UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

NOV 16 2011

Dear Reviewer:

In accordance with provisions of the National Environmental Policy Act (NEPA), we notify you of the availability of the Final Environmental Impact Statement (FEIS) for the Comprehensive Annual Catch Limit (ACL) Amendment for the South Atlantic Region (RIN 0648-AY73).

This FEIS is prepared pursuant to NEPA to assess the environmental impacts associated with NOAA Fisheries Service implementing actions in the Comprehensive ACL Amendment, which include: (1) Changes to the snapper-grouper fishery management unit, including the removal of some species, designation of ecosystem component species, and the development of species groups; (2) establishment of acceptable biological catch control rules; (3) ACLs and annual catch targets; (4) sector allocations; (5) accountability measures; and (6) management measures necessary to ensure mortality is at or below the ACLs.

Electronic copies of the FEIS may be accessed through the NOAA Fisheries Service Web site http://sero.nmfs.noaa.gov/sf/SAACLAmend.htm, or the e-Rulemaking Portal at http://www.regulations.gov. CDs of the FEIS may also be obtained from the Responsible Program Official identified below.

NOAA Fisheries Service is not required to respond to comments received during the agency's 30 day cooling off period as a result of the issuance of the FEIS. However, comments received by December 27, 2011, will be reviewed and considered for their impact on issuance of a record of decision (ROD). Please send comments to the responsible official identified below. The ROD will be made available publicly following final agency action on or after December 27, 2011.

Responsible Program Official: Roy E. Crabtree, Ph.D.
Regional Administrator
Southeast Regional Office
National Oceanic and Atmospheric Administration
263 13th Avenue South
St. Petersburg, FL 33701-5505
Phone: 727-824-5305; Fax: 727-824-5308
www.regulations.gov

Sincerely,

Paul N. Doremus, Ph.D.
NOAA NEPA Coordinator

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

RECORD OF DECISION

FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

FOR

COMPREHENSIVE ANNUAL CATCH LIMIT (ACL) AMENDMENT FOR THE SOUTH ATLANTIC REGION

National Marine Fisheries Service
Southeast Region
St. Petersburg, Florida

January 2012

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

Table of Contents

1.0 Summary 4
1.1 Background 5
1.2 Controversy 6
2.0 Decision 8
3.0 Rationale for Decision 8
3.1 Action 1. Remove species from the snapper-grouper FMU (approved). 8
3.2 Action 2. Designate ecosystem component (EC) species (approved). 11
3.3 Action 3. Establish species groupings for snapper-grouper species (approved). 13
3.4 Action 4. Establish an acceptable biological catch (ABC) control rule for snapper-grouper species (approved). 15
3.5 Action 5. Specify allocations for snapper-grouper species that do not currently have allocations (approved). 19
3.6 Action 6. Establish ACLs and OY for the snapper-grouper fishery (approved). 20
3.7 Action 7. Specify AMs/ACTs for the commercial sector for species in the snapper-grouper FMU (approved). 22
3.8 Action 8. Specify AMs/ACTs for the recreational sector for species in the snapper-grouper FMU (approved). 24
3.9 Action 9. Specify allocations for the wreckfish portion of the snapper-grouper fishery (approved). 27
3.10 Action 10. Establish an ACL and OY for wreckfish (approved). 28
3.11 Action 11. Specify AMs for the wreckfish fishery (approved). 30
3.12 Action 12. Establish management measures for wreckfish (approved). 32
3.13 Action 13. Specify jurisdictional allocations for black grouper (approved). 34
3.14 Action 14. Specify sector allocations for black grouper (approved). 35
3.15 Action 15. Establish ACLs and OY for black grouper (approved). 37
3.16 Action 16. Establish AMs/management measures for the commercial sector for black grouper (approved). 38
3.17 Action 17. Establish accountability measures (AMs)/management measures for the recreational sector for black grouper (approved). 40
3.18 Action 18. Establish jurisdictional allocations for yellowtail snapper (approved). 43
3.19 Action 19. Establish jurisdictional allocations for mutton snapper (approved). 45
3.20 Action 20. Establish an ABC control rule and ABC for dolphin (approved). 47
3.21 Action 21. Specify allocations for dolphin (approved). 48
3.22 Action 22. Establish ACLs and OY for dolphin (approved). 49
3.23 Action 23. Establish AMs for the commercial sector for dolphin (approved). 51
3.24 Action 24. Establish AMs for the recreational sector for dolphin (approved). 52
3.25 Action 25. Establish management measures for dolphin (approved). 56
3.26 Action 26. Establish an ABC control rule and ABC for wahoo (approved). 58
3.27 Action 27. Specify allocations for wahoo (approved). 60
3.28 Action 28. Establish ACLs and OY for wahoo (approved). 61
3.29 Action 29. Establish AMs for the commercial sector for wahoo (approved). 62
3.30 Action 30. Establish AMs for the recreational sector for wahoo (approved). 64
3.31 Action 31. Establish management measures for wahoo (approved). 67
3.32 Action 32. Establish ACLs and OY for golden crab (approved). 68

3.33 Action 33. Establish AMs for golden crab (approved) 69
4.0 Mitigation, Monitoring and Enforcement 70
5.0 Scoping Process and Public Involvement 71
6.0 Findings Required by Other Laws and Regulations 72
7.0 Implementation 72

1.0 Summary

This Record of Decision (ROD) documents the determination by NOAA's National Marine Fisheries Service (NMFS), on behalf of the Secretary of Commerce (Secretary), to approve the Comprehensive Annual Catch Limit (ACL) Amendment. The Comprehensive ACL Amendment amends four fishery management plans (FMPs): Amendment 2 to the FMP for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo FMP); Amendment 2 to the FMP for Pelagic *Sargassum* Habitat of the South Atlantic Region (*Sargassum* FMP); Amendment 5 to the FMP for the Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP); and Amendment 25 to the FMP for the Snapper-Grouper Fishery of the South Atlantic Region (Snapper-Grouper FMP). The South Atlantic Fishery Management Council (South Atlantic Council) has submitted the Comprehensive ACL Amendment for review and approval by the Secretary. This ROD documents NMFS' decisions regarding the appropriateness of various actions in the Comprehensive ACL Amendment. The document contains numerous actions which, in summary will:

- Make changes to the fishery management unit (FMU) for the Snapper-Grouper FMP, including the removal of some species, designation of ecosystem component (EC) species, and the development of species groups.

- Specify an acceptable biological catch (ABC) control rule and an ABC for species in the Snapper-Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum* FMPs. The ABC control rule was developed by the South Atlantic Council's Scientific and Statistical Committee (SSC), and the South Atlantic Council.

- Specify ACLs for species in the Snapper-Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum* FMPs.

- Allocate ACLs between the recreational and commercial sectors for species in the Snapper-Grouper and Dolphin Wahoo FMPs. The document also includes actions to allocate ACLs for three snapper-grouper species (black grouper, yellowtail snapper, and mutton snapper) across the jurisdictional boundaries of the South Atlantic Council and Gulf of Mexico Fishery Management Council (Gulf of Mexico Council).

- Establish annual catch targets (ACTs) for the recreational sector (Snapper-Grouper, and Dolphin Wahoo FMPs); and accountability measures (AMs) for recreational (Snapper-Grouper and Dolphin Wahoo FMPs), and commercial (Snapper-Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum* FMPs) sectors.

- Specify management measures for dolphin (Dolphin Wahoo FMP) and wreckfish (Snapper-Grouper FMP).

These measures are being approved in accordance with the procedures prescribed in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This ROD is issued pursuant to the National Environmental Policy Act (NEPA), the Council on

Environmental Quality (CEQ) NEPA regulations at 40 C.F.R. § 1500-1508, and NOAA's Administrative Order NAO 216-6, Sections 6.03(a)(2) (Consolidated NEPA Documents, Management Plans and Plan Amendments), and 6.03(d)(2) (Fisheries Actions that Require an Environmental Impact Statement (EIS)). The decision to approve the Comprehensive ACL Amendment is based on analyses in the final EIS (FEIS) prepared in association with this action and in accordance with NEPA. The scheduling of the development of the FEIS and South Atlantic Council documents is provided in Section 5, titled, "**Scoping Process and Public Involvement**."

1.1 Background

The Magnuson-Stevens Act requires the regional fishery management councils and NMFS to prevent overfishing while achieving optimum yield (OY) from each fishery. Revisions to the Magnuson-Stevens Act in 2006 require that a fishery management council specify ACLs for each of its managed fisheries at a level which prevents overfishing. The National Standard (NS) 1 Guidelines provide that ACLs and AMs are needed for each fishery under federal management, unless covered by a statutory exception. The Comprehensive ACL Amendment addresses these requirements for species not undergoing overfishing in four FMPs.

The purpose of the Comprehensive ACL Amendment for the South Atlantic is to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The need for action is to specify ACLs, and AMs, where needed, to comply with Magnuson-Stevens Act requirements. The South Atlantic Council is utilizing several tools to achieve OY for the stocks included in this amendment. The SSC worked with the South Atlantic Council to develop an ABC control rule, which the SSC employed to specify an ABC for species in the four FMPs. The ABC control rule, which accounts for uncertainty, contains four tiers, with a species assigned to a specific tier depending on the amount of information available about the species, such as life history and landings information. ABC can be computed using the ABC control rule for assessed and unassessed (data poor) species. Tier 1 applies to species with the greatest amount of information and Tier 4 applies to species which have the least amount of data for determining ABC (See **Action 4** for information on ABC control rules). Using the ABC as a start, the South Atlantic Council developed ACLs for the non-overfishing federally managed stocks in the Snapper-Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum* FMPs. The ACL is an annual limit expressed in pounds or numbers of fish, which serves as the basis for invoking AMs. AMs are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur (50 C.F.R. § 600.310(g)(1)). Although AMs are intended to prevent overfishing in a fishery, the South Atlantic Council must specify regulations to ensure that overfishing does not occur.

The final NS1 Guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to ACL and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 Guidelines. Therefore, the Comprehensive ACL Amendment would not specifically set another ACL for *Sargassum*, because there is currently a commercial quota in place which already functions as an ACL. There is no recreational component of *Sargassum* in the *Sargassum* FMP. In addition to the current restrictions, the *Sargassum* FMP restricts all harvest of the species after the quota is met or is projected to be met, which functions as the AM. An individual ACL of zero is specified for Goliath grouper and Nassau grouper since harvest is already prohibited for these species.

1.2 Controversy

A minority report was submitted by dissenting South Atlantic Council members on October 14, 2011, who indicated Secretarial review of the Comprehensive ACL Amendment should be delayed to allow time for data from the new Marine Recreational Information Program to become available for incorporation into estimates of sector allocations and ACLs. The minority report also stated that the method used for calculating sector allocations in the Comprehensive ACL Amendment is not acceptable. The South Atlantic Council's allocation formula in the amendment uses 50 percent of the average historical time series plus 50 percent of the average of a three year recent catch trend for each sector to calculate the allocations. The dissenting members felt that using only three years to calculate 50 percent of the allocation is too short a time period given the perceived limitations of Marine Recreational Fishing Statistical Survey (MRFSS) data, and they suggested alternative approaches for determining allocations. The minority report also stated a "complete" time series of years should be used to set allocations for species in the Comprehensive ACL Amendment. The South Atlantic Council used a different time series of data for various species when determining allocations according to the availability of data, quality of those data, and management history of the species.

The dissenting Council members also expressed concern over the South Atlantic Council's approval of a proposed wreckfish ACL of 250,000 pounds whole weight (ww), which is significantly lower than the current total allowable catch (TAC) of 2 million pounds ww. The minority report stated the proposed ACL could adversely impact the fishers vested in the wreckfish fishery. The authors of the minority report also felt the wreckfish ITQ system is the only catch share program in the South Atlantic, and its failure could threaten NOAA Fisheries Service's catch share initiative in the Southeast Region. The state of North Carolina and an individual also opposed the proposed ACL for wreckfish.

The specification of the ABC for wreckfish was discussed extensively by the South Atlantic Council's SSC. In April 2010, the SSC determined the wreckfish ABC was unknown because effort and landings were reduced to the extent that landings information was confidential. The SSC indicated the South Atlantic Council should consider an ACL that did not exceed 200,000 pounds ww. The SSC discussed setting an ABC for wreckfish again during their August 2010 meeting. The SSC stated that a 2001 assessment indicated stock depletion at higher historical levels of effort and that the catch reductions appeared to have come mainly from gear restrictions, a spawning season closure, and the ITQ implementation. The SSC stated a depletion-based stock reduction analysis (DBSRA; Tier 2 of the ABC control rule) or depletion-corrected average catch (DCAC; Tier 3 of the ABC control rule) estimate could be calculated, but recent landings are confidential, therefore the SSC was not able to perform the calculations to produce these estimates. The SSC agreed the 2001 assessment was dated and did not apply to current landings and conditions, and concluded the ABC control rule based on catch-only data (Tier 4 of the ABC control rule) should be used even though a dated stock assessment exists for wreckfish. Therefore, the SSC recommended setting the ABC at the average historical catch (1997-recent) of 250,000 pounds ww in September 2010. Due to confidentially of data, a more precise level could not be set.

A DCAC analysis for wreckfish was completed and presented to the SSC at their November 2011 meeting. The SSC adopted the DCAC methodology to develop a new ABC recommendation of 235,000 pounds ww for wreckfish, in accordance with the proposed ABC Control Rule contained in the Comprehensive ACL Amendment. There is greater confidence in the ABC estimate 235,000 pounds ww based on the Tier 3 DCAC analysis than in the previous 250,000 pounds ww estimate derived from Tier 4 of the ABC control rule.

The South Atlantic Council reviewed the recommended ABC value in December 2011 and passed a motion to concur with the process of adjusting the wreckfish ACL to reflect the revised ABC value. The proposed ACL for wreckfish in the proposed rule for the Comprehensive ACL Amendment is 250,000 pounds ww. Because the ACL cannot exceed the catch level recommendation of a Council's SSC, an amended proposed rule was published on December 30, 2011, which provides a new proposed wreckfish ACL based on the revised ABC value for wreckfish of 235,000 pounds ww. The comment period for the amended proposed rule ended on January 17, 2012. If approved, the 2012 commercial ACL for wreckfish would be 223,250 pounds ww, and the recreational ACL would be 11,750 pounds ww.

Comments on the Comprehensive ACL Amendment and proposed rules were received from recreational fishers opposing: The proposed prohibition of the sale of bag-limit caught dolphin from the for-hire sector; setting the ABC with ABC control rules that used MRFSS data; sector allocation of ACLs for snapper-grouper and dolphin wahoo species; and specification of ACLs and AMs for snapper-grouper species complexes. Responses were mixed regarding the designation of EC species, with some in favor, but many were opposed to the action.

Non-governmental organizations submitted comments on the Comprehensive ACL Amendment and proposed rules that were related to: Removing species from the FMU; designation of EC species; inability of the SSC to specify an OFL for some data poor stocks; application of the ABC control rule; and specification of ACTs. One group indicated bank sea bass should not be designated as an EC species because an "exploratory assessment" conducted by graduate students indicated the stock was overfished and undergoing overfishing. However, the exploratory assessment has not been peer-reviewed and the document states that all work in the report should be considered to be preliminary.

Finally, in their review of the Comprehensive ACL Amendment as required by the Coastal Zone Management Act, nine states concurred that the actions in the amendment were consistent with their respective coastal management programs. North Carolina concurred, but expressed a lack of support with the actions for sector allocation for blueline tilefish, the ACL for wreckfish, and the sector allocation for dolphin. Concurrence is inferred for six additional states in accordance with the provisions of 15 C.F.R. § 930.41.

2.0 Decision

Following a review of the Comprehensive ACL Amendment and supporting analyses for compliance with the Magnuson-Stevens Act and other applicable law, including NEPA, CZMA, and the Information Quality Act, NMFS approves the Comprehensive ACL Amendment. The rationale for this decision is supported by the FEIS, and summarized below. The proposed actions are viewed as those that achieve the purpose and need for action in a way that best addresses Magnuson-Stevens Act mandates and the multiple objectives outlined in the FMPs. Additional alternatives considered by the South Atlantic Council and NMFS in developing the rule and the Comprehensive ACL Amendment, but eliminated from detailed study, are described in **Appendix A** of the FEIS, and noted in this ROD.

3.0 Rationale for Decision

3.1 Action 1. Remove species from the snapper-grouper FMU (approved).

Alternative 2 (Preferred). Remove species from the snapper-grouper FMU with 95% (or greater) of landings in state waters.

Species selected for removal under this criterion are:

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Puddingwife

Alternative 5 (Preferred) (Environmentally Preferable). Remove all the species under the Florida Marine Life Species Rule from the snapper-grouper FMU. Species selected for removal under this criterion are: Queen triggerfish; porkfish; and puddingwife.

Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the snapper-grouper FMU.

NMFS guidelines to define FMUs specify that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 C.F.R. § 600.320(d)(1)). NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 C.F.R. § 600.340(b)(2)):

1. The importance of the fishery to the Nation and the regional economy;
2. whether an FMP can improve the condition of the stock;
3. the extent to which the fishery could be or already is adequately managed by states;
4. whether an FMP can further the resolution of competing interests and conflicts;
5. whether an FMP can produce more efficient utilization of the fishery;
6. whether an FMP can foster orderly growth of a developing fishery; and
7. costs of the FMP balanced against benefits.

NMFS and the South Atlantic Council evaluated whether all 73 species originally included in the snapper-grouper FMU are currently in need of federal conservation and management according to the seven factors identified in 50 C.F.R. § 600.340(b)(2), and determined federal conservation and management is not needed for the 13 species identified in **Alternatives 2, 5,** and **9 (Preferreds)**. The South Atlantic Council determined that these species should be removed from the FMU.

In theory, specifying ACLs for all 73 species and constraining federal fisheries to those ACLs would provide biological and ecological benefits. Since **Alternative 5** would only remove three species (porkfish, puddingwife, and queen triggerfish) from the snapper-grouper FMU, which are already subject to stringent protection through the Florida Marine Life Rule, it would be considered to be the **environmentally preferable**. However, since such a small portion of the overall fishing activity for the 13 species identified in **Alternatives 2, 5,** and **9** occurs in federal waters, there is very little difference in the biological effects between **Alternative 1 (No Action)** and the preferred alternatives. Thus, these 13 species could be or already are adequately managed by the states. In addition, two species (tiger grouper and smallmouth grunt) identified for removal **(Alternative 9)** have no commercial or recreational landings. Therefore, any conservation and management measures applied to federal waters are not expected to have a noticeable effect on the population of the 13 species identified for removal from the FMU. Effects on bycatch would be minimal, and socio-economic benefits associated with retaining management of the 13 snapper-grouper species' effective landings would be relatively small.

The South Atlantic Council intends to evaluate landings in state and federal waters and other available information on species removed from the snapper-grouper FMU every five years. Monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the snapper-grouper FMU.

NMFS **approves** the removal of 13 species from the snapper-grouper FMU.

<u>Rejected alternatives to the proposed action to remove stocks from the snapper-grouper FMU.</u>

Alternative 1 (No Action)). Do not remove any species from the snapper-grouper FMU.

Alternative 3. Remove species from the snapper-grouper FMU with 90% (or greater) of landings in state waters. Species selected for removal under this criterion are:

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors choice	

Alternative 4. Remove species from the snapper-grouper FMU with 80% (or greater) of landings in state waters, except hogfish and mutton snapper. Species selected for removal under this criterion are:

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish

Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors choice
Graysby	Schoolmaster	Saucereye porgy	Puddingwife	Margate

Alternative 6. Remove species with state and federal (combined) landings that are less than, or equal to 10,000 pounds (with the exception of speckled hind) from the snapper-grouper FMU. Species selected for removal under this criterion are:

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Spanish grunt
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Puddingwife
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	

Alternative 7. Remove species with state and federal (combined) landings that are less than, or equal to 20,000 pounds (with the exception of cubera snapper, warsaw grouper, lesser amberjack and speckled hind) from the snapper-grouper FMU. Species selected for removal under this criterion are:

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Puddingwife
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Bar jack
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	Ocean triggerfish
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	
Sand tilefish	Yellowfin grouper	Graysby	Sailors choice	Spanish grunt	

Alternative 8. Remove tomtate, knobbed porgy, jolthead porgy, and whitebone porgy from the snapper-grouper FMU.

<u>Discussion:</u>
Under **Alternative 1 (No Action)** all 73 species in the snapper-grouper FMU would remain subject to current federal regulations and would be required to have ABCs and ACLs. NMFS' NS Guidelines state that the principle implicit in NS7 is that not every fishery needs regulation. The Magnuson-Stevens Act requires fishery management councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose; and where the present or future benefits of regulation would justify the costs. Decisions about the composition of FMUs are an integral part of the plan development process, as FMUs define the specific species that are to be the target of federal conservation and management. NMFS guidelines to define FMUs specify that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 C.F.R. § 600.320(d)(1)). Based on the NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management (50 C.F.R. § 600.340(b)(2) federal management is not needed for

13 species in the FMU identified in **Alternatives 2, 5,** and **9**. Therefore, the South Atlantic Council chose not to select **Alternatives 3, 4, 6, 7,** and **8** as their preferred alternatives.

Alternative 3 would remove 11 species for which 10% or less of the total harvest occurs in federal waters, while **Alternative 4** would remove 15 species for which 20% or less of the total harvest occurs in federal waters. Many of the species in **Alternatives 2 (Preferred)-4** are harvested in more significant quantities than are species in **Alternatives 6-9 (Preferred),** but such harvest occurs primarily in state waters outside the South Atlantic Council's management jurisdiction. **Alternatives 6** and **7** would remove species from the FMU if their combined (state and federal) average annual landings for 2005-2009 were below a specified threshold. **Alternative 8** would remove an additional four species (tomtate, knobbed porgy, jolthead porgy, and whitebone porgy) from the snapper-grouper FMU because they are often not targeted and are considered to be less desirable than other species in the snapper-grouper FMU.

The South Atlantic Council originally selected as their preferred **Alternatives 4, 5, 7,** and **8,** which would have removed 39 species from the snapper-grouper FMU. At their August 2011 meeting, after reviewing comments submitted by the public on the proposed actions and considering the recommendations from advisory panels, the South Atlantic Council reconsidered the removal of 39 species from the snapper-grouper management unit. The Council re-evaluated whether or not species contained within the FMU were in need of federal management according to criteria specified in NS7, which had not been considered during previous South Atlantic Council meetings. The South Atlantic Council chose to deselect **Alternatives 4, 7, and 8** as their preferred alternatives due to concerns including: 1) Potential for bycatch as a result of species removal, 2) uncertainty as to the level of state management and how a state would regulate catch in its waters that was landed in a neighboring state, and 3) concern that unregulated catch in federal waters could cause overfishing.

3.2 Action 2. Designate ecosystem component (EC) species (approved).

Alternative 6 (Preferred) (Environmentally Preferable). Designate snapper-grouper species that meet three out of four NS1 criteria, as EC species.

Alternative 6 (Preferred) designates six species (cottonwick, longspine porgy, bank sea bass, rock sea bass, ocean triggerfish, and schoolmaster) as EC species. The NS1 Guidelines pertaining to EC species, (50 C.F.R. § 600.310(d)(5)(i)), identify four criteria for consideration as an EC species: (1) Be a non-target species or non-target stock; (2) not be determined to be subject to overfishing, approaching overfished, or overfished; (3) not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (4) not generally be retained for sale or personal use. A quantitative method was developed to determine which species met NS1 criteria for EC species using a landings threshold of less than or equal to 10,000 pounds whole weight in relation to criterion 1; the availability of a stock assessment and its results in relation to criterion 2; an assessment of vulnerability to overfishing using a productivity and susceptibility analysis (PSA) score provided by MRAG Americas in relation to criterion 3; and a subjective decision based on landings and magnitude of discards regarding whether a species is generally retained for sale or personal use in relation to criterion 4. Based on the quantitative method developed, bank sea bass, longspine porgy, ocean triggerfish, rock sea bass, and schoolmaster did not meet criterion 3, and cottonwick did not meet criterion 4.

The PSA exercise conducted by MRAG Americas suggested longspine porgy, bank sea bass, rock sea bass, ocean triggerfish, and schoolmaster could be vulnerable to overfishing if they were targeted. However, these species have extremely low landings and are generally not retained because of their small size and the availability of higher quality, co-occurring species. Therefore, the South Atlantic Council felt that fishing pressure was unlikely to affect the non-overfishing, and thus the non-overfished status of these species, and they should be designated as EC species. Cottonwick was not identified by MRAG Americas as a species vulnerable to overfishing, but the species might be more likely to be retained by fishers than others being considered as EC species since it can attain a size of 13 inches total length. Due to the extremely low landings level (average 6 pounds during 2005-2009), the South Atlantic Council felt cottonwick should be designated as an EC species. Tiger grouper and smallmouth grunt also met criteria as EC species, but were removed from the FMU through **Action 1**. As in **Action 1**, ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are considered to be EC species. The EC status of a species would be reconsidered if the South Atlantic Council determines that a species is in need of management.

Alternative 6 (Preferred) is the **environmentally preferable** alternative. Of the alternatives considered, the six species identified in **Alternative 6 (Preferred)** best met the NS1 criteria for EC species, and were designated by the South Atlantic Council as EC species under **Alternative 6 (Preferred)**. Therefore, the South Atlantic Council concluded that **Alternative 6 (Preferred)** best met the objectives of the Snapper-Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

NMFS **approves** the designation of six EC species within the snapper-grouper FMU.

Rejected alternatives to the proposed action to designate EC species.

Alternative 1 (No Action). Do not designate EC species.

Alternative 2. Designate snapper-grouper species with state and federal (combined) landings that are less than, or equal to 10,000 pounds as EC species.

Alternative 3. Designate snapper-grouper species with state and federal (combined) landings that are less than, or equal to 1,000 pounds as EC species.

Alternative 4. Designate snapper-grouper species with state and federal (combined) landings that are less than, or equal to 2,500 pounds as EC species.

Alternative 5. Designate snapper-grouper species with state and federal (combined) landings that are less than, or equal to 5,000 pounds as EC species.

Discussion:

Under **Alternative 1 (No Action)**, all 73 species in the snapper-grouper FMU would be subject to the specification of ACLs, AMs, and management measures. However, the biological and economic effects of designating six species as EC species under **Alternative 6 (Preferred)** are not significantly different from **Alternative 1 (No Action)**. The six species designated as EC species are not targeted, constitute a minor component of the landings, and are less desirable as a food fish than other species in the snapper-grouper FMU. Therefore, conservation and management measures would not be expected to have any effect on the six species if they were not designated as EC species.

Alternatives 2, 3, 4, and **5** identify 16, 6, 10, and 11 species, respectively, as potential EC species based on criteria using different landings thresholds. Most of the species in **Alternatives 2-5** are subject to little management and are infrequently landed. Exceptions include the grouper (coney, misty grouper, yellowmouth grouper) and snapper species (dog snapper, mahogany snapper, blackfin snapper, and black snapper), which have limits on the number of individuals that can be retained by recreational fishermen. Furthermore, coney and yellowmouth grouper are included in the four-month spawning season closure for shallow water grouper species. Designating grouper (coney, misty grouper, and yellowmouth grouper) and snapper (mahogany snapper, blackfin snapper, dog snapper, and black snapper) species through proposed actions in **Alternatives 2-5** could result in increased harvest (albeit small) of the species by commercial and recreational fishermen since they would no longer be subject to management. Therefore, the South Atlantic Council did not choose **Alternatives 2-5** as their preferred alternatives for designation of EC species.

3.3 Action 3. Establish species groupings for snapper-grouper species (approved).

Alternative 4 (Preferred) (Environmentally Preferable). Establish single species ACLs and grouped species complexes for the establishment of ACLs. Single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on the criteria below. Complexes for groups of species would be established for other species using associations based on one or more of the following: life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent Marine Resources Monitoring, Assessment, and Prediction (MARMAP) data. When a complex ACL is exceeded, all species in that complex will be subject to AMs. When an individual ACL is exceeded, the individual stock will be subject to AMs.

Alternative 4 (Preferred) meets the guidelines at 50 C.F.R. § 600.320(d)(1) for establishing stock complexes, and establishes species groups using life history, fishery-dependent, and fishery-independent data for all 54 species remaining in the snapper-grouper FMU. Detailed quantitative analyses included PSA and life history characteristics, in addition to examining differences in population dynamic parameters. Multivariate statistical analyses were used to identify stock associations from life history, fishery-dependent, and fishery-independent data sources. Identified associations between stocks were used to develop six complexes for unassessed stocks and 12 individual ACLs for assessed and targeted species.

Stock assessments are currently available for only 13 snapper-grouper species, and many of the species in the snapper-grouper FMU are difficult to identify and can be subject to extreme fluctuations in landings due to low abundance, or lack of targeted fishing effort. Thus, specifying individual ACLs for all snapper-grouper species could result in periodic overages that would require AM implementation, creating additional burdens on science and enforcement. Grouping unassessed stocks into complexes using the methods described in **Alternative 4 (Preferred)** would help avoid these issues and adhere to NS1 and NS3 Guidelines.

Alternative 4 (Preferred) is the **environmentally preferable** alternative. **Alternative 4 (Preferred)** promotes attaining OY for assessed stocks while providing a mechanism to prevent overfishing of the less productive or more vulnerable, unassessed stocks. Grouping less productive, vulnerable, and/or data-poor stocks into complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. This approach is relatively simple and also carries a minimal administrative burden with regard to quota monitoring as compared to the other alternatives considered. The approach towards assignment of species to complexes in **Alternative 4 (Preferred)** also considers discard information where available.

The South Atlantic Council intends to evaluate landings and other available information on all species periodically through stock assessment and fishery evaluation reports. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in complexes. If the South Atlantic Council determines that landings of any species within a complex have changed significantly, more appropriate species groupings would be established.

NMFS **approves** the selected species groupings identified in **Alternative 4 (Preferred).**

<u>Rejected alternatives to the proposed action to establish species groupings for snapper-grouper species</u>.

Alternative 1 (No Action). Do not establish multi-species groupings for the snapper-grouper FMU.

Alternative 2. Establish species groups for the snapper-grouper FMU using associations based on life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. Establish sub-complexes within species complexes. Complex and/or sub-complex ACLs will be a sum of the individual ACLs included in that complex (all sectors combined) and/or sub-complex. When a complex ACL is exceeded, all species in that complex, as well as those in sub-complexes will be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex will be subject to AMs.

Alternative 3. Establish species groups for the snapper-grouper FMU based on similar life histories.

Discussion:

Under **Alternative 1 (No Action),** all remaining species in the snapper-grouper FMU would be subject to the specification of individual ACLs, AMs, and management measures. Stock assessments exist only for a handful of snapper-grouper species. Furthermore, it would be difficult to monitor individual ACLs for species that have very low abundance or similar species that cannot easily be identified from each other. Thus, specifying individual ACLs for all species in the snapper-grouper FMU would not be practical as it would substantially increase costs associated with monitoring ACLs as well as burdens on science and enforcement.

In **Alternative 2**, stocks within complexes would be managed by two ACLs; one at the complex level and another at the individual or sub-complex level. This multi-faceted approach promotes attaining OY for assessed stocks while providing two mechanisms to prevent overfishing of the unassessed stocks, which are often less productive and more vulnerable. However, this approach is complicated and also carries a heavy administrative burden with regards to quota monitoring. Therefore, the South Atlantic Council did not choose **Alternative 2** as their preferred alternative for establishing species groups.

Alternative 3 represents a qualitative approach towards species groupings that was explored during the development of Amendment 13B to the Snapper-Grouper FMP. Generally, each unit would be composed of an indicator species that is usually captured with other members of the unit due to similarities in susceptibility to fishing gear, occupying similar habitats, and/or possessing similar life history strategies and/or depth preferences. The South Atlantic Council's SSC did not endorse this method because a quantitative basis for groupings was not employed. Furthermore, the SSC felt groupings by life-history attributes or taxonomy alone did not address aggregations of species that are caught together by gear type. Therefore, the South Atlantic Council did not choose **Alternative 3** as their preferred alternative for establishing species groups.

The South Atlantic Council originally selected preferred alternatives in **Action 2** that would have removed 39 species from the snapper-grouper FMU. At their August 2011 meeting, the South Atlantic Council re-evaluated whether or not species contained within the FMU were in need of federal management according to criteria specified in NS7, and determined that only 13 species should be removed. As a result the South Atlantic Council modified the species groupings and added two additional complex groups in **Action 3** to accommodate the additional 39 species that would not be eliminated from the FMU under **Action 2.**

3.4 Action 4. Establish an acceptable biological catch (ABC) control rule for snapper-grouper species (approved).

Alternative 7 (Preferred) (Environmentally Preferable). <u>For assessed species:</u> Establish ABCs based on the South Atlantic Council SSC's ABC control rule. <u>For unassessed species</u>: When the ABC control rule portion for unassessed species is complete, establish ABCs based on the South Atlantic Council SSC's ABC control rule. Until the ABC control

rule is complete, establish ABCs based upon the South Atlantic Council SSC's approach for unassessed species in Level 4 of the ABC Control Rule and OFL = unknown.

The NS1 Guidelines state that each fishery management council must establish an ABC control rule based on scientific advice from its SSC. The ABC control rule in **Alternative 7 (Preferred)** represents a four level tiered approach for use by the South Atlantic Council's SSC in selecting the appropriate ABC for a species, where Tier 1 is the most data rich situation and Tier 4 has the fewest data for determining ABC (see **Table 1** below). The multi-tiered ABC control rule takes into account different sources of uncertainty into ABC recommendations. For Tier 1, the ABC is determined from a quantitative stock assessment. For Tier 2 where no stock assessment had been conducted but the entire catch history for a fishery is available, a DBSRA would be conducted to identify ABC. Under Tier 3, where a limited number of years of data are available, a DCAC analysis would be run to identify an ABC. Tier 4 is the most data poor level where ABC is derived by the SSC on a case by case basis.

Table 1. The South Atlantic Council SSC's ABC Control Rule. The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate: (1) The maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. (See **Appendix Q** in the Comprehensive ACL Amendment for details on the methodology.)

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. Assessment Information (10%)	1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%) 2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%) 3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%) 4. Reliable catch history. (7.5%) 5. Scarce or unreliable catch records. (10%)
2. Uncertainty Characterization (10%)	1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%) 2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%) 3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%) 4. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Stock Status (10%)	1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%) 2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%) 3. Stock is either overfished or overfishing. (5%) 4. Stock is both overfished and overfishing. (7.5%) 5. Either status criterion is unknown. (10%)
4. Productivity and Susceptibility – Risk Analysis	1. Low risk. High productivity, low vulnerability, low susceptibility. (0%) 2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)

(10%)	3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)
Tier 2: Unassessed Stocks - Reliable landings and life history information available	
	OFL derived from DBSRA. ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.
Tier 3: Unassessed Stocks - Inadequate data to support DBSRA	
	ABC derived directly, from DCAC. Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.
Tier 4: Unassessed Stocks - Inadequate data to support DCAC and DBSRA	
	OFL and ABC derived on a case-by-case basis. "Only reliable catch series" ad hoc group is currently working on what to do when not enough data exist to perform DCAC.

The South Atlantic Council's SSC used **Alternative 7 (Preferred)** to establish ABCs for assessed and unassessed snapper-grouper species not experiencing overfishing. The SSC did not specify OFL for the Tier 4 unassessed species in the Comprehensive ACL Amendment. The SSC stated at their August 2010 meeting that for Tier 4 species, OFL is an unknown value above their estimate of the ABC. The South Atlantic Council and the SSC will periodically evaluate the performance of the ABC control rule and determine when and how it needs to be modified. In addition, the SSC intends to re-evaluate the unassessed species' portion of their ABC control rule in the near future, to assess whether modifications are necessary.

Alternative 7 (Preferred) is the **environmentally preferable alternative** since it follows the South Atlantic Council SSC's recommendations for the specification of ABCs based on a systematic inspection of all sources of uncertainty, including variables such as susceptibility, vulnerability, bycatch, and discard information.

NMFS **approves** the control rule for setting ABC in **Alternative 7 (Preferred)**.

<u>Rejected alternatives to the proposed action to establish an ABC control rule for snapper-grouper species</u>.

Alternative 1 (No Action). Do not establish an ABC control rule for species in the snapper-grouper FMU.

Alternative 2. Where applicable, establish an ABC control rule where ABC equals OFL.

Alternative 3. <u>For unassessed species</u>: Establish an ABC control rule where ABC equals a percentage of OFL or a percentage of the median landings 1999-2008, as appropriate.

Subalternative 3a. ABC=65% (OFL or median landings 1999-2008)
Subalternative 3b. ABC=75% (OFL or median landings 1999-2008)
Subalternative 3c. ABC=85% (OFL or median landings 1999-2008)
Subalternative 3d. ABC=95% (OFL or median landings 1999-2008)

Alternative 4. <u>For assessed species</u>: Establish an ABC control rule where ABC equals a percentage of the yield at maximum fishing mortality threshold (MFMT).

Subalternative 4a. ABC=yield at 65%MFMT

Subalternative 4b. ABC=yield at 75%MFMT
Subalternative 4c. ABC=yield at 85%MFMT

Alternative 5. <u>For assessed species</u>: Establish ABCs based on the South Atlantic Council SSC's ABC control rule. <u>For unassessed species</u>: Adopt the South Atlantic Council SSC's ABC control rule, but establish an interim ABC = median landings 1999-2008 and OFL = unknown until the South Atlantic Council SSC's ABC control rule can be fully applied.

Alternative 6. <u>For assessed species</u>: Establish ABCs based on the South Atlantic Council SSC's ABC control rule. <u>For unassessed species</u>: Adopt the Gulf of Mexico Council SSC's ABC control rule for unassessed species. The indicated default ABC buffer levels for Tier 3a and 3b are to be used unless specified otherwise by the Gulf of Mexico Council on a stock by stock basis.

<u>Discussion:</u>

Alternative 1 (No Action) would not establish an ABC control rule for all species in the snapper-grouper FMU. It contains no guidance on how uncertainty is applied to the setting of the ABC, and therefore, this alternative does not comply with NS1 Guidelines. Although there are currently no ABC control rules, there are status quo ABC values for some snapper-grouper species based on recommendations from the South Atlantic Council's SSC. For overfished species, the South Atlantic Council's SSC previously recommended ABCs equal to the value specified in the rebuilding plan, and for other species experiencing overfishing, ABCs are specified and included in Amendments 15A, 16, 17A, and 17B to the Snapper-Grouper FMP.

Alternatives 2-4 would specify an ABC control rule for assessed and unassessed species where needed. Under **Alternative 2**, ABC would be equal to OFL. The NS1 Guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. **Alternative 3** and its subalternatives would set the ABC for unassessed species as a percentage of the OFL (equal to the median landings from 1999-2008). However, the South Atlantic Council's SSC has indicated that OFL is unknown for many data poor species. Therefore, the South Atlantic Council did not select **Alternatives 2** or **3** as their preferred alternative.

Alternative 4 and its subalternatives would set ABC to a percentage of the yield at the maximum fishing mortality threshold (MFMT) for assessed species. Like **Alternatives 2** and **3**, **Alternative 4** has limitations since estimates of MFMT usually come from stock assessments. Only a few stocks managed by the South Atlantic Council have adequate data to conduct stock assessments. Therefore, the South Atlantic Council did not select **Alternative 4** as their preferred alternative.

Similar to **Alternative 7 (Preferred), Alternative 5** would consider the probability of overfishing in determining ABC for assessed species. However, for unassessed species, the South Atlantic Council would set ABC equal to the median landings from 1999-2008, which offers less flexibility in establishing ABC for data poor species than the **Alternative 7**

(Preferred). Therefore, the South Atlantic Council did not choose **Alternative 5** as their preferred alternative.

Alternative 6 would specify an ABC control rule based on the South Atlantic Council SSC's control rule for assessed species. However, for unassessed species, the Gulf of Mexico Council SSC's ABC control rule would be used. Under this control ABC would be set as a portion of OFL. The South Atlantic Council's SSC indicated OFL could not be estimated for many species, which are data poor. Therefore, the South Atlantic Council did not select **Alternative 6** as their preferred alternative.

3.5 Action 5. Specify allocations for snapper-grouper species that do not currently have allocations (approved).

Alternative 2 (Preferred) (Environmentally Preferable). Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 2 (Preferred) is the **environmentally preferable** alternative, because it divides allocations between the recreational and commercial sectors based on landings information from 1986-2008 and 2006-2008, and therefore, considers past and present participation. The South Atlantic Council decided to establish allocations based on balancing long-term catch history with recent catch history, and believes it to be the most fair and equitable way to allocate fishery resources. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations.

NMFS **approves** the preferred alternative for sector allocations for snapper-grouper species, which currently do not have allocations.

<u>Rejected alternatives to the proposed action to specify allocations for snapper-grouper species that do not currently have allocations</u>.

Alternative 1 (No Action). Retain the current allocations. Do not specify allocations for those species where no allocations have been specified.

Alternative 3. Specify allocations for species that do not currently have allocations among three sectors, commercial, recreational, and for-hire, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 5. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-1998. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 6. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1999-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 7. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 2006-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Discussion:

Alternative 1 (No Action) would retain the allocations that are currently in place for some species, but would not specify commercial and recreational allocations for the remaining species or species groups in the snapper-grouper FMU. If allocations for both sectors were not specified, then it would not be possible to identify the ACL for each sector. Only a single ACL would be established for both sectors and options for an AM would be limited.

Alternatives 3-5 would divide the ABC specified in **Action 4** between the recreational and commercial sectors based on landings history for different years. There is a greater chance that the ACLs would be exceeded for private recreational and for-hire recreational sectors under **Alternative 3** since estimates of recreational landings could be less certain for rarely encountered species or species groups when recreational data are divided into additional sectors. **Alternative 4** is almost identical to **Alternative 2 (Preferred)**, and could have similar biological effects. **Alternative 5** would generally allocate a larger portion of the ACL to the commercial sector than allocation alternatives that include more recent landings information. There is little difference in the biological effects among the alternatives, as a similar amount of ABC would generally be allocated to the commercial and recreational sectors. **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than alternatives that include data from earlier years. The South Atlantic Council felt the formula used for sector allocations in **Alternative 2 (Preferred)** better represented past and present participation by fishermen than **Alternatives 3-7**. Therefore, the South Atlantic Council did not select **Alternatives 3-7** as their preferred alternative.

3.6 Action 6. Establish ACLs and OY for the snapper-grouper fishery (approved).

Alternative 2 (Preferred). Establish ACLs for species as needed where ACL = OY = ABC.

(Individual ACLs are summed to get the complex ACLs and allocated to get the sector ACLs.)

Alternative 2 (Preferred) sets ACL equal to OY. The NS1 Guidelines discuss the relationship of ACT/ACL to OY. The NS1 Guidelines state that if OY is set close to the maximum sustainable yield (MSY), the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

The ACL is the limit that triggers AMs, and if an ACT is specified, the ACT would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. ACLs and AMs act in concert to ensure overfishing does not occur. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. Many species addressed by the Comprehensive ACL Amendment are data poor, and the value for OY and MSY is unknown. By setting the OY equal to the ACL, there would be greater insurance that OY could be achieved.

Alternative 2 (Preferred) also sets the ACL equal to the ABC. The NS1 Guidelines indicate that ACL may typically be set very close to the ABC. The South Atlantic Council's SSC's preferred alternative for an ABC control rule in **Action 4** takes uncertainty into consideration in the specification of an ABC, regardless of the tier for data availability. Therefore, the South Atlantic Council decided it was appropriate to set the ACL equal to the ABC. For assessed species where OFL is known (Tier 1), the SSC's ABC control rule establishes a buffer between the OFL and the ABC. For extremely data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur.

NMFS **approves** the ACLs described in **Alternative 2 (Preferred)** for species in the snapper-grouper FMU.

<u>Rejected alternatives to the proposed action to establish ACLs and OY for the snapper-grouper fishery</u>.

Alternative 1 (No Action). Retain existing ACLs and OYs for snapper-grouper species or species groups. Do not specify ACLs for species that already have them.

Alternative 3. Establish ACLs for species as needed where ACL = OY = 90% of the ABC.

Alternative 4 (Environmentally Preferable). Establish ACLs for species as needed where ACL = OY = 80% of the ABC.

<u>Discussion:</u>

Alternative 1 (No Action) would not meet the NS1 Guidelines for specifying ACLs for all species not undergoing overfishing. In addition, **Alternative 1 (No Action)** would retain the existing definition of OY for snapper-grouper species. For most data poor snapper-grouper

species addressed by the Comprehensive ACL Amendment, OY is defined as the yield at $F_{40\%SPR}$ and its value is unknown.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because **Alternatives 3** and **4** would create a buffer between the ACL/OY and ABC. **Alternative 4** would be the **environmentally preferable** alternative since it would establish the most conservative ACL at 80% of the ABC.

The South Atlantic Council did not choose **Alternatives 3** or **4** as their preferred alternatives because the preferred alternative in **Action 4** for setting ABC takes uncertainty into consideration. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC. For extremely data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur. Therefore, the South Atlantic Council did not feel that it was necessary to establish a buffer between the ABC and ACL to account for uncertainty. Furthermore, the South Atlantic Council is establishing an ACT for the recreational sector under **Action 8** that will serve as a performance measure.

If an evaluation concludes that the ACL or ACT is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council will consider changes to the system of ACTs, ACLs, and associated AMs, which could be done through a regulatory amendment based on the framework procedures for the snapper-grouper fishery. Using the regulatory amendment process to implement such changes through the framework process, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations.

3.7 Action 7. Specify AMs/ACTs for the commercial sector for species in the snapper-grouper FMU (approved).

Alternative 2. Specify individual ACTs for species in the snapper-grouper FMU.
Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Alternative 3 (Preferred) (Environmentally Preferable). For the species above, if an ACL (i.e., individual or complex) is met or is projected to be met, all subsequent purchase and sale is prohibited and harvest and/or possession is limited to the bag limit for the species covered by that ACL. For example, if a complex ACL is met or projected to be met, all purchase and sale of all the species in the complex is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). For the species above, if an ACL (i.e., individual or complex) is exceeded, the Regional Administrator (RA) shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

The NS1 Guidelines state that setting an ACT is left to the discretion of each fishery management council and should be based on the level of management uncertainty in each fishery. For the commercial snapper-grouper fishery, the South Atlantic Council concluded that quota monitoring and the AMs specified in **Alternatives 3** and **4** are sufficient to account for management uncertainty. Therefore, the South Atlantic Council did not establish a commercial ACT under **Subalternative 2a (Preferred)**.

Alternative 3 (Preferred) includes an in-season AM which will prevent the commercial sector from profiting from the harvest of snapper-grouper species in quantities exceeding the ACL, and thus provide a disincentive to target snapper-grouper species once the ACL has been reached. After the commercial ACL has been met, all harvest will be limited to the recreational bag limit. This in-season AM will be biologically beneficial to snapper-grouper species, as well as yield long-term socio-economic benefits. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

Alternative 4 (Preferred) corrects for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision, but only if the species is overfished. The South Atlantic Council rationale is that the current in-season monitoring of commercial catches should be sufficient to prevent any overages from occurring, and the payback provision in **Alternative 4 (Preferred)** will act as a contingency plan if a species were to be overfished.

NMFS **approves** the preferred alternatives that would specify AMs for the commercial sector for snapper-grouper species.

<u>Rejected alternatives to the proposed action to specify AMs/ACTs for the commercial sector for species in the snapper-grouper FMU.</u>

Alternative 1 (No Action). Do not specify new commercial AMs for snapper-grouper species:

Alternative 2. Specify individual ACTs for species in the snapper-grouper FMU.
- **Subalternative 2b. The individual ACT equals 90% of the individual ACL. The complex ACT equals 90% of the complex ACL.**
- **Subalternative 2c. The individual ACT equals 80% of the individual ACL. The complex ACT equals 80% of the complex ACL.**

<u>Discussion:</u>

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 6**, and therefore, not comply with the requirements of the Magnuson-Stevens Act. **Alternative 2** would establish a commercial sector ACT, with **Subalternatives 2b** and **2c** establishing reduced harvest levels (90% and 80% of the ACL, respectively). **Subalternative 2c** would provide the largest buffer between the ACT and ACL, and hence, could provide the largest biological benefit among the alternatives, which address an ACT. By establishing a buffer between the ACT and ACL, there would be more time to take corrective action in-season to prevent an ACL from being exceeded. However, the South Atlantic Council concluded that the level of management uncertainty is minimal in the commercial snapper-grouper fishery because commercial landings are closely

tracked through a quota monitoring system. Furthermore, the proposed in-season and post-season AMs in this action under the **Preferred Alternatives 3** and **4**, respectively, will help ensure commercial ACLs are not exceeded. Therefore, the South Atlantic Council chose not to select **Subalternatives 2b** or **2c** as their preferred alternative.

If an evaluation concludes that the commercial ACL is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council will consider changes to the system of ACTs, ACLs, and associated AMs, which could be done through a regulatory amendment based on the framework procedures for the snapper-grouper fishery.

3.8 Action 8. Specify AMs/ACTs for the recreational sector for species in the snapper-grouper FMU (approved).

Alternative 2. Specify an ACT.

Subalternative 2d (Preferred). The ACT equals ACL*(1-percent standard error (PSE)) or ACL*0.5, whichever is greater.

Alternative 3. Specify the AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Alternative 5. Specify the post-season AM.

Subalternative 5d (Preferred) (Environmentally Preferable). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The RA will publish a notice to reduce the length of the fishing season as necessary.

The South Atlantic Council reasoned that the level of management uncertainty for the recreational component of the snapper-grouper fishery is currently high enough to warrant specification of an ACT. **Alternative 2** and its subalternatives specify a recreational sector ACT, which is set lower than the recreational sector ACL. **Subalternative 2d (Preferred)** adjusts the ACL by 50% or by one minus the PSE from the recreational fishery, whichever is greater to be the ACT. Including the PSE for the catch estimates into a formula to establish ACT adds a larger buffer for species that are not commonly landed, further accounting for uncertainty.

Subalternative 2d (Preferred) establishes an ACT for the recreational sector that serves as a performance measure. The NS1 Guidelines recommend a performance standard by which the efficiency of any system of ACLs and AMs can be measured and evaluated. If tracking the ACT through time reveals a trend in ACT and ACL overages, the entire system of ACTs and ACLs would be reevaluated and some corrective action could be linked to the ACT in the future to prevent the ACL from being exceeded. The South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational snapper-grouper fishery. **Subalternative 2d (Preferred)** is the most conservative of all subalternatives under **Alternative 2**, and would have the greatest biological and long-term economic benefits.

Alternative 3 and its subalternatives specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs will be triggered if the annual landings exceed the ACL in a given year. **Alternative 4** examines the need for an in-season AM. The South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

Subalternative 5d (Preferred) ensures that the amount of the previous year's ACL overage is accounted for in the subsequent year's protection via a shortened season, and thus is biologically beneficial. The monitoring component of **Subalternative 5d (Preferred)** also allows for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefits. For these reasons, **Subalternative 5d (Preferred)** is also the **environmentally preferable** alternative.

NMFS **approves** the preferred alternatives that would specify AMs and ACTs for the recreational sector for snapper-grouper species.

<u>Rejected alternatives to the proposed action to specify AMs/ACTs for the recreational sector for species in the snapper-grouper FMU.</u>

Alternative 1 (No Action). Do not specify new recreational AMs for snapper-grouper species that already have them.

Alternative 2. Specify an ACT.
- **Subalternative 2a. Do not specify an ACT.**
- **Subalternative 2b. The ACT equals 85% of the ACL.**
- **Subalternative 2c. The ACT equals 75% of the ACL.**

Alternative 3. Specify the AM trigger.
- **Subalternative 3a. Do not specify an AM trigger.**
- **Subalternative 3c. If the *<u>mean landings</u>* for the past three years exceed the ACL.**
- **Subalternative 3d. If the *<u>modified mean landings</u>* exceeds the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.**
- **Subalternative 3e. If the lower bound of the 90% *<u>confidence interval</u>* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.**

Alternative 4. Specify the in-season AM.

Subalternative 4b. The RA shall publish a notice to close the recreational sector when the ACL is projected to be met.

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Subalternative 5c. _Monitor following year._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA would take action as necessary.

Subalternative 5e. _Monitor following year and reduce bag limit as necessary._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. _Shorten following season._ If the ACL is exceeded, the RA shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. _Payback._ If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Discussion:

Alternative 1 (No Action) would perpetuate the current level of fishing in the recreational sector with no mechanism to maintain harvest levels at or below the ACLs established in **Action 6**, and therefore, does not comply with the requirements of the Magnuson-Stevens Act. With the exception of **Subalternative 2a** (which would not set a recreational ACT), **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. However, the biological benefits of **Subalternatives 2a, 2b,** and **2c** would be smaller than the **Subalternative 2d (Preferred)**, which is the most conservative of all the subalternatives under **Alternative 2**. Therefore, the South Atlantic Council did not select **Subalternatives 2a-2c** as their preferred alternatives.

Subalternative 3a would not specify an AM trigger. An evaluation of the approaches used in **Subalternatives 3c-3e** revealed problems with the use of averages and the use of the lower bound of the 90% confidence interval (CI). Therefore, the South Atlantic Council decided that **Subalternative 3b (Preferred)**, which simply compares the annual landings to the ACL in a given year, is the preferred alternative.

Subalternative 4b would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult, there is a time lag in the availability of recreational data, and therefore, uncertainty in the specification of an in-season AM. Therefore, the South Atlantic Council decided not to select **Subalternative 4b** as their preferred alternative.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its sub-alternatives identify methodologies for post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs, which has complications when there are extremes in reported landings. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f**). In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of the provisions identified in **Subalternatives 5c-5e, 5f,** and **5g**.

3.9 Action 9. Specify allocations for the wreckfish portion of the snapper-grouper fishery (approved).

Alternative 3 (Preferred) (Environmentally preferable). Divide allocations as 95% commercial and 5% recreational.

In November 2011, the South Atlantic Council's SSC recommended a revised ABC value of 235,000 pounds ww for wreckfish. The South Atlantic Council reviewed the recommended ABC value in December 2011 and passed a motion to concur with the process of adjusting the previously recommended wreckfish ACL of 250,000 pounds ww, to reflect the revised ABC value (and new ACL value) of 235,000 pounds ww. More detail on the process for establishing the new ABC for wreckfish is discussed in the controversy section **(Section 1.2)** of this ROD.

Wreckfish are occasionally encountered by recreational fishermen. Currently, wreckfish cannot be retained by recreational fishermen since regulations to fish for, possess, and sell wreckfish require a person be a shareholder under the wreckfish ITQ program with coupons allocating annual pounds, to have a wreckfish vessel permit, and posses a federal commercial South Atlantic snapper-grouper permit. **Alternative 3 (Preferred)** will allocate 95% (223,250 pounds ww) of the wreckfish ABC/ACL to the commercial sector and 5% (11,750 pounds ww) to the recreational sector. A recreational allocation could help mitigate bycatch mortality of occasionally encountered wreckfish because the species inhabits very deep water, and discarded fish do not survive. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** the preferred alternative to specify allocations for wreckfish.

Rejected alternatives to the proposed action to specify allocations for the wreckfish fishery.

Alternative 1 (No Action). Do not specify allocation. In this scenario, the TAC is essentially allocated 100% to the commercial sector.

Alternative 2. Divide allocations as 90% commercial and 10% recreational.

Alternative 4. Allocate 100% of the allowable catch to the commercial sector.

Discussion:

In recent years, commercial and recreational fishermen have reported an increased incidence of wreckfish encounters. Since wreckfish are caught in very deep water, all incidentally caught wreckfish die and must be released dead since only wreckfish shareholders are allowed to retain the fish. By establishing a small allocation for the recreational sector the South Atlantic Council is attempting to curb some wreckfish bycatch mortality by allowing fishermen to retain fish, which would otherwise die.

The South Atlantic Council did not choose **Alternative 4** as their preferred alternative because it would not allocate any of the wreckfish ACL to the recreational sector and address unnecessary bycatch that could be occurring. **Alternative 2** would allocate a higher proportion of the ACL to the recreational sector than the preferred alternative. The South Atlantic Council felt that any recreational catch of wreckfish is likely to be small and a larger allocation other than that specified in **Preferred Alternative 3** was not necessary.

3.10 Action 10. Establish an ACL and OY for wreckfish (approved).

Alternative 2 (Preferred). ACL = OY = ABC.

Specification of the ACL for wreckfish has been controversial. A minority report submitted by dissenting South Atlantic Council members on October 14, 2011, expressed concern over the South Atlantic Council's approval of the wreckfish ACL of 250,000 pounds ww, which is significantly lower than the current TAC of 2 million pounds ww. Furthermore, the specification of the ABC for wreckfish was discussed extensively by the South Atlantic Council's SSC, and in November 2011, recommended a revised ABC value of 235,000 pounds ww. In December 2011, the South Atlantic Council approved the lower ACL of 235,000 pounds ww for wreckfish (see **Section 1.2** for more details).

Alternative 2 (Preferred) sets ACL equal to OY. The NS1 Guidelines state that if OY is set close to the MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Although OY is currently defined, the value for OY is unknown for most unassessed species in the FMPs addressed by the Comprehensive ACL Amendment, and thus the value for OY will now be established.

The ACL is the limit that triggers AMs, and if an ACT is specified, the ACT would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. ACLs and AMs act in concert to ensure overfishing does not occur. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. Wreckfish is considered data poor, and the value for OY and MSY is unknown. By setting the OY equal to the ACL, there would be greater insurance that OY could be achieved.

Alternative 2 (Preferred) would also set the ACL equal to the ABC. The NS1 Guidelines indicate that ACL may typically be set very close to the ABC. If all landings are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2 (Preferred)-4** would be very similar. Wreckfish are not undergoing overfishing, and harvest has declined since the implementation of the ITQ program, with very few fishers actively targeting wreckfish. Furthermore, ACLs and AMs implemented through the Comprehensive ACL Amendment should ensure that recreational harvest will be very small. Therefore, the South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects.

NMFS **approves** the ACL and OY described in **Alternative 2 (Preferred)** for wreckfish.

Rejected alternatives to the proposed action to establish an ACL and OY for wreckfish.

Alternative 1 (No Action). Do not establish an ACL for wreckfish.

Alternative 3. ACL = OY = 90% of the ABC.

Alternative 4 (Environmentally preferable). ACL = OY = 80% of the ABC.

Discussion:

Alternative 1 (No Action) would retain the current regulations established for wreckfish, which includes a TAC equal to 2 million pounds ww, which would serve as the status quo ACL. However, the South Atlantic Council's SSC specified an ABC of 235,000 pounds ww. An ACL cannot exceed the catch level recommendation from a fishery management council's SSC. **Alternative 1 (No Action)** would also retain the OY definition for wreckfish as the yield associated with $F_{40\%SPR}$, the value for which is currently unknown.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 4** setting the most conservative ACL at 80% (188,000 pounds ww) of the ABC. **Alternative 4** would be the **environmentally preferable** alternative since it would have greater biological benefits than the other alternatives considered.

Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. The South Atlantic Council did not choose **Alternatives 3** or **4** as their preferred alternative because the preferred alternative in **Action 4** for setting ABC takes uncertainty into consideration. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC. For data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur. Therefore, the South Atlantic Council did not feel that it was necessary to establish a buffer between the ABC and ACL to account for uncertainty.

If an evaluation concludes that the ACL or ACT is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council will consider changes to the system of ACTs, ACLs, and associated AMs, which could be done through a regulatory amendment based on the framework procedures for the snapper-grouper fishery. Using the regulatory amendment process to implement such changes through the framework process, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations.

3.11 Action 11. Specify AMs for the wreckfish fishery (approved).

Alternative 2. Specify the AM trigger.

Subalternative 2b (Preferred). If the *annual landings* exceed the ACL in a given year.

Alternative 3. Specify the recreational post-season AM.

Subalternative 3d (Preferred) (Environmentally Preferable). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The RA will publish a notice to reduce the length of the fishing season as necessary.

For the commercial sector, the ITQ program acts as the AM, and therefore, the alternatives under this action apply to the recreational sector for wreckfish. Currently, there is no recreational sector for wreckfish and no measure of PSEs, and hence, the South Atlantic Council chose not to select a recreational ACT. **Action 9** allocates 5% of the ABC/ACL to the recreational sector.

Subalternative 2b (Preferred) triggers an AM identified in **Alternative 3** if the recreational ACL is exceeded. **Subalternative 3d (Preferred)** ensures that the amount of the previous year's ACL overage is accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternative 3d (Preferred)** also allows for any anomalies or data reporting irregularities to be taken into account before the AMs becomes effective, and hence, possibly adding a socio-economic benefit to the biological benefits. For these reasons, **Subalternative 3d (Preferred)** is also the **environmentally preferable** alternative.

NMFS **approves** the preferred alternatives that specify sector AMs for wreckfish.

Rejected alternatives to the proposed action to specify AMs for the wreckfish fishery.

Alternative 1 (No Action). Do not specify AMs for a recreational sector of the wreckfish fishery. Do not add new AMs for the commercial sector of the wreckfish fishery. Currently, the commercial sector for wreckfish is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year.

Alternative 2. Specify the AM trigger.

Subalternative 2a. Do not specify an AM trigger.

Subalternative 2c. If the *mean landings* for the past three years exceed the ACL.

Subalternative 2d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.

Subalternative 2e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Alternative 3. Specify the recreational post-season AM.

Subalternative 3a. Do not specify a recreational post-season AM.

Subalternative 3b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Subalternative 3c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA would take action as necessary.

Subalternative 3e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA will publish a notice to reduce the bag limit as necessary.

Subalternative 3f. *Shorten following season.* If the ACL is exceeded, the RA shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 3g. *Payback.* If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Discussion:

The approaches used in **Subalternatives 2c-2e** involve the use of averages and the lower bound of the 90% CI. The averages are not practical at this time since 2012 would be the first year that the recreational sector would exist for wreckfish. Therefore, the South Atlantic Council concluded that **Subalternative 2b**, which simply compares the annual landings to the ACL in a given year, would be most appropriate and the preferred alternative to specify the AM trigger.

With the exception of **Subalternative 3a**, which would not specify a post-season AM, **Alternative 3** and its subalternatives identify methodologies for post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 3b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. However, considerable extremes could occur in estimates of wreckfish recreational landings due to the low encounter rate in a recreational survey. If the ACL is exceeded, **Subalternatives 3d (Preferred)** and **3f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 3c-3e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 3f**). In contrast, under **Subalternative 3g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage. The South Atlantic Council chose **Subalternative 3d (Preferred)** as their preferred alternative because it contains aspects of the provisions in **Subalternatives 3c-3e, 3f,** and **3g**, and thus would be expected to generate the largest biological and socio-economic benefits of all the subalternatives under **Alternative 3**.

3.12 Action 12. Establish management measures for wreckfish (approved).

Alternative 3 (Preferred) (Environmentally Preferable). Implement a one-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 6 (Preferred). Establish a July-August recreational season.

Management measures for the commercial sector for wreckfish will not change, and the current spawning season closure from January 15-April 15, in a given calendar year, will be retained. **Alternatives 2-8** apply to the recreational sector.

Among **Alternatives 2-8, Alternative 3 (Preferred)** is the most conservative alternative with a limitation of one wreckfish per vessel per day, and provides the largest biological benefits. Therefore, this alternative is also the **environmentally preferable** alternative.

Alternative 6 (Preferred) provides a longer time interval after the spawning season ends before the recreational fishing season begins, which could provide enhanced biological benefits to wreckfish. **Alternative 6 (Preferred)** also allows recreational fishermen to fish for wreckfish in the summer, when weather conditions are more favorable offshore. Since wreckfish occur very far offshore, safety at sea can be an issue if fishermen have to travel long distances in poor weather conditions.

NMFS **approves** the recreational management measures of one fish per vessel per day and a July-August fishing season for wreckfish.

Rejected alternatives to the proposed action to establish management measures for wreckfish.

Alternative 1 (No Action). Retain the January 15-April 15 spawning season closure. Wreckfish is included in the 20-fish snapper-grouper aggregate bag limit. The TAC/ACL for wreckfish is 2 million pounds.

Alternative 2. Remove wreckfish from the 20 fish aggregate snapper-grouper bag limit.

Alternative 4. Implement a one-wreckfish per angler per day bag limit for the recreational fishery.

Alternative 5. Implement a 5-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 7. Establish a May-June recreational season.

Alternative 8. Exempt the recreational sector from having to have commercial permits (snapper-grouper and wreckfish), wreckfish shares, and coupons to land wreckfish.

Discussion:

Alternative 2 would remove wreckfish from the 20-fish aggregate bag limit and would be consistent with an alternative in **Action 9**, which would not allocate any of the wreckfish ACL to the recreational sector to address unnecessary bycatch that could be occurring. Therefore, the South Atlantic Council did not select **Alternative 2** as their preferred alternative.

Alternatives 3 (Preferred)-5 explore various recreational bag and vessel limits for wreckfish, with **Alternative 3 (Preferred)** being the most conservative alternative limiting catches to one wreckfish per vessel per day. **Alternatives 4** and **5** would allow for more wreckfish to be harvested and could therefore, yield lower biological benefits compared to **Alternative 3 (Preferred)**. Therefore, the South Atlantic Council did not select **Alternative 4** or **5** as their preferred alternative.

Biologically, the benefits of a May-June recreational fishing season identified in **Alternative 7** are not very different from the July-August recreational fishing season in **Alternative 6 (Preferred)**. However, **Alternative 7** would allow for the recreational effort to start only two weeks after the spawning season closure ends, and could have lower biological benefits than **Alternative 6 (Preferred)**. Furthermore, a July-August recreational fishing season would likely provide for safer fishing conditions than in May-June since weather is generally better in late summer than in the spring. Therefore, the South Atlantic Council did not select **Alternative 7** as their preferred alternative.

Alternative 8 exempts the recreational sector from the constraints currently in place to retain wreckfish under the bag limit. The South Atlantic Council determined at their March 2011 meeting, that an alternative to exempt the recreational sector from requirements for the commercial sector is not needed, but should be discussed and explained within this action. It is implicit that the recreational sector is not subject to these constraints since they now have a specific bag limit. Therefore, the South Atlantic Council did not select **Alternative 8** as their preferred alternative.

3.13 Action 13. Specify jurisdictional allocations for black grouper (approved).

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

> **Subalternative 2b (Preferred) (Environmentally Preferable). South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).**

Alternative 2 (Preferred) establishes a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils. Currently, the ABC applies across Council jurisdictions. This creates an issue for management because black grouper is managed by both Councils under two separate FMPs, as it is also part of the "other shallow water" species complex in the Gulf of Mexico individual fishing quota (IFQ) program. Both Councils agreed to the allocation procedure, which considers historical data and recent data, and provides extra weighting to recent landings. **Subalternative 2b** represents this allocation procedure by providing the best information on the current status of fishing removals for both sectors, an accurate biological basis for management, and ensures fairness and equitability in practice. Therefore, **Subalternative 2b (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** this jurisdictional allocation for black grouper.

<u>Rejected alternatives to the proposed action to specify jurisdictional allocations for black grouper</u>.

Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper ABC between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

> **Subalternative 2a. South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (established by using average landings from 1991-2008).**
>
> **Subalternative 2c. South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).**
>
> **Subalternative 2d. South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).**

Discussion:

The stock assessment conducted by the Southeast Data, Assessment and Review (SEDAR) process in 2010, which concluded black grouper is neither overfished nor undergoing overfishing, treated the Gulf of Mexico and South Atlantic black grouper as a single stock rather than providing separate assessments. Thus, the ABC for black grouper applies across Council jurisdictions. **Alternative 1 (No Action)** would create regulatory confusion regarding the allowance of snapper-grouper fishermen from the South Atlantic into the Gulf of Mexico grouper-tilefish IFQ. Therefore, **Alternative 1 (No Action)** would not be appropriate.

Subalternatives 2a and **2c** consider similar percentages allocated between the two Councils, differing in the utilization of the range of years with landings history. However, the South Atlantic Council's **Subalternative 2b (Preferred)** better represents past and present participation in the two areas with the formula employed to specify allocations. **Subalternative 2d** would establish a jurisdictional apportionment by simply dividing the ABC evenly between the two Councils. This method does not take into consideration any changes in landings between the two Councils' areas of jurisdiction. Therefore, the South Atlantic Council did not select **Subalternatives 2a, 2c,** or **2d** as their preferred alternatives.

3.14 Action 14. Specify sector allocations for black grouper (approved).

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

> **Subalternative 2e (Preferred) (Environmentally Preferable). Commercial = 36.88% and recreational = 63.12% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.**

Subalternative 2e (Preferred) is the **environmentally preferable** alternative, because it divides allocations between the recreational and commercial sectors based on historical landings that consider both past and present participation. The South Atlantic Council selected a start year of 1991 because recreational data collection and fish species identification were notably improved in 1991. The South Atlantic Council felt an additional benefit of **Subalternative 2e (Preferred)** was its inclusion of a transparent formula to specify allocations, making the process a fair and equitable way to allocate fishery resources, in addition to providing the largest biological benefits.

NMFS **approves** the preferred alternative for sector allocations for black grouper.

Rejected alternatives to the proposed action to specify sector allocations for black grouper.

Alternative 1 (No action). Do not establish sector allocations for black grouper.

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

Subalternative 2a. Commercial = 48.14% and recreational = 51.86% using average landings from 1986-2008.
Subalternative 2b. Commercial = 50.13% and recreational = 49.87% using average landings from 1986-1998.
Subalternative 2c. Commercial = 43.74% and recreational = 56.26% using average landings from 1999-2008.
Subalternative 2d. Commercial = 33.02% and recreational = 66.98% using average landings from 2006-2008.

Alternative 3. Establish commercial, recreational, and for-hire sector allocations based on criteria outlined in subalternatives below.
Subalternative 3a. Commercial = 48.14% , for-hire = 11.11%, and recreational = 40.75% using average landings from 1986-2008.
Subalternative 3b. Commercial = 48.14% , for-hire = 8.45%, and recreational = 41.42% using average landings from 1986-1998.
Subalternative 3c. Commercial = 43.74% , for-hire = 16.99%, and recreational = 39.27% using average landings from 1999-2008.
Subalternative 3d. Commercial = 33.02% , for-hire = 15.06%, and recreational = 51.92% using average landings from 2006-2008.
Subalternative 3e. Commercial = 36.88% , for-hire = 15.29%, and recreational = 47.83% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Discussion:

Alternative 1 (No Action) would not specify commercial and recreational allocations for black grouper, and consequently it would not be possible to identify the ACL for each sector. A single ACL would be established for both sectors and options for sector AMs would be limited.

Alternative 2 and its **Subalternatives 2a-2d** would allocate the ABC/ACL between two sectors (commercial and recreational). The resulting allocations using data from varying time series of landings history range from 33.02%/66.98% (commercial/recreational allocation) in **Subalternative 2d** to 50.13%/49.87% in **Subalternative 2b**. Biological effects would not be very different among the subalternatives. However, the South Atlantic Council felt that the formula used in **Subalternative 2e** best represented past and present participation for black grouper. Therefore, the South Atlantic Council did not select any of the **Subalternatives 2a-2d** as their preferred alternative.

Alternative 3 and its **Subalternatives 3a-3e** would allocate the ABC/ACL between three sectors (commercial, recreational, and for-hire). The resulting allocations using data from varying time series of landings history range from 33.02%/15.06%/51.92% (commercial/recreational/for-hire allocation) in **Subalternative 3d** to 48.14%/11.11%/40.75% in **Subalternative 3a**. Biological effects would not be very different among the subalternatives under **Alternative 3**. However, the negative biological effects of **Alternative 3** and its subalternatives would be expected to be greater than those resulting from subalternatives under **Alternative 2** since recreational data can be less certain when they are divided into two sectors. Therefore, none of the subalternatives under **Alternative 3** were chosen as preferred.

3.15 Action 15. Establish ACLs and OY for black grouper (approved).

Alternative 2 (Preferred). ACL = OY = ABC. Specify commercial and recreational ACLs for black grouper. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 2 (Preferred) sets ACL equal to OY. The NS1 Guidelines state that if OY is set close to the maximum sustainable yield (MSY), the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Although OY is currently defined, the value for OY is unknown for most unassessed species in the FMPs addressed by the Comprehensive ACL Amendment, and thus the value for OY will now be established.

The ACL is the limit that triggers AMs, and if an ACT is specified, the ACT would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. ACLs and AMs act in concert to ensure overfishing does not occur. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. By setting the OY equal to the ACL, there would be greater insurance that OY could be achieved.

Alternative 2 (Preferred) also sets the ACL equal to the ABC. The NS1 Guidelines indicate that ACL may typically be set very close to the ABC. Biological effects would be expected to be lower than alternatives that include a buffer between the ACL and ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where scientific uncertainty is not addressed in the specification of the ABC and there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. For assessed species like black grouper where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC and takes into scientific uncertainty from the assessment. For extremely data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur. Furthermore, black grouper is neither overfished, nor experiencing overfishing in the South Atlantic.

The South Atlantic Council's intent is to implement the individual ACLs for black grouper when Amendment 24 to the Snapper-Grouper FMP is in place. Until then, the aggregate ACLs for black grouper, red grouper, and gag (for both sectors) remain in place.

NMFS **approves** the ACL and OY described in **Alternative 2 (Preferred)** for black grouper.

<u>Rejected alternatives to the proposed action to establish ACLs and OY for black grouper.</u>

Alternative 1 (No Action). Retain aggregate recreational and commercial ACLs and OY for black grouper, red grouper, and gag.

Alternative 3. ACL = OY = 90% of the ABC. Specify commercial and recreational ACLs for black grouper. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 4 (Environmentally Preferable). ACL = OY = 80% of the ABC. Specify commercial and recreational ACLs for black grouper. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Discussion:

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC. **Alternative 4** would establish the most conservative ACL at 80% of the ABC, yield the largest biological and long-term economic benefits, and is therefore, the **environmentally preferable** alternative.

The South Atlantic Council did not choose **Alternatives 3** or **4** as their preferred alternative because the preferred alternative in **Action 4** for setting ABC takes uncertainty into consideration. For assessed species like black grouper where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC. For extremely data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur. Therefore, the South Atlantic Council did not feel that it was necessary to establish a buffer between the ABC and ACL to account for uncertainty. Furthermore, the South Atlantic Council is establishing an ACT for the recreational sector under **Action 17** that will serve as a performance measure.

If an evaluation concludes that the ACL or ACT is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council will consider changes to the system of ACTs, ACLs, and associated AMs, which could be done through a regulatory amendment based on the framework procedures for the snapper-grouper fishery. Using the regulatory amendment process to implement such changes through the framework process, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations.

3.16 Action 16. Establish AMs/management measures for the commercial sector for black grouper (approved).

Alternative 2. Specify ACTs for the commercial sector.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Alternative 3 (Preferred) (Environmentally Preferable). After the commercial ACL is met or projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). If the commercial sector ACL is exceeded, the RA shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished.

The NS1 Guidelines state that setting of ACTs is left to the discretion of each fishery management council and should be based on the level of management uncertainty in each fishery. Black grouper is part of the snapper-grouper FMU. For the commercial snapper-grouper fishery, the South Atlantic Council concluded that quota monitoring and the AMs specified in **Alternatives 3** and 4 are sufficient to account for management uncertainty. Therefore, the South Atlantic Council did not establish a commercial ACT for black grouper under **Subalternative 2a (Preferred)**.
Alternative 3 (Preferred) is an in-season AM which prevents the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus provides a disincentive to target black grouper once the ACL has been reached. After the ACL has been met, all harvest will be limited to the recreational bag limit. This in-season AM will be biologically beneficial to black grouper and provide long-term socio-economic benefits. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

Alternative 4 (Preferred) corrects for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision, but only if the species is overfished. Black grouper is not overfished. The South Atlantic Council feels that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring, and the payback provision in **Alternative 4 (Preferred)** would act as a contingency plan if a species were overfished. The South Atlantic Council decided not to establish any new management measures for the commercial sector for black grouper because actions taken through Amendment 16 to the Snapper-Grouper FMP along with ACLs and AMs in the Comprehensive ACL Amendment should ensure overfishing does not occur.

NMFS **approves** the preferred alternatives that will specify AMs/management measures for the commercial sector for black grouper.

<u>Rejected alternatives to the proposed action to establish AMs and management measures for the commercial sector for black grouper</u>.

Alternative 1 (No Action). Retain the existing commercial AMs for black grouper.

Alternative 2. Specify ACTs for the commercial sector.

> **Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.**
> **Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.**

<u>Discussion:</u>

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACL established in **Action 15**, and therefore, would not

comply with the requirements of the Magnuson-Stevens Act. **Alternative 2** would establish a commercial sector ACT, with **Subalternatives 2b** and **2c** establishing reduced harvest levels (90% and 80% of the ACL, respectively). **Subalternative 2c** would provide the largest buffer between the ACT and ACL, and hence, could provide the largest biological benefit among **Subalternatives 2a-2c**. By establishing a buffer between the ACT and ACL, there would be more time to take corrective action in-season to prevent an ACL from being exceeded. However, the South Atlantic Council concluded that the level of management uncertainty is minimal in the commercial portion of the snapper-grouper fishery (which includes black grouper) since landings are closely tracked through a quota monitoring system. Furthermore, the proposed in-season and post-season AMs under the **Alternatives 3** and **4**, respectively, will help ensure the commercial ACL is not exceeded. Therefore, the South Atlantic Council did not select **Subalternatives 2b** or **2c** as their preferred alternative.

If an evaluation concludes that the commercial ACL is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council will consider any changes to the system of ACTs, ACLs, and associated AMs, which could be done through a regulatory amendment based on the framework procedures for the snapper-grouper fishery.

3.17 Action 17. Establish accountability measures (AMs)/management measures for the recreational sector for black grouper (approved).

Alternative 2. Specify an ACT.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Alternative 3. Specify the AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Alternative 5. Specify the post-season AM.

Subalternative 5d (Preferred) (Environmentally Preferable). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The RA will publish a notice to reduce the length of the fishing season as necessary.

The South Atlantic Council reasoned that the level of management uncertainty for the recreational sector for black grouper is currently high enough to warrant specification of an ACT. **Alternative 2** and its subalternatives specify a recreational sector ACT, which is set lower than the recreational sector ACL. **Subalternative 2d (Preferred)** adjusts the ACL by 50% or by one minus the PSE from the recreational fishery, whichever is greater. Including the PSE for the catch estimates into a formula to establish ACT adds an appropriate buffer for black grouper, further accounting for uncertainty.

Subalternative 2d (Preferred) establishes an ACT for the recreational sector that serves as a performance measure. The NS1 Guidelines recommend a performance standard by which the efficiency of any system of ACLs and AMs can be measured and evaluated. If tracking the ACT through time reveals a trend in ACT and ACL overages, the entire system of ACTs and ACLs would be reevaluated and some corrective action could be linked to the ACT in the future to prevent the ACL from being exceeded. The South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational sector for black grouper. **Subalternative 2d (Preferred)** is the most conservative of all subalternatives under **Alternative 2**, and would have the greatest biological and long-term economic benefits.

Alternative 3 and its subalternatives specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred),** AMs will be triggered if the annual landings exceed the ACL in a given year. **Alternative 4** examines the need for an in-season AM. The South Atlantic Council decided not to have an in-season AM as defined in **Subalternative 4a (Preferred),** because in-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

Subalternative 5d (Preferred) ensures that the amount of the previous year's ACL overage is accounted for in the subsequent year's protection via a shortened season, and thus is biologically beneficial. The monitoring component of **Subalternative 5d (Preferred)** also allows for any anomalies or data reporting irregularities to be taken into account before the AMs become effective, and hence, possibly adding a socio-economic benefit to the biological benefits. For these reasons, **Subalternative 5d (Preferred)** is also the **environmentally preferable** alternative.

The South Atlantic Council did not establish any new management measures for the recreational sector for black grouper because actions taken through Amendment 16 to the Snapper-Grouper FMP along with ACLs and AMs in the Comprehensive ACL Amendment should ensure overfishing does not occur.

NMFS **approves** the preferred alternatives that will specify AMs/management measures for the black grouper recreational sector.

<u>Rejected alternatives to the proposed action to establish AMs and management measures for the commercial sector for black grouper</u>.

Alternative 1 (No Action). Do not specify new recreational AMs for black grouper.

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.

Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.

Alternative 3. Specify the AM trigger.
Subalternative 3a. Do not specify an AM trigger.
Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.
Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.
Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Alternative 4. Specify the in-season AM.
Subalternative 4b. The RA shall publish a notice to close the recreational sector when the ACL is projected to be met.

Alternative 5. Specify the post-season AM.
Subalternative 5a. Do not specify a post-season AM.
Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.
Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA would take action as necessary.
Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA will publish a notice to reduce the bag limit as necessary.
Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the RA shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.
Subalternative 5g. *Payback.* If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage if the species is overfished.

Discussion:

Alternative 1 (No Action) would perpetuate the current level of fishing in the recreational sector for black grouper with no mechanism to maintain harvest levels at or below the ACLs established in **Action 15**, and therefore, does not comply with the requirements of the Magnuson-Stevens Act. With the exception of **Subalternative 2a**, which would not set a recreational ACT, **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. However, the biological benefits of **Subalternatives 2a, 2b,** and **2c** would be lower than the **Subalternative 2d (Preferred)**, which is the most conservative of all the subalternatives under **Alternative 2**. Therefore, the South Atlantic Council did not select any of **Subalternatives 2a-2c** as their preferred alternatives.

Subalternative 3a would not specify an AM trigger. An evaluation of the approaches used in **Subalternatives 3c-3e** revealed problems with the use of averages and the use of the lower bound of the 90% CI. Therefore, the South Atlantic Council decided that their preferred alternative would be **Subalternative 3b (Preferred)**, which simply compares the annual landings to the ACL in a given year.

Subalternative 4b would allow the RA to publish a notice to close the recreational sector for black grouper when the ACL is projected to be met. In-season monitoring of recreational landings is difficult, there is a time lag in the availability of recreational data, and therefore, uncertainty in the specification of an in-season AM. Therefore, the South Atlantic Council did not select **Subalternative 4b** as their preferred alternative.

With the exception of **Subalternative 5a**, which would not specify a post-season AM for black grouper, **Alternative 5** and its sub-alternatives identify methodologies for post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs, which has complications when there are extremes in reported landings. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f**). In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of the provisions identified in **Subalternatives 5c-5e, 5f,** and **5g**.

3.18 Action 18. Establish jurisdictional allocations for yellowtail snapper (approved).

Alternative 4 (Preferred) (Environmentally Preferable). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

Alternative 4 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC. Currently, the ABC applies across Council jurisdictions, and both Councils manage yellowtail snapper under two separate FMPs; therefore, both Councils would have difficulty in setting and monitoring an overall ACL. The allocation follows the procedure used for black grouper in **Action 13**, with a different time frame, to manage yellowtail snapper by both Councils. The allocation procedure, which considered both historical and recent landings, provides extra weighting to recent landings. The South Atlantic Council concluded that this method provides the best information on the current status of fishing removals, an accurate biological basis for management, and ensures fairness and equitability in practice. Furthermore, both Councils agreed on the percentage allocated across jurisdictions as specified under **Alternative 4 (Preferred)**. Based on this, **Alternative 4 (Preferred)** is the **environmentally preferable alternative.**

NMFS **approves** this jurisdictional allocation for yellowtail snapper.

Rejected alternatives to the proposed action to establish jurisdictional allocations for yellowtail snapper.

Alternative 1 (No action). Do not establish jurisdictional allocation of the yellowtail snapper ABC between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

Subalternative 2a. South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (established by using average landings from 1987-2001).

Subalternative 2b. South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).

Subalternative 2c. South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (established by using highest catch history from 1987-2001).

Subalternative 2d. South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (established by using lowest catch history from 1987-2001).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (established by using average landings from 2005-2009).

Discussion:

SEDAR 3 (2003), which determined yellowtail snapper is neither overfished nor experiencing overfishing, treated the Gulf of Mexico and South Atlantic yellowtail snapper as a single stock rather than providing separate assessments. **Alternative 1 (No Action)** would not establish jurisdictional allocation of yellowtail snapper between the Gulf of Mexico and South Atlantic Councils. Under this alternative, yellowtail snapper would need to be managed jointly, with both Councils having to agree on a common set of regulations. This would create an unnecessary management burden. **Alternative 2** and its subalternatives would establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3 2003), which does not consider stratified yellowtail snapper catches for Monroe County, Florida. The subalternatives would result in almost identical percentage of allocations between the two Councils and therefore, yield similar biological benefits.

Alternatives 3-6, which consider post-stratified data, are more appropriate than **Alternative 2** for determining jurisdictional allocations based on where yellowtail snapper is harvested in the Florida Keys. **Alternatives 3-6** also take into account any management changes for yellowtail snapper in both the Gulf of Mexico and South Atlantic Councils since all catch history data considered begin in 1993. The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Alternatives 2-6** are similar. However, the South Atlantic Council's preferred **Alternative 4 (Preferred)** better represents past and present participation in the two areas with the formula employed to specify allocations. Therefore, the South Atlantic Council did not select **Alternatives 2, 3, 5,** or **6** as their preferred alternative.

3.19 Action 19. Establish jurisdictional allocations for mutton snapper (approved).

Alternative 2 (Preferred) (Environmentally Preferable). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for mutton snapper ABC based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

The stock assessment (SEDAR 15A 2008) treated mutton snapper in the Gulf of Mexico and South Atlantic as a single stock rather than providing separate assessments. The stock assessment concluded that mutton snapper is neither overfished nor undergoing overfishing. Currently, the ABC applies across Council jurisdictions, and both Councils manage mutton snapper under two separate FMPs; therefore, both Councils would have difficulty in setting and monitoring an overall ACL. **Alternative 2 (Preferred)** would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for the mutton snapper ABC. The allocation follows the procedure used for black grouper in **Action 13**, with a different time frame the Councils considered appropriate for the species based on its management history. The allocation procedure, which considers both historical and recent landings, provides extra weighting to recent landings. The South Atlantic Council concluded that this method provides the best information on the current status of fishing removals, an accurate biological basis for management, and ensures fairness and equitability in practice. Furthermore, both Councils agreed on the percentage allocated across jurisdictions as specified under **Alternative 2 (Preferred)**. Based on this, **Alternative 2 (Preferred)** is the **environmentally preferable alternative.**

NMFS **approves** this jurisdictional allocation for mutton snapper.

Rejected alternatives to the proposed action to establish jurisdictional allocations for mutton snapper.

Alternative 1. (No Action). Do not establish jurisdictional allocation of the mutton snapper ABC between the Gulf and South Atlantic Councils.

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper ABC based on the following method: South Atlantic = 79% of ABC and Gulf = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

Discussion:

Under **Alternative 1 (No Action)**, mutton snapper would be managed jointly, and both Councils would need to agree on a common set of regulations, creating an unnecessary burden and duplicative effort.

Alternative 3 is similar to **Alternative 2 (Preferred)**, with only a 3% difference in allocation of the ABC between the two Councils. **Alternative 4** would be dependent upon the Gulf Council relinquishing management of mutton snapper. Under this alternative the South Atlantic Council would manage mutton snapper in the South Atlantic, where most of the landings occur as well as the Gulf of Mexico. The biological effects of **Alternative 4** could be slightly greater than **Alternatives 2 (Preferred)** and **3** because management measures are more restrictive for the commercial sector in the South Atlantic than in the Gulf of Mexico. However, commercial landings of mutton snapper are small relative to recreational landings, and landings from the Gulf of Mexico are much smaller than those in the South Atlantic. The South Atlantic Council's preferred **Alternative 2 (Preferred)** better represents past and present participation in the two areas with the formula employed to specify allocations. Therefore, the South Atlantic Council did not select **Alternatives 3** or **4** as their preferred alternative.

3.20 Action 20. Establish an ABC control rule and ABC for dolphin (approved).

Alternative 4 (Preferred) (Environmentally Preferable). When the ABC control rule portion for unassessed species is complete, establish ABC for dolphin based on the South Atlantic Council SSC's ABC control rule. Until the ABC control rule is complete, establish ABC based upon the South Atlantic Council SSC's approach for unassessed species in Level 4 of the ABC control rule and OFL = unknown (currently ABC = 14,596,216 pounds ww).

Alternative 4 (Preferred) specifies an ABC for dolphin based on Tier 4 of the South Atlantic Council SSC's ABC control rule, which accounts for uncertainty (see **Table 1** and **Alternative 7** in **Action 4** of this ROD). The SSC stated at their August 2010 meeting that OFL for dolphin is an unknown value above the value for ABC. Tier 4 is the most data poor level where ABC is derived by the SSC on a case by case basis. The South Atlantic Council's SSC will periodically evaluate the performance of their ABC control rule and determine when and how it needs to be modified. In addition, the SSC intends to re-evaluate the unassessed species' portion of their ABC control rule in the near future, to assess whether modifications are necessary.

During their April 2011 meeting, the South Atlantic Council's SSC commented on the decline in dolphin landings after 1999-2000. The various factors likely responsible for the decline were: Management measures; impacts of a voluntary bag limit; recent environmental conditions; economic impacts on charter and private effort; and the Florida pelagic longline closure. Dolphin are an extremely productive species, which are highly resistant to overfishing. The South Atlantic Council's SSC noted that if there were to be an increase in catch beyond current range of variability, it would not lead to a decline or stock concerns for dolphin. **Alternative 4 (Preferred)** is the **environmentally preferable** alternative since it follows the South Atlantic Council SSC's recommendations for the specification of ABCs based on a systematic inspection of all sources of scientific uncertainty, including variables such as susceptibility, vulnerability, bycatch, and discard information.

NMFS **approves** ABC for dolphin identified in **Alternative 4 (Preferred).**

<u>Rejected alternatives to the proposed action to establish an ABC control rule and ABC for dolphin.</u>

Alternative 1 (No Action). Do not establish an ABC control rule for dolphin.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule. Note: The Gulf of Mexico Council's control rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD. (ABC = 12,795,629 to 15,415,524 pounds whole weight).

Discussion:

Alternative 1 (No Action) would not establish an ABC control rule for dolphin and hence, not meet the requirements for establishing an ABC under the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for dolphin. Under **Alternative 2,** the ABC would be equal to the OFL specified by the South Atlantic Council's SSC. The NS1 Guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. **Alternative 3** would specify an ABC control rule based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule which uses a combination of average landings and a range of standard deviation. Biological benefits of **Alternative 3** would be similar to **Alternative 4 (Preferred),** if OFL could be determined. However, the South Atlantic Council's SSC indicated at their April 2011 meeting that OFL is unknown for dolphin. Therefore, the South Atlantic Council did not select **Alternatives 2** or **3** as their preferred alternative.

3.21 Action 21. Specify allocations for dolphin (approved).

Alternative 3 (Preferred) (Environmentally Preferable). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (pounds) 1999-2008) + (50% * average of recent catch trend (pounds) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred) uses a formula that would equal 50% * average of long catch range (pounds) 1999-2008 + 50% * average of recent catch trend (pounds) 2006-2008, thereby balancing the total time series with more recent data. This is consistent with the South Atlantic Council's approach to sector allocations in other fisheries (see **Action 5**). **Alternative 3 (Preferred),** provides the added biological benefits of accurately accounting for the fishing effort in both sectors, in addition to a fair, equitable, and mathematically transparent approach. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** the preferred alternative to specify sector allocations for dolphin.

Rejected alternatives to the proposed action to specify allocations for dolphin.

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the accumulative landings system (ALS), MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector allocation = (50% * average of long catch range (pounds) 1999-2008) + (50% * average of recent catch trend (pounds) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

Discussion:

Alternative 1 (No Action) was implemented through the Dolphin Wahoo FMP, which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic EEZ. The Dolphin Wahoo FMP established this allocation as a "soft cap" on the commercial sector, which was met in 2009. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action by the South Atlantic Council is necessary.

Dolphin is predominantly a recreational species, and the South Atlantic Council wants to maintain this structure. **Alternative 2** provides allocations that are very similar to **Alternative 3 (Preferred)**, but does not use a mathematical formula that puts greater weight on landings data from recent years. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the recreational catch estimates. The South Atlantic Council felt the formula used for sector allocations in **Alternative 3 (Preferred)** better represents past and present participation by fishermen. Therefore, the South Atlantic Council did not select **Alternatives 2** or **4** as their preferred alternative.

3.22 Action 22. Establish ACLs and OY for dolphin (approved).

Alternative 2 (Preferred). ACL = OY =ABC (currently estimated to be 14,596,216 pounds ww).

Alternative 2 (Preferred) sets ACL equal to OY. The NS1 Guidelines state that if OY is set close to the MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Although OY is currently defined, the value for OY is unknown for most unassessed species in the FMPs addressed by the Comprehensive ACL Amendment, and thus the value for OY will now be established.

The ACL is the limit that triggers AMs, and if an ACT is specified, the ACT would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. ACLs and AMs act in concert to ensure overfishing does not occur. The long-term objective is to achieve OY through annual achievement of an ACL or

ACT. Dolphin is considered data poor, and the value for OY and MSY is unknown. By setting the OY equal to the ACL, there would be greater insurance that OY could be achieved.

Alternative 2 (Preferred) also sets the ACL equal to the ABC. The NS1 Guidelines indicate that ACL may typically be set very close to the ABC. Biological effects would be expected to be lower for **Alternative 2 (Preferred)** than for alternatives that include a buffer between the ACL and ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where uncertainty is not addressed in the specification of the ABC and there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC and takes into scientific uncertainty from the assessment. For data poor species like dolphin where OFL cannot be determined, various criteria are considered in the ABC control rule (see **Table 1** in **Action 4** of this ROD) to constrain harvest and ensure the ABC is set at a level where overfishing would not occur. Furthermore, the ACTs and AMs specified in Actions 23 and 24 would provide additional assurance in the event that the ACL for dolphin was exceeded.

NMFS **approves** the ACLs described in **Alternative 2 (Preferred)** for dolphin.

<u>Rejected alternatives to the proposed action to establish ACLs and OY for dolphin</u>.

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the MSY (between 14.1 and 34.9 million pounds).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 pounds ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 pounds ww).

Alternative 5 (Environmentally Preferable). ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 pounds ww).

<u>Discussion:</u>

Alternative 1 (No Action) would retain the current regulations established for dolphin, which includes a "soft cap" for the commercial sector of 1.5 million pounds or 13% of total landings, whichever is greater. ACLs are in place for dolphin in the form of a soft cap for the commercial sector but there would be no ACL for the recreational sector. Therefore, **Alternative 1 (No Action)** is not an appropriate option. **Alternatives 3-5** provide a buffer between the ACL and ABC. **Alternative 5** is the most conservative (65% of the ABC) of all the alternatives, and hence, has the greatest biological benefits to the stock and would decrease, to the greatest extent, any potential interactions with protected species. Therefore, **Alternative 5** is the **environmentally preferable** alternative.

The South Atlantic Council did not choose **Alternatives 3, 4,** or **5** as their preferred alternative because the preferred alternative in **Action 20** for setting ABC takes uncertainty into consideration. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC. For data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur (see **Table 1** in **Action 4**). Therefore, the South Atlantic Council did not feel that it was necessary to establish a buffer between the ABC and ACL to account for additional uncertainty. Furthermore, the South Atlantic Council is establishing an ACT for the recreational sector under **Action 24** that will serve as a performance measure.

If an evaluation concludes that the ACL or ACT is being chronically exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council would make changes to the system of ACTs, ACLs, and associated AMs to ensure overfishing does not occur.

3.23 Action 23. Establish AMs for the commercial sector for dolphin (approved).

Alternative 2. Specify commercial sector ACTs for dolphin.
Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Alternative 3 (Preferred) (Environmentally Preferable). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

The NS1 Guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the dolphin commercial sector, the South Atlantic Council concluded that the level of uncertainty is minimal and an ACT is not needed (**Subalternative 2a, Preferred**). Quota monitoring in the commercial sector and the AMs the South Atlantic Council specified in **Alternative 3** is sufficient to account for management uncertainty.

Alternative 3 (Preferred) prevents the commercial sector from profiting from the harvest of dolphin in quantities exceeding the ACL, and thus provides a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest will be limited to the recreational bag limit. This in-season AM will be biologically beneficial to the dolphin stock, as well as yield long-term socio-economic benefits. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** the preferred alternatives that will establish AMs for dolphin in the commercial sector.

<u>Rejected alternatives to the proposed action to establish AMs for the commercial sector for dolphin</u>.

Alternative 1 (No Action). Do not specify commercial sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Alternative 2. Specify commercial sector ACTs for dolphin.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 4. If the commercial sector ACL is exceeded, the RA shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Discussion:

Currently, there are size limits, trip limits, and bag limits in place to restrict harvest of dolphin in the South Atlantic. There is no hard quota that would trigger the commercial harvest of dolphin to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the ACL. **Alternative 1 (No Action)** would not implement an AM for dolphin and would not meet the requirements of the Magnuson-Stevens Act.

Subalternative 2c would create the largest buffer (80%) between the ACT and ACL, and hence, provide the most biological benefits of all the subalternatives under **Alternative 2**. However, the South Atlantic Council concluded that the level of uncertainty is minimal in the commercial sector for dolphin because commercial landings are closely tracked through a quota monitoring system.

Alternative 4 is a post-season AM that would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The reduced ACL may serve to shorten the season in the following year, which in turn may result in increased regulatory discards of dolphin. The South Atlantic Council concluded that the current in-season AM as stated in **Alternative 3 (Preferred)** would be sufficient to prevent any overages from occurring.

3.24 Action 24. Establish AMs for the recreational sector for dolphin (approved).

Alternative 2. Specify an ACT.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. South Atlantic Council guidance to use the PSE 3-year average.

Alternative 3. Specify the AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM

Alternative 5. Specify the post-season AM.

> **Subalternative 5d (Preferred) (Environmentally Preferable).** ***<u>Monitor following year and shorten season as necessary.</u>*** **If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The RA will publish a notice to reduce the length of the fishing season as necessary.**

The South Atlantic Council determined that the level of management uncertainty for the recreational sector for dolphin is currently high enough to warrant specification of an ACT. **Alternative 2** and its subalternatives will specify a recreational sector ACT, which will be set lower than the recreational sector ACL. **Subalternative 2d (Preferred)** will adjust the ACL by 50% or by one minus the PSE from the recreational sector, whichever is greater. Including the PSE for the catch estimates into a formula to establish ACT will add an appropriate buffer for dolphin, further accounting for uncertainty.

Subalternative 2d (Preferred) will serve as a performance measure. The NS1 Guidelines recommend a performance standard by which the efficiency of any system of ACLs and AMs can be measured and evaluated. If tracking the ACT through time reveals a trend in ACT and ACL overages, the entire system of ACTs and ACLs would be reevaluated and some corrective action could be linked to the ACT in the future to prevent the ACL from being exceeded. The South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational sector for dolphin. **Subalternative 2d (Preferred)** is the most conservative of all subalternatives under **Alternative 2**, and would have the greatest biological benefits.

Alternative 3 and its subalternatives specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Alternative 4** examines the need for an in-season AM. The South Atlantic Council decided not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, including dolphin. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM for dolphin due to the current preferred alternatives for an ACT and AM trigger.

Subalternative 5d (Preferred) ensures that the amount of the previous year's ACL overage for dolphin is accounted for in the subsequent year's protection via a shortened season, and thus will be biologically beneficial. The monitoring component of **Subalternative 5d (Preferred)** also allows for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefits. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of provisions identified in **Subalternatives 5c-5e, 5f,** and **5g**. For these reasons, **Subalternative 5d (Preferred)** is also the **environmentally preferable** alternative.

NMFS **approves** the preferred alternatives that would specify AMs/ACTs in the recreational sector for dolphin.

Rejected alternatives to the proposed action to establish AMs for the recreational sector for dolphin.

Alternative 1 (No Action). Do not specify new recreational AMs for dolphin.

Alternative 2. Specify an ACT.
Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.

Alternative 3. Specify the AM trigger.
Subalternative 3a. Do not specify an AM trigger.
Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.
Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.
Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Alternative 4. Specify the in-season AM.
Subalternative 4b. The RA shall publish a notice to close the recreational sector when the ACL is projected to be met.

Alternative 5. Specify the post-season AM.
Subalternative 5a. Do not specify a post-season AM.
Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.
Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA would take action as necessary.
Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA will publish a notice to reduce the bag limit as necessary.
Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the RA shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.
Subalternative 5g. *Reduce bag limit.* If the ACL is exceeded, the RA shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Discussion:

Alternative 1 (No Action) would maintain the current level of fishing in the recreational sector for dolphin, with no mechanism to maintain harvest levels at or below the ACLs established in **Action 22**, and therefore, not comply with the requirements of the Magnuson-Stevens Act. With the exception of **Subalternative 2a**, which would not set a recreational ACT, **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. However, the biological benefits of **Subalternatives 2a, 2b,** and **2c** would be lower than the **Subalternative 2d (Preferred)**, which is the most conservative of all the subalternatives under **Alternative 2**. Therefore, the South Atlantic Council did not select any of **Subalternatives 2a-2c** as their preferred alternative.

Subalternative 3a would not specify an AM trigger for dolphin. An evaluation of the approaches used in **Subalternatives 3c-3e** revealed problems with the use of averages and the use of the lower bound of the 90% CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**) for dolphin.

Subalternative 4b would allow the RA to publish a notice to close the recreational sector for dolphin when the ACL is projected to be met. In-season monitoring of recreational landings is difficult, there is a time lag in the availability of recreational data, and therefore, uncertainty in the specification of an in-season AM. Therefore, the South Atlantic Council selected not to have an in-season AM for dolphin under **Subalternative 4a (Preferred)**.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its sub-alternatives specify methodologies for specifying post-season AM actions that would be taken if the dolphin ACL is exceeded. Under **Subalternative 5b**, ACLs for dolphin would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length (**Subalternative 5f**), or bag limit of the following fishing season (**Subalternative 5g**). In contrast, under **Subalternative 5h**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL for dolphin in the following season by the amount of the overage. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of the provisions identified in **Subalternatives 5c-5e,** and **5f-5h**.

3.25 Action 25. Establish management measures for dolphin (approved).

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels. Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length (FL) from Florida through South Carolina.

Currently, for-hire fishermen who possess the necessary state and federal permits can sell bag limit quantities of dolphin. With the possibility of more restrictive catch limits for dolphin being imposed on recreational and commercial fishermen, the South Atlantic Council is concerned that when for-hire fishermen sell their catch to dealers, catch will be counted toward the commercial quota resulting in early filling of the commercial ACL.

Alternative 2 (Preferred) helps to ensure regulations are fair and equitable, and fish harvested by the recreational sector are not counted toward commercial quotas. This alternative also would help to improve the accuracy of total landings and benefit both sectors. Therefore, the South Atlantic Council selected **Alternative 2 (Preferred)** to prohibit the sale of bag limit caught dolphin in the for-hire sector. Concern has been expressed that the fish sold make up an important part of the mate's income and if this was prohibited, the cost of a charter trip would have to be increased to cover the lost income.

Alternative 3 (Preferred) was introduced for the South Atlantic Council's consideration to address concerns, primarily from South Carolina anglers, about the large-scale recreational harvest of "peanut" dolphin. In 2002, when size limits were being discussed for this species in the South Atlantic Region, they were not considered off South Carolina, because the state had its own size limit. That measure has since been challenged in court. Therefore, the South Atlantic Council chose **Alternative 3 (Preferred)** to prevent a possible over-harvest of small sized dolphin by recreational fishers.

NMFS **approves** the alternatives to specify a minimum size limit of 20 inches FL from South Carolina to Florida and to prohibit bag limit sales of dolphin.

<u>Rejected alternatives to the proposed action to establish management measures for dolphin</u>.

Alternative 1 (No Action). Retain current management regulations.

- **Fishing year is January 1 to December 31.**
- **Sale of recreationally caught dolphin in or from the Atlantic exclusive economic zone (EEZ) is prohibited. For-hire vessels possessing the necessary state and federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.**
- **Commercial soft cap of 1.5 million pounds or 13% of total landings, whichever is greater.**

- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches FL off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches FL; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the 10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.
- Allowable gear is specified.

For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 pounds of dolphin and wahoo combined.

Alternative 4. Establish a minimum size limit of 20 inches FL from Florida through New England.

Alternative 5 (Environmentally Preferable). Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches FL.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.
Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 pounds with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.
Subalternative 7b. Establish a 5,000 pound trip limit.
Subalternative 7c. Establish a 4,000 pound trip limit.
Subalternative 7d. Establish a 3,000 pound trip limit.
Subalternative 7e. Establish a 2,000 pound trip limit.
Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person.

Discussion:

Alternative 1 (No Action) would retain the current regulations for dolphin. Establishing a 20-inch FL size limit for dolphin in South Carolina and North Carolina would be expected to reduce harvest of dolphin by about 5% (**Alternative 4**). Data are not available for areas north of North Carolina for all sectors and a 20-inch FL size limit is already in place for Florida and Georgia. Increasing the minimum size limit to 24 inches FL under **Alternative 5** would be expected to provide a 35% reduction in harvest among all sectors off Florida and Georgia. As **Alternative 5** would likely represent the greatest biological benefit for dolphin, it is the **environmentally preferable** alternative. However, obtaining length measurements from dolphin can be difficult since it is hard to restrain them when they are brought out of the water. Furthermore, a reduction in harvest is needed to ensure the recreational ACT or commercial and recreational ACLs are not exceeded. Therefore, **Alternatives 4** and **5** were not selected as preferred alternatives by the South Atlantic Council.

Proposed reductions in the vessel limit under **Alternative 6** and its subalternatives would reduce recreational harvest of dolphin by 6 to 18%, which would be biologically beneficial. **Alternative 7** and **Subalternatives 7a-7f** would consider trip limits for commercial harvest of dolphin. The greatest biological effect among the trip limit subalternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in commercial dolphin harvest for all areas. **Alternative 8** would set a recreational dolphin bag limit of 9 fish per person per day, which would be expected to reduce harvest by 2%. Current recreational bag limit regulations restrict the harvest of dolphin to 10 dolphin per person per day, or 60 dolphin per boat per day, whichever is less.

The dolphin stock in the South Atlantic Region is not undergoing overfishing, and a reduction in harvest is needed to ensure the recreational ACT or commercial and recreational ACLs are not exceeded. Therefore, **Alternatives 4-8** were not selected by the South Atlantic Council as preferred alternatives.

3.26 Action 26. Establish an ABC control rule and ABC for wahoo (approved).

Alternative 4 (Preferred) (Environmentally Preferable). When the ABC control rule portion for unassessed species is complete, establish ABC for wahoo based on the South Atlantic Council SSC's ABC control rule. Until the ABC control rule is complete, establish ABC based upon the South Atlantic Council SSC's approach for unassessed species in Level 4 of the ABC control rule and OFL = unknown (currently ABC is estimated to be 1,491,785 pounds ww).

Alternative 4 (Preferred) specifies an ABC for wahoo based on Tier 4 of the South Atlantic Council's ABC control rule, which accounts for scientific uncertainty (see **Table 1** and **Alternative 7** in **Action 4**). The SSC stated at their August 2010 meeting that OFL for wahoo is an unknown value somewhere above the value for ABC. Tier 4 is the most data poor level where ABC is derived by the SSC on a case by case basis. During their April 2011 meeting the South Atlantic Council's SSC discussed trends in landings of wahoo and stated that the decline in landings after 2002 was likely a result of the bag limit change. The South Atlantic Council's SSC also noted that wahoo landings are significant in the charter fishery and are therefore, impacted by economic trends, as is the case for dolphin. The South Atlantic Council and the SSC will periodically evaluate the performance of their ABC control rule and determine when and how it needs to be modified. In addition, the SSC intends to re-evaluate the unassessed species' portion of the ABC control rule in the near future, to assess whether modifications are necessary.

Alternative 4 (Preferred) is the **environmentally preferable** alternative since it follows the recommendations for the specification of ABCs based on a systematic inspection of all sources of scientific uncertainty, including variables such as susceptibility, vulnerability, bycatch, and discard information.

NMFS **approves Alternative 4 (Preferred)** to establish an ABC for wahoo.

Rejected alternatives to the proposed action to establish an ABC control rule and ABC for Wahoo.

Alternative 1 (No Action). Do not establish an ABC control rule for wahoo.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule. Note: The Gulf of Mexico control rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

Discussion:

Alternative 1 (No Action) would not establish an ABC control rule for wahoo and hence, not meet the requirements for establishing an ABC under the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for wahoo. Under **Alternative 2,** the ABC would be equal to the OFL specified by the South Atlantic Council's SSC. The NS1 Guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternative 3. Alternative 3** would specify an ABC control rule based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule which uses a combination of average landings and a range of standard deviations. Biological benefits of **Alternative 3** would be similar to **Alternative 4 (Preferred),** if OFL could be determined. However, since the South Atlantic Council's SSC indicated at their April 2011 meeting that OFL is unknown for wahoo, the South Atlantic Council did not select **Alternatives 2** or **3** as their preferred alternative.

3.27 Action 27. Specify allocations for wahoo (approved).

Alternative 3 (Preferred) (Environmentally Preferable). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector allocation = (50% * average of long catch range (pounds) 1999-2008) + (50% * average of recent catch trend (pounds) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational.

Alternative 3 (Preferred) uses a formula that would equal 50% * average of long catch range (pounds) 1999-2008 + 50% * average of recent catch trend (pounds) 2006-2008 thereby balancing the total time series with more recent data. This is consistent with the South Atlantic Council's approach to sector allocations in other fisheries (see **Action 5**). **Alternative 3 (Preferred)**, provides the added biological benefits of accurately accounting for the fishing effort in both sectors, in addition to a fair, equitable, and mathematically transparent approach. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** the preferred alternative to specify sector allocations for wahoo.

<u>Rejected alternatives to the proposed action to specify allocations for wahoo</u>.

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector allocation = (50% * average of long catch range (pounds) 1999-2008) + (50% * average of recent catch trend (pounds) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

<u>Discussion:</u>

Alternative 1 (No Action) would not establish allocations for wahoo for the commercial and recreational sectors. If an allocation is not specified, then it would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for sector AMs would be limited. Therefore, **Alternative 1 (No Action)** is not an appropriate option.

Wahoo is predominantly harvested by the recreational sector, and the South Atlantic Council wants to maintain this structure. **Alternative 2** would provide allocations that are very similar to **Alternative 3 (Preferred)**; however, **Alternative 2** does not use a mathematical formula that puts greater weight on recent landings data. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the recreational catch estimates. The South Atlantic Council felt the formula used for sector allocations in **Alternative 3 (Preferred)** better represented past and present participation by fishermen. Therefore, the South Atlantic Council did not select **Alternatives 2** and **4** as their preferred alternatives.

3.28 Action 28. Establish ACLs and OY for wahoo (approved).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 1,491,785 pounds ww).

Alternative 2 (Preferred) sets ACL equal to OY. The NS1 Guidelines state that if OY is set close to the MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Although OY is currently defined, the value for OY is unknown for most unassessed species in the FMPs addressed by the Comprehensive ACL Amendment, and thus the value for OY will now be established.

The ACL is the limit that triggers AMs, and if an ACT is specified, the ACT would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. ACLs and AMs act in concert to ensure overfishing does not occur. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. Wahoo is considered data poor, and the value for OY and MSY is unknown. By setting the OY equal to the ACL, there would be greater insurance that OY could be achieved.

Alternative 2 (Preferred) also sets the ACL equal to the ABC. The NS1 Guidelines indicate that ACL may typically be set very close to the ABC. Biological effects would be expected to be lower for **Alternative 2 (Preferred)** than for alternatives that include a buffer between the ACL and ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where scientific uncertainty is not addressed in the specification of the ABC and there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC and takes into scientific uncertainty from the assessment. For data poor species like wahoo where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur.

NMFS **approves** the ACL and OY described in **Alternative 2 (Preferred)** for wahoo.

Rejected alternatives to the proposed action to establish ACLs and OY for wahoo.

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million pounds).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1,268,017 pounds ww.

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1,118,839 pounds ww.

Alternative 5 (Environmentally Preferable). ACL = OY = 65% of the ABC (currently estimated to be 969,660 pounds ww).

Discussion:

Alternative 1 (No Action), would retain the current regulations established for wahoo, which includes the amount of harvest that can be taken by fishermen between 1.41 and 1.63 million pounds. However, there is not an ACL, and therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act. **Alternatives 3-5** provide a buffer between the ACL and ABC. **Alternative 5** is the most conservative (65% of the ABC) of all the alternatives, and hence, has the highest probability of providing positive biological benefits. Therefore, **Alternative 5** is the **environmentally preferable** alternative.

The South Atlantic Council did not choose **Alternatives 3, 4,** or **5** as their preferred alternative, because the preferred alternative in **Action 26** for setting ABC for Wahoo using an ABC control rule, takes uncertainty into consideration. For assessed species where OFL is known, the ABC control rule establishes a buffer between the OFL and the ABC. For data poor species where OFL cannot be determined, various criteria are considered to constrain harvest and ensure the ABC is set at a level where overfishing would not occur (see **Table 1** in **Action 4**). Therefore, the South Atlantic Council did not feel that it was necessary to establish a buffer between the ABC and ACL to account for uncertainty. Furthermore, the South Atlantic Council is establishing an ACT for the recreational sector under **Action 30** that will serve as a performance measure.

If an evaluation concludes that the ACL or ACT is being exceeded, and post-season AMs are repeatedly needed to correct for ACL overages, the South Atlantic Council would make changes to the system of ACTs, ACLs, and associated AMs to ensure overfishing does not occur.

3.29 Action 29. Establish AMs for the commercial sector for wahoo (approved).

Alternative 2. Establish commercial sector ACT for wahoo.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Alternative 3 (Preferred) (Environmentally Preferable). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

The NS1 Guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial sector, the South Atlantic Council concluded that the level of uncertainty associated with commercial harvest is minimal since landings can be closely tracked through a quota monitoring system and an ACT is not needed (**Subalternative 2a, Preferred**). Quota monitoring in the commercial sector and the AMs the Council is proposing to implement through the Comprehensive ACL Amendment, are sufficient to account for management uncertainty.

Alternative 3 (Preferred) prevents the commercial sector from profiting from the harvest of wahoo in quantities exceeding the ACL, and thus provides a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest will be limited to the recreational bag limit. This in-season AM will be biologically beneficial to the wahoo stock, as well as yield long-term socio-economic benefits. Therefore, **Alternative 3 (Preferred)** is the **environmentally preferable** alternative.

NMFS **approves** the preferred alternatives that would establish AMs for the commercial sector for wahoo.

<u>Rejected alternatives to the proposed action to establish AMs for the commercial sector for wahoo.</u>

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Alternative 2. Establish commercial sector ACT for wahoo.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 4. If the commercial sector ACL is exceeded, the RA shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

<u>Discussion:</u>

Currently, there are size limits, trip limits, and bag limits in place to restrict harvest of wahoo in the South Atlantic. There is no hard quota that would trigger a closure once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the ACL. **Alternative 1 (No Action)** would not implement an AM for wahoo, and would not meet the requirements of the Magnuson-Stevens Act.

Subalternative 2c would create the largest buffer (80%) between the ACT and ACL, and hence, provide the most biological benefits of all the subalternatives under **Alternative 2**. However, the South Atlantic Council concluded that the level of uncertainty is minimal in the commercial sector for wahoo because commercial landings are closely tracked through a quota monitoring system.

Alternative 4 is a post-season AM that would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred. The reduced ACL may serve to shorten the season in the following year, which in turn may result in increased regulatory discards of wahoo. The South Atlantic Council concluded that the current in-season AM as stated in **Alternative 3 (Preferred)** would be sufficient to prevent any overages from occurring.

3.30 Action 30. Establish AMs for the recreational sector for wahoo (approved).

Alternative 2. Specify an ACT.

> **Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. South Atlantic Council guidance to use the PSE 5-year (2005-2009) average (18.4).**

Alternative 3. Specify the AM trigger.

> **Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.**

Alternative 4. Specify the in-season AM.

> **Subalternative 4a (Preferred). Do not specify an in-season AM**

Alternative 5. Specify the post-season AM.

> **Subalternative 5d (Preferred) (Environmentally Preferable). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The RA will publish a notice to reduce the length of the fishing season as necessary.**

The South Atlantic Council determined that the level of management uncertainty for the recreational sector for wahoo is currently high enough to warrant specification of an ACT. **Alternative 2** and its subalternatives specify a recreational sector ACT, which will be set lower than the recreational sector ACL. **Subalternative 2d (Preferred)** adjusts the ACL by 50% or by one minus the PSE from the recreational sector, whichever is greater. Including the PSE for the catch estimates into a formula to establish ACT will add an appropriate buffer for wahoo, further accounting for uncertainty.

Subalternative 2d (Preferred) establishes an ACT for the recreational sector that serves as a performance measure. The NS1 Guidelines recommend a performance standard by which the efficiency of any system of ACLs and AMs can be measured and evaluated. If tracking the ACT through time reveals a trend in ACT and ACL overages, the entire system of ACTs and ACLs would be reevaluated and some corrective action could be linked to the ACT in the future to prevent the ACL from being exceeded. The South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational sector for wahoo. **Subalternative 2d (Preferred)** is the most conservative of all subalternatives under **Alternative 2**, and would have the greatest biological benefits.

Alternative 3 and its subalternatives specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs will be triggered if the annual landings exceeded the ACL in a given year. **Alternative 4** examines the need for an in-season AM. The South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM for wahoo due to the current preferred alternatives for an ACT and AM trigger.

Subalternative 5d (Preferred) ensures that the amount of the previous year's ACL overage for wahoo will be accounted for in the subsequent year's protection via a shortened season, and thus will be biologically beneficial. The monitoring component of **Subalternative 5d (Preferred)** also allows for any anomalies or data reporting irregularities to be taken into account before the AMs will be effective, and hence, possibly adding a socio-economic benefit to the biological benefits. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of the provisions identified in **Subalternatives 5c-5e, 5f,** and **5g**. For these reasons, **Subalternative 5d (Preferred)** is also the **environmentally preferred** alternative.

NMFS **approves** the preferred alternatives that would specify AMs/ACTs for wahoo in the recreational sector.

<u>Rejected alternatives to the proposed action to establish AMs for the recreational sector for wahoo</u>.

Alternative 1 (No Action). Do not specify new recreational AMs for wahoo.

Alternative 2. Specify an ACT.

> **Subalternative 2a. Do not specify an ACT.**
> **Subalternative 2b. The ACT equals 85% of the ACL.**
> **Subalternative 2c. The ACT equals 75% of the ACL.**

Alternative 3. Specify the AM trigger.

> **Subalternative 3a. Do not specify an AM trigger.**
> **Subalternative 3c. If the *<u>mean landings</u>* for the past three years exceed the ACL.**
> **Subalternative 3d. If the *<u>modified mean landings</u>* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.**

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Alternative 4. Specify the in-season AM.

Subalternative 4b. The RA shall publish a notice to close the recreational sector when the ACL is projected to be met.

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA would take action as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The RA will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the RA shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit.* If the ACL is exceeded, the RA shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Discussion:

Alternative 1 (No Action) would maintain the current level of fishing in the recreational sector for wahoo, with no mechanism to maintain harvest levels at or below the ACLs established in **Action 22**, and therefore, not comply with the requirements of the Magnuson-Stevens Act. With the exception of **Subalternative 2a**, which would not set a recreational ACT, **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. However, the biological benefits of **Subalternatives 2a, 2b,** and **2c** would be lower than the **Subalternative 2d (Preferred)**, which is the most conservative of all the subalternatives under **Alternative 2.**

Subalternative 3a would not specify an AM trigger for wahoo. An evaluation of the approaches used in **Subalternatives 3c-3e** revealed problems with the use of averages and the use of the lower bound of the 90% CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**) for wahoo.

Subalternative 4b would allow the RA to publish a notice to close the recreational sector for wahoo when the ACL is projected to be met. In-season monitoring of recreational landings is difficult, there is a time lag in the availability of recreational data, and therefore, uncertainty in the specification of an in-season AM. Therefore, the South Atlantic Council selected not to have an in-season AM for wahoo under **Subalternative 4a (Preferred)**.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its sub-alternatives specify methodologies for specifying post-season AM actions that would be taken if the wahoo ACL is exceeded. Under **Subalternative 5b**, ACLs for wahoo would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs, which has complications when there are extremes in reported landings. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, and hence, possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length (**Subalternative 5f**), or bag limit of the following fishing season (**Subalternative 5g**). In contrast, under **Subalternative 5h**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL for wahoo in the following season by the amount of the overage. The South Atlantic Council chose **Subalternative 5d** as their preferred alternative because it captures aspects of the provisions identified in **Subalternatives 5c-5e,** and **5f-5h**.

3.31 Action 31. Establish management measures for wahoo (approved).

Alternative 1 (No Action) (Preferred). Retain current management measures for wahoo.

- **Fishing year is January 1 to December 31.**
- **Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.**
- **500-pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.**
- **Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.**

For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 pounds of dolphin and wahoo combined.

Alternative 1 (Preferred) (No Action) would retain the management measures currently in place. No management measures are needed because recent average recreational landings (2005-2009, excluding 2007) are well below the South Atlantic Council's preferred alternatives for a recreational ACL (**Action 28**) and ACT (**Action 29**). The in-season and post-season AMs under **Actions 29** and **30** include alternatives which would ensure overfishing does not occur.

Rejected alternatives to the proposed action to establish management measures for Wahoo.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/vessel per day in the recreational fishery.

Subalternative 2a. Establish a boat limit of 12 wahoo per boat/vessel per day.

Subalternative 2b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Subalternative 2c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Subalternative 2d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Subalternative 2e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Subalternative 2f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Subalternative 2g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Subalternative 2h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Subalternative 2i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Subalternative 2j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Subalternative 2k (Environmentally Preferable). Establish a boat limit of 2 wahoo per boat/vessel per day.

Discussion:

Alternative 2 and its subalternatives would establish a boat limit for private, charter, and headboat recreational fishermen ranging from 2 to 12 wahoo per boat/vessel per day. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors would range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit. Restricting the vessel limit to 2-fish per vessel (**Subalternative 2k**) would have the greatest biological effect and would provide the greatest assurance the recreational ACL for wahoo would not be exceeded. Thus, **Subalternative 2k** is the **environmentally preferable** alternative. However, based on 2005-2009 landings data (excluding 2007), no reduction in recreational landings is necessary to prevent the recreational ACL or ACT from being exceeded. Therefore, the South Atlantic Council did not choose any of the subalternatives under **Alternative 2.**

3.32 Action 32. Establish ACLs and OY for golden crab (approved).

Alternative 2 (Preferred). ACL= OY=ABC (2 million pounds).

There is no known recreational harvest of golden crab, and therefore, only a single ACL for the commercial sector is necessary for this fishery. The South Atlantic Council reasoned that the harvest of golden crab is a small fishery and the current quota monitoring system adequately keeps track of the landings. Similar to the approach for other species in the Comprehensive ACL Amendment, the South Atlantic Council set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved. **Alternative 2 (Preferred)** is economically optimal given the relatively small amount of landings and low risk of overfishing compared to the South Atlantic Council SSC's recommended ABC of 2 million pounds. **Alternative 2 (Preferred)** would also allow for the golden crab fishery to expand and provide the largest long-term economic benefits.

NMFS **approves** the ACL and OY for golden crab in **Alternative 2 (Preferred).**

Rejected alternatives to the proposed action to establish ACLs and OY for golden crab.

Alternative 1 (No Action). Do not specify an ACL for golden crab.

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1.7 million pounds.

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1.5 million pounds.

Alternative 5 (Environmentally Preferable). ACL = OY = 65% of the ABC (currently estimated to be 1.3 million pounds.

Discussion:

Alternative 1 (No Action) is not appropriate since it would not establish an ACL for golden crab as required by the Magnuson-Stevens Act. **Alternatives 3-5** provide a buffer between the ACL and ABC. **Alternative 5** is the most conservative (65% of the ABC) of all the alternatives, and provides the greatest biological benefits to the stock, and reduces potential negative impacts to bottom habitat and protected species. Therefore, **Alternative 5** is the **environmentally preferable** alternative. The South Atlantic Council did not select **Alternatives 3-5** because golden crab is a small fishery, and the current quota monitoring system adequately keeps track of the landings. Furthermore, closed areas were established through Comprehensive Ecosystem-Based Amendment 1 to protect fragile coral species from the negative impacts from golden crab traps. Although the SSC indicated data were not sufficient to specify an OFL, the South Atlantic Council's SSC identified studies conducted on golden crab, which provide estimates of a MSY of about 2.5 million pounds. Therefore, ABC would equal about 80% of MSY.

3.33 Action 33. Establish AMs for golden crab (approved).

Alternative 2 (Preferred) (Environmentally Preferable). After the ACL is met or projected to be met, all harvest, purchase, and sale of golden crab is prohibited.

Alternative 3 (Preferred). If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

Alternative 2 (Preferred) requires in-season monitoring. All golden crab landings are reported through dealer reports; therefore, in-season monitoring will project, with a reasonable level of accuracy, when the ACL will be met. As golden crab traps are only used to harvest golden crab, no fishing with the gear will occur after a closure reducing potential interactions with protected species and sensitive bottom habitat. An in-season closure for golden crab will provide the greatest biological benefit to the stock and therefore, is the **environmentally preferred** alternative.

Alternative 3 (Preferred) will provide protection to the golden crab fishery if it is declared overfished and act as a post-season AM. The ACL would be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A combination of the in-season and post-season AMs in

preferred Alternatives 2 and **3**, respectively, will provide the best biological benefits in addition to the largest long-term socio-economic benefits.

NMFS **approves** the preferred alternatives for golden crab AMs.

Rejected alternatives to the proposed action to establish AMs for golden crab.

Alternative 1 (No Action). Do not establish AMs for golden crab.

Discussion:

Alternative 1 (No Action) is the least biologically beneficial AM alternative for golden crab, and is not a legally sufficient alternative, since no AM would be established for the species as required under the Magnuson-Stevens Act.

4.0 Mitigation, Monitoring and Enforcement

CEQ regulations implementing NEPA direct agencies to identify in the ROD whether all practical means to avoid or minimize environmental harm from the proposed actions have been adopted, and if not, why they were not (40 C.F.R. § 1505.2(a)(b)(c)). Mitigation measures are the practical means to avoid, minimize, and reduce impacts, and compensate for unavoidable impacts. Additionally, the regulations require a monitoring and enforcement program be adopted and summarized where applicable for any mitigation.

NMFS has thoroughly analyzed in the FEIS, and described in this ROD, a range of reasonable alternatives and their associated environmental impacts. NMFS and the South Atlantic Council have attempted to mitigate those impacts to the extent practicable. The process of managing the various stocks identified in the FEIS is expected to have minimal negative short-term effect on the social and economic environment, and will increase burden on the administrative environment. Some alternatives have relatively small short-term economic costs and administrative burdens, but would also provide smaller and more delayed long-term benefits. Other alternatives may have greater short-term costs, but provide larger and more long-term benefits. Therefore, mitigating these measures would be difficult, but managers attempt to balance the costs and benefits when choosing management alternatives for the fishery. The effects of the proposed actions are, and will continue to be monitored through collection of landings data by NMFS, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. As a consequence of these considerations, NMFS concludes that all practical means to avoid, minimize, or compensate for environmental harm from the proposed actions have been adopted, and the public has had adequate opportunity for involvement, input, and comment during the deliberative phases of the Comprehensive ACL Amendment and FEIS (see **Scoping Process and Public Involvement** in **Section 5.0**). Regulations contained within FMPs are enforced through actions of the NOAA's Office of Law Enforcement, the United States Coast Guard, and various cooperative state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are coordinated by the South Atlantic Council's Law Enforcement Advisory Panel and the Atlantic States Marine Fisheries Commission's Law Enforcement Committee.

5.0 Scoping Process and Public Involvement

Through the FEIS, as documented in this ROD, the South Atlantic Council and NMFS have analyzed the various alternatives, associated environmental impacts, and the extent to which the impacts could be mitigated, in relation to the objectives of the proposed action. As summarized below, NMFS and the South Atlantic Council have considered public and Agency comments received during the various EIS review periods.

The South Atlantic Council submitted the Comprehensive ACL Amendment and its integrated FEIS to NMFS on October 14, 2011. The range of actions and alternatives considered in the FEIS were based on information derived from five scoping meetings held by the South Atlantic Council from January 26, 2009, to February 5, 2009; and six public hearing meetings held from January 24, 2011, to February 3, 2011, throughout the South Atlantic. Opportunity for further public input was provided during each of the South Atlantic Council's meetings, which have a scheduled public testimony period. A notice of intent to prepare an EIS was published in the *Federal Register* on September 15, 2009. The draft EIS filed with the EPA on June 10, 2011, and notice of its availability published on June 17, 2011. The 45-day comment period for the draft EIS ended on August 1, 2011. Comments received on the draft EIS were addressed in the FEIS. Including comments from the EPA, five comment letters were received from individuals and organizations during the 45-day comment period. The comments can be viewed at www.regulations.gov (search for NOAA-NMFS-2011-0087). The EPA classified the DEIS and proposed actions as "LO" (Lack of Objections) and published these findings in the *Federal Register*.

A notice of availability for the Comprehensive ACL Amendment was published in the *Federal Register* on October 20, 2011, with a comment period ending December 19, 2011. The proposed rule published in the *Federal Register* on December 1, 2011, with a comment period ending December 19, 2011. An amended proposed rule was published on December 30, 2011, which provides a new proposed wreckfish ACL based on the revised ABC value for wreckfish of 235,000 pounds ww. The comment period for the amended proposed rule ended on January 17, 2012. The FEIS filed with the EPA on November 18, 2011, and was announced by EPA in the *Federal Register* on November 25, 2011. The cooling off period for the FEIS ended December 27, 2011. EPA responded on December 27, 2011, noting support for the actions analyzed in the Comprehensive ACL Amendment and its integrated FEIS. EPA recommended that clarification be provided in the ROD regarding why the South Atlantic Council changed their preferred alternatives for removal of snapper-grouper species from the FMU (**Action 2**), and why there was a modification to the species groupings (**Action 3**).

6.0 Findings Required by Other Laws and Regulations

This ROD reflects NMFS' decision to approve the actions as identified and analyzed in the integrated Comprehensive ACL Amendment/FEIS. NMFS has determined the actions are in compliance with applicable law. These determinations are documented in other NMFS documents, including a regulatory flexibility analysis under the Regulatory Flexibility Act and determinations regarding the Coastal Zone Management Act, Essential Fish Habitat regulations, Endangered Species Act, and the Information Quality Act.

As part of the 2006 reauthorization of the Magnuson-Stevens Act, Section 303, Contents of Fishery Management Plans, was amended to add the following:

> "(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability."

On January 16, 2009, NMFS published revised guidelines for implementing NS1 to provide guidance on how to comply with the new ACL and AM requirements [74 FR 3178]. The purpose of the Comprehensive ACL Amendment is to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The need for this action is to specify ACLs and AMs, where needed, and comply with the requirements of the Magnuson-Stevens Act.

7.0 Implementation

Actions proposed, analyzed, and approved by the Secretary will be implemented by promulgation of a final rule in the *Federal Register*.

Contact Person:

Roy E. Crabtree, Ph.D.
Regional Administrator
Southeast Regional Office
National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, Florida 33701-5505
Phone: 727-824-5301

Samuel D. Rauch III
Acting Assistant Administrator for Fisheries
National Marine Fisheries Service
National Oceanic and Atmospheric Administration

1/18/12
Date

COMPREHENSIVE ANNUAL CATCH LIMIT (ACL) AMENDMENT FOR THE SOUTH ATLANTIC REGION

AMENDMENT 2 TO THE FISHERY MANAGEMENT PLAN FOR THE DOLPHIN WAHOO FISHERY OF THE ATLANTIC
AMENDMENT 2 TO THE FISHERY MANAGEMENT PLAN FOR PELAGIC SARGASSUM HABITAT OF THE SOUTH ATLANTIC REGION
AMENDMENT 5 TO THE FISHERY MANAGEMENT PLAN FOR THE GOLDEN CRAB FISHERY OF THE SOUTH ATLANTIC REGION
AMENDMENT 25 TO THE FISHERY MANAGEMENT PLAN FOR THE SNAPPER GROUPER FISHERY OF THE SOUTH ATLANTIC REGION

(INCLUDING A FINAL ENVIRONMENTAL IMPACT STATEMENT, REGULATORY FLEXIBILITY ACT ANALYSIS, REGULATORY IMPACT REVIEW, AND SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT)

October 2011

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, South Carolina 29405
(843) 571-4366
(843) 769-4520 (FAX)
Email (general): safmc@safmc.net
Website: www.safmc.net

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 / FAX (727) 824-5308

A publication of the South Atlantic Fishery Management Council pursuant to
National Oceanic and Atmospheric Administration Award Number NA05NMF4410004

ABBREVIATIONS AND ACRONYMS

ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limit
AM	Accountability Measure
ACT	Annual Catch Target
ALS	Accumulative Landings System
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass in either weight or other appropriate unit
B_{MSY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
CRP	Cooperative Research Program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFH-HAPC	Essential Fish Habitat - Habitat Area of Particular Concern
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	A measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	Fishing mortality that will produce a static SPR = 30%.
$F_{45\%SPR}$	Fishing mortality that will produce a static SPR = 45%.
F_{CURR}	The current instantaneous rate of fishing mortality
F_{MSY}	The rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	The rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FMU	Fishery management unit
FONSI	Finding of No Significant Impact
GMFMC	Gulf of Mexico Fishery Management Council
ITQ	Individual transfer quota
IPT	Interdisciplinary Plan Team
M	Natural mortality rate
MARFIN	Marine Fisheries Initiative

MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act of 1972
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Magnuson-Stevens Reauthorization Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing Limit
OY	Optimum Yield
PQBM	Post Quota Bycatch Mortality
PSE	Percent Standard Error
R	Recruitment
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAMFC	South Atlantic Fishery Management Council
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SPR	Spawning Potential Ratio
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
T_{MIN}	The length of time in which a stock could rebuild to B_{MSY} in the absence of fishing mortality
USCG	U.S. Coast Guard

COMPREHENSIVE ANNUAL CATCH LIMIT (ACL) AMENDMENT FOR THE SOUTH ATLANTIC REGION

INCLUDING A FINAL ENVIRONMENTAL IMPACT STATEMENT, REGULATORY FLEXIBILITY ANALYSIS, REGULATORY IMPACT REVIEW AND SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

Proposed actions:	Remove some species from South Atlantic Snapper Grouper FMU and designate others as Ecosystem Components. Consider multi-species groupings for specifying ACLs, ACTs, and AMs. Establish ABC control rules, ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing. Specify jurisdictional allocations and sector allocations for species not undergoing overfishing. Modify management measures to limit total mortality to the ACL.
Lead agency:	FMP Amendment – South Atlantic Fishery Management Council EIS - NOAA Fisheries Service
For Further Information Contact:	Robert K. Mahood South Atlantic Fishery Management Council 4055 Faber Place, Suite 201 North Charleston, SC 29405 866-SAFMC-10 Robert.mahood@safmc.net Roy E. Crabtree NOAA Fisheries, Southeast Region 263 13th Avenue South St. Petersburg, FL 33701 727-824-5301

NOI for Comprehensive ACL Amendment:	January 28, 2009 [74 FR 4943]
Scoping meetings held:	January26-February 5, 2009
DEIS filed:	June 10, 2011
DEIS notice published:	June 17, 2011
DEIS Comments received by:	August 1, 2011
FEIS filed:	DATE TO BE FILLED IN
FEIS Comments received by:	DATE TO BE FILLED IN

ABSTRACT

The Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. Revisions to the Magnuson-Stevens Act in 2006 required that by 2010, Fishery Management Plans (FMPs) for fisheries determined by the Secretary of Commerce to be subject to overfishing, establish a mechanism for specifying annual catch limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes, as well as establish measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the FMP for the Snapper Grouper Fishery of the South Atlantic Region specified ACLs for species subject to overfishing. The South Atlantic Fishery Management Council (South Atlantic Council) is addressing all of the remaining species in this amendment except corals, which are being addressed in the Comprehensive Ecosystem-Based Amendment 2 (currently under review), and Coastal Migratory Pelagics and Spiny Lobster, which are being addressed jointly with the Gulf of Mexico Fishery Management Council.

The purpose of this Comprehensive ACL Amendment for the South Atlantic Region (Comprehensive ACL Amendment) is to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. Long-term measures include implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species, designation of ecosystem component species, and the development of species groups; 2) establish acceptable biological catch (ABC) control rules; 3) ACLs and annual catch targets (ACTs); 4) jurisdictional and sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets. Optimum yield, the ultimate goal of any fishery management plan, is the portion of the fish stock that provides the greatest economic, social, and ecological benefit to the nation.

The need for action is to specify overfishing limits (OFLs), ACLs, and AMs, where needed to comply with Magnuson-Stevens Act requirements.

The South Atlantic Council is utilizing several tools to achieve OY for stocks addressed in this comprehensive amendment. These tools include a determination from the Council's SSC for an ABC based on an ABC control rule. Another tool is the OFL, which is an estimate of the catch level above which overfishing is occurring. This value may stem from the outcome of a stock assessment and is equivalent to the yield at the maximum fishing mortality threshold (MFMT). An SSC may use other methods to estimate OFL in the absence of a stock assessment. The ABC is defined as the level of a

stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule. The South Atlantic Council is using ABC and proposing an ACL for the stocks in the South Atlantic. The ACL is an annual limit expressed in pounds or numbers of fish that serves as the basis for invoking AMs. Accountability measures are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur (50 CFR 600.310 (g) (1)). The South Atlantic Council is proposing AMs in this amendment. While AMs act to prevent overfishing in a fishery, the South Atlantic Council must specify actions in order to ensure that overfishing does not occur.

TABLE OF CONTENTS

ABSTRACT IV
TABLE OF CONTENTS VI
LIST OF APPENDICES XV
LIST OF FIGURES XVI
LIST OF TABLES 19
SUMMARY 1
TABLE OF CONTENTS FOR ENVIRONMENTAL IMPACT STATEMENT XXXII
1 Introduction 1
1.1 Background 1
1.2 Purpose of the Proposed Action 3
1.3 Need for the Proposed Action 3
1.4. Process for Defining Limits and Targets 3
1.5 History of Management 12
2 Actions and Alternatives 13
2.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers) 13
2.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU) 13
2.1.2 Action 2: Designate Ecosystem Component (EC) Species 24
2.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species 28
2.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species 34
2.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do Not Currently Have Allocations 50
2.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery 57
2.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU 63
2.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU 67
2.2 Snapper Grouper Fishery Management Plan (wreckfish) 80
2.2.1 Action 9: Specify Allocations for the Wreckfish Fishery 81
2.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish 84
2.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery 86
2.2.4 Action 12: Establish Management Measures for Wreckfish 91
2.3 Snapper Grouper Fishery Management Plan (black grouper, yellowtail snapper & mutton snapper) 95
2.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper 95
2.3.2 Action 14: Specify Sector Allocations for Black Grouper 98

2.3.3 Action 15: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper 103
2.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper 106
2.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper 109
2.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper . 117
2.3.7. Action 19: Establish Jurisdictional Allocations for Mutton Snapper . 120
2.4 Dolphin Wahoo Fishery Management Plan 124
2.4.1 Dolphin 124
2.4.1.1. Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin 124
2.4.1.2 Action 21: Specify Allocations for Dolphin 126
2.4.1.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin 128
2.4.1.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin 130
2.4.1.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin 133
2.4.1.6 Action 25: Establish Management Measures for Dolphin 141
2.4.2 Wahoo 149
2.4.2.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo 149
2.4.2.2 Action 27: Specify Allocations for Wahoo 151
2.4.2.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo 154
2.4.2.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo 156
2.4.2.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo 159
2.4.2.6 Action 31: Establish Management Measures for Wahoo 167
2.5 Sargassum Fishery Management Plan 171
2.5.1 Acceptable Biological Catch Control Rule and ABC for Sargassum 171
2.6 Golden Crab Fishery Management Plan 173
2.6.1 Acceptable Biological Catch Control Rule and ABC for Golden Crab .. 173
2.6.2 Action 32: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Golden Crab 173
2.6.3 Action 33: Establish Accountability Measures for Golden Crab 175
3.0 Affected Environment 177
3.1 Habitat 177
3.1.1 Habitat for Snapper Grouper Species 177
3.1.1.1 Essential Fish Habitat 177
3.1.1.2 Habitat Areas of Particular Concern 178
3.1.2 Habitat for Dolphin and Wahoo 178
3.1.2.1 Essential Fish Habitat 178
3.1.2.2 Habitat Areas of Particular Concern 179

3.1.3 Habitat for Golden Crab 179
3.1.3.1 Essential Fish Habitat 179
3.1.3.2 Habitat Areas of Particular Concern 179
3.1.4 Habitat for Sargassum 179
3.2 Biological and Ecological Environment 180
3.2.1 Species Most Impacted by this FMP Amendment 180
3.3 Science Underlying the Management of Species Most Impacted by this FMP Amendment 180
3.4 Other Affected Council-Managed Species 181
3.5 Protected Species 181
3.5.1 ESA-Listed Marine Mammals 181
3.5.2 ESA-Listed Sea Turtles 182
3.5.3 ESA-Listed Marine Fish 183
3.5.4 ESA-Listed Marine Invertebrates 184
3.5.5 South Atlantic Fisheries Interactions with ESA-Listed Species 184
3.5.6. Designated Critical Habitat for ESA-Listed Species in the South Atlantic 185
3.6 Administrative Environment 187
3.6.1 The Federal Fishery Management and Applicable Laws 187
3.6.1.1 Federal Fishery Management 187
3.6.1.2 State Fishery Management 188
3.7 Enforcement 189
3.8 Human Environment 190
3.8.1 Economic Description of the Commercial Fishery 190
3.8.1.1 Permits 191
3.8.1.2 Gear and Fishing Behavior 191
3.8.1.3 Landings, Revenue, and Economic Activity 194
3.8.1.4 Economic Activity 194
3.8.1.5 Landings, Vessels, Dealers, Effort (Trips), Ex-vessel Price, and Ex-vessel Revenue, 2005-2009 195
3.8.1.6 Fisheries by State 203
3.8.1.7 Fisheries by Gear 206
3.8.1.8 Commercial Fishery by Species 208
3.8.1.9 Imports 235
3.8.2 Economic Description of the Recreational Fishery 239
3.8.2.1 Harvest 239
3.8.2.2 Effort 239
3.8.2.3 Permits 249
3.8.2.4 Economic Value, Expenditures, and Economic Activity 250
3.8.3 Social and Cultural Environment 257
3.8.3.1 Marine Related Employment 259
3.8.3.2 Social Vulnerability 259
3.8.3.3 Fishing Communities 260
3.8.3.4 Florida Counties 261
3.8.3.5 Georgia Counties 282
3.8.3.6 South Carolina Counties 288

3.8.3.7 North Carolina Counties 295
3.8.4 Snapper Grouper Fishery Social Environment 306
3.8.5 Dolphin Wahoo Fishery Social Environment 311
3.8.6 Sargassum Fishery Social Environment 313
3.8.7 Golden Crab Fishery Social Environment 313
3.8.8 Environmental Justice 314
4.0 Environmental Effects 315
4.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers) 315
4.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU) 315
4.1.1.1 Biological Effects 316
4.1.1.2 Economic Effects 331
4.1.1.3 Social Effects 335
4.1.1.4 Administrative Effects 335
4.1.1.5 Council Conclusions 336
4.1.2 Action 2: Designate Ecosystem Component (EC) Species 338
4.1.2.1 Biological Effects 338
4.1.2.2 Economic Effects 346
4.1.2.3 Social Effects 348
4.1.2.4 Administrative Effects 348
4.1.2.5 Council's Conclusions 348
4.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species 349
4.1.3.1 Biological Effects 353
4.1.3.2 Economic Effects 357
4.1.3.3 Social Effects 361
4.1.3.4 Administrative Effects 362
4.1.3.5 Council Conclusions 362
4.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species 363
4.1.4.1 Biological Effects 368
4.1.4.2 Economic Effects 377
4.1.4.3 Social Effects 378
4.1.4.4 Administrative Effects 379
4.1.4.5 Council Conclusions 379
4.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do not Currently have Allocations 381
4.1.5.1 Biological Effects 382
4.1.5.2 Economic Effects 386
4.1.5.3 Social Effects 394
4.1.5.4 Administrative Effects 394
4.1.5.5 Council Conclusions 395
4.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery 396
4.1.6.1 Biological Effects 400

4.1.6.2 Economic Effects 403
4.1.6.3 Social Effects 411
4.1.6.4 Administrative Effects 411
4.1.6.5 Council Conclusions 411
4.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU .. 413
4.1.7.1 Biological Effects 413
4.1.7.2 Economic Effects 417
4.1.7.3 Social Effects 420
4.1.7.4 Administrative Effects 421
4.1.7.5 Council Conclusions 421
4.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU .. 423
4.1.8.1 Biological Effects 431
4.1.8.2 Economic Effects 434
4.1.8.3 Social Effects 440
4.1.8.4 Administrative Effects 441
4.1.8.5 Council Conclusions 441
4.2 Snapper Grouper Fishery Management Plan (wreckfish) 444
4.2.1 Action 9: Specify Allocations for Wreckfish Fishery 445
4.2.1.1 Biological Effects 445
4.2.1.2 Economic Effects 447
4.2.1.3 Social Effects 448
4.2.1.4 Administrative Effects 449
4.2.1.5 Council Conclusions 449
4.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish 450
4.2.2.1 Biological Effects 450
4.2.2.2 Economic Effects 452
4.2.2.3 Social Effects 453
4.2.2.4 Administrative Effects 453
4.2.2.5 Council Conclusions 453
4.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery 454
4.2.3.1 Biological Effects 456
4.2.3.2 Economic Effects 459
4.2.3.3 Social Effects 460
4.2.3.4 Administrative Effects 461
4.2.3.5 Council Conclusions 462
4.2.4 Action 12: Establish Management Measures for Wreckfish 463
4.2.4.1 Biological Effects 463
4.2.4.2 Economic Effects 466
4.2.4.3 Social Effects 466
4.2.4.4 Administrative Effects 466
4.2.4.5 Council Conclusions 467

4.3 Snapper Grouper Fishery Management Plan (black grouper remaining actions; yellowtail snapper & mutton snapper jurisdictional allocations)....468
4.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper....468
4.3.1.1 Biological Effects....468
4.3.1.2 Economic Effects....473
4.3.1.3 Social Effects....475
4.3.1.4 Administrative Effects....475
4.3.1.5 Council Conclusions....475
4.3.2 Action 14: Specify Sector Allocations for Black Grouper....477
4.3.2.1 Biological Effects....478
4.3.2.2 Economic Effects....480
4.3.2.3 Social Effects....484
4.3.2.4 Administrative Effects....484
4.3.2.5 Council Conclusions....485
4.3.3 Action 15. Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper....486
4.3.3.1 Biological Effects....487
4.3.3.2 Economic Effects....488
4.3.3.3 Social Effects....489
4.3.3.4 Administrative Effects....490
4.3.3.5 Council Conclusions....490
4.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper....491
4.3.4.1 Biological Effects....491
4.3.4.2 Economic Effects....495
4.3.4.3 Social Effects....496
4.3.4.4 Administrative Effects....496
4.3.4.5 Council Conclusions....497
4.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper....498
4.3.5.1 Biological Effects....500
4.3.5.2 Economic Effects....503
4.3.5.3 Social Effects....506
4.3.5.4 Administrative Effects....507
4.3.5.5 Council Conclusions....508
4.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper 510
4.3.6.1 Biological Effects....512
4.3.6.2 Economic Effects....515
4.3.6.3 Social Effects....517
4.3.6.4 Administrative Effects....517
4.3.6.5 Council Conclusions....517
4.3.7 Action 19: Establish Jurisdictional Allocations for Mutton Snapper....519
4.3.7.1 Biological Effects....519
4.3.7.2 Economic Effects....522
4.3.7.3 Social Effects....524
4.3.7.4 Administrative Effects....524

4.3.7.5 Council Conclusions 524
4.4 Dolphin Wahoo FMP 526
4.4 Dolphin 526
4.4.1 Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin 528
4.4.1.1 Biological Effects 529
4.4.1.2 Economic Effects 530
4.4.1.3 Social Effects 532
4.4.1.4 Administrative Effects 533
4.4.1.5 Council Conclusions 533
4.4.2 Action 21: Specify Allocations for Dolphin 535
4.4.2.1 Biological Effects 535
4.4.2.2 Economic Effects 537
4.4.2.3 Social Effects 539
4.4.2.4 Administrative Effects 539
4.4.2.5 Council Conclusions 540
4.4.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin 541
4.4.3.1 Biological Effects 541
4.4.3.2 Economic Effects 543
4.4.3.3 Social Effects 544
4.4.3.4 Administrative Effects 545
4.4.3.5 Council Conclusions 545
4.4.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin 546
4.4.4.1 Biological Effects 546
4.4.4.2 Economic Effects 547
4.4.4.3 Social Effects 548
4.4.4.4 Administrative Effects 549
4.4.4.5 Council Conclusions 549
4.4.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin 550
4.4.5.1 Biological Effects 552
4.4.5.2 Economic Effects 555
4.4.5.3 Social Effects 557
4.4.5.4 Administrative Effects 558
4.4.5.5 Council Conclusions 558
4.4.6 Action 25: Establish Management Measures for Dolphin 561
4.4.6.1 Biological Effects 564
4.4.6.2 Economic Effects 572
4.4.6.3 Social Effects 585
4.4.6.4 Administrative Effects 585
4.4.6.5 Council Conclusions 585
4.5 Wahoo 587
4.5.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo 590

4.5.1.1 Biological Effects ... 590
4.5.1.2 Economic Effects ... 591
4.5.1.3 Social Effects ... 593
4.5.1.4 Administrative Effects ... 593
4.5.1.5 Council Conclusions ... 594
4.5.2 Action 27: Specify Allocations for Wahoo ... 596
4.5.2.1 Biological Effects ... 596
4.5.2.2 Economic Effects ... 597
4.5.2.3 Social Effects ... 599
4.5.2.4 Administrative Effects ... 599
4.5.2.5 Council Conclusions ... 599
4.5.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo ... 601
4.5.3.1 Biological Effects ... 601
4.5.3.2 Economic Effects ... 603
4.5.3.3 Social Effects ... 604
4.5.3.4 Administrative Effects ... 604
4.5.3.5 Council Conclusions ... 605
4.5.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo ... 606
4.5.4.1 Biological Effects ... 606
4.5.4.2 Economic Effects ... 607
4.5.4.3 Social Effects ... 608
4.5.4.4 Administrative Effects ... 609
4.5.4.5 Council Conclusions ... 609
4.5.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo ... 610
4.5.5.1 Biological Effects ... 612
4.5.5.2 Economic Effects ... 615
4.5.5.3 Social Effects ... 617
4.5.5.4 Administrative Effects ... 618
4.5.5.5 Council Conclusions ... 618
4.5.6 Action 31: Establish Management Measures for Wahoo ... 621
4.5.6.1 Biological Effects ... 623
4.5.6.2 Economic Effects ... 624
4.5.6.3 Social Effects ... 636
4.5.6.4 Administrative Effects ... 636
4.5.6.5 Council Conclusions ... 636
4.6 Sargassum FMP ... 638
4.6.1 Acceptable Biological Catch Control Rule and ABC for Sargassum 638
4.7 Golden Crab FMP ... 640
4.7.1 Acceptable Biological Catch Control Rule and ABC ... 640
4.7.2 Action 32: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Golden Crab ... 641
4.7.2.1 Biological Effects ... 641
4.7.2.2 Economic Effects ... 642

4.7.2.3 Social Effects 644
4.7.2.4 Administrative Effects 645
4.7.2.5 Council Conclusions 645
4.7.3 Action 33: Establish Accountability Measures for Golden Crab 646
4.7.3.1 Biological Effects 646
4.7.3.2 Economic Effects 647
4.7.3.3 Social Effects 647
4.7.3.4 Administrative Effects 648
4.7.3.5 Council Conclusions 648
5.0 Cumulative Effects 649
5.1 Biological 650
5.2 Socioeconomic 663
6.0 Other Things to Consider 667
6.1 Unavoidable Adverse Impacts 667
6.2 Effects of the Fishery on Essential Fish Habitat 667
6.3 Damage to Ocean and Coastal Habitats 668
6.4 Relationship of Short-Term Uses and Short-Term Productivity 669
6.5 Irreversible and Irretrievable Commitments of Resources 670
6.6 Unavailable or Incomplete Information 670
7.0 List of Preparers 672
8.0 List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent 674
9.0 References 675
10.0 Index 689

LIST OF APPENDICES

Appendix A. Alternatives the Council considered but eliminated from detailed study and a brief discussion of the reasons for their elimination

Appendix B. Glossary

Appendix C. Essential fish habitat and movement towards ecosystem-based management.

Appendix D. History of Management

Appendix E. Fishery Impact Statement

Appendix F. Regulatory Impact Review

Appendix G. Regulatory Flexibility Analysis

Appendix H. Bycatch Practicability Analysis

Appendix I. Other Applicable Laws

Appendix J. National Standard 1 Guidelines

Appendix K. Scoping Summary

Appendix L. Recreational Sector (Landings) Data

Appendix M. Landings Trends for Snapper Grouper Species

Appendix N. Description of commercial fisheries for assessed snapper grouper species under previous amendments

Appendix O. Species groupings for management of snapper grouper species

Appendix P. Economic model for commercial sector in dolphin/wahoo fishery

Appendix Q. Scientific and Statistical Committee Report – August 2010

Appendix R. DEIS Comments

LIST OF FIGURES

Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council. 1
Figure 3-1. Imports relevant to the South Atlantic Snapper Grouper Fishery Management Plan. 236
Figure 3-2. Imports relevant to the Dolphin Wahoo Fishery Management Plan. 237
Figure 3-3. Imports relevant to the South Atlantic Golden Crab Fishery Management Plan. 238
Figure 3-4. The Social Vulnerability Index applied to Florida Counties with Fishing Communities. 261
Figure 3-5. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fernandina Beach, Florida. 263
Figure 3-6. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mayport, Florida. 264
Figure 3-7. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Atlantic Beach, Florida. 264
Figure 3-8. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Jacksonville, Florida. 265
Figure 3-9. Proportion (lq) of landings and value for top fifteen species out of total landings and value for St. Augustine, Florida. 266
Figure 3-10. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Ormond Beach, Florida. 267
Figure 3-11. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Port Orange, Florida. 268
Figure 3-12. Proportion (lq) of landings and value for top fifteen species out of total landings and value for New Smyrna Beach, Florida. 268
Figure 3-13. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Cocoa, Florida. 269
Figure 3-14. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sebastian, Florida. 271
Figure 3-15. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Pierce, Florida. 272
Figure 3-16. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Stuart, Florida. 273
Figure 3-17. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Palm Beach Gardens, Florida. 274
Figure 3-18. Proportion (lq) of landings and value for top fifteen species out of total landings and value for West Palm Beach, Florida. 274
Figure 3-19. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Lauderdale, Florida. 275
Figure 3-20. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Pompano Beach, Florida. 276
Figure 3-21. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Hialeah, Florida. 277

Figure 3-22. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Miami, Florida..277
Figure 3-23. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Homestead, Florida. 278
Figure 3-24. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key Largo, Florida. 279
Figure 3-25. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Islamorada, Florida...279
Figure 3-26. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Marathon, Florida...280
Figure 3-27. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key West, Florida. 281
Figure 3-28. The Social Vulnerability Index applied to Georgia Counties. 282
Figure 3-29. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Townsend, Georgia. 285
Figure 3-30. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Savannah, Georgia..287
Figure 3-31. The Social Vulnerability Index applied to South Carolina Counties 288
Figure 3-32. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Charleston, South Carolina. 290
Figure 3-33. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mount Pleasant, South Carolina.......................................291
Figure 3-34. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Georgetown, South Carolina..292
Figure 3-35. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Little River, South Carolina...293
Figure 3-36. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Murrell’s Inlet, South Carolina. 294
Figure 3-37. The Social Vulnerability Index applied to North Carolina Counties. 295
Figure 3-38. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Southport, North Carolina..297
Figure 3-39. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Supply, North Carolina..298
Figure 3-40. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Morehead City, North Carolina..299
Figure 3-41. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wanchese, North Carolina...302
Figure 3-42. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Carolina Beach, North Carolina.......................................303
Figure 3-43. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wilmington, North Carolina. 304
Figure 3-44. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sneads Ferry, North Carolina. 305
Figure 3-45. Snapper Grouper Permits from 2001-2008..307
Figure 3-46. Snapper Grouper Dealers by Zip code of Permit Holder.........................309

Figure 3-47. Snapper Grouper Commercial Limited Permits by Zip code of Permit Holder 309
Figure 3-48. Shallow Water Grouper Regional Quotient Landings and Value for South Atlantic Coast Communities. 310
Figure 3-49. Snapper Grouper Charter Permits by Zip code of Permit Holder 310
Figure 3-50. Dolphin Wahoo Dealers by Zip code of Permit Holder 311
Figure 3-51. Dolphin Wahoo Commercial Permits by Zipcode of Permit Holder 312
Figure 3-52. Dolphin Wahoo Charter Permits by Zipcode of Permit Holder....312
Figure 3-53. Golden Crab Dealer Permits by Zip code of Permit Holder....313
Figure 3-54. Golden Crab Landings and Value Regional Quotient by Community....314
Figure 4-1. Decision process for choosing preferred AM alternatives for the recreational sector of the snapper grouper fishery....423
Figure 4-2. Landings of black grouper in whole weight (ww) in the Gulf of Mexico and South Atlantic jurisdictions A) recreational landings (MRFSS and headboat data combined) and B) commercial black grouper landings. 472
Figure 5-1. Marine protected areas implemented under Snapper Grouper Amendment 14 (SAFMC 2007)....652

LIST OF TABLES

Table 1-1. Species in the fishery management units for Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum*. 2
Table 1-2. A summary of the tools being used to achieve OY in this amendment. 4
Table 1-3. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC Control Rule (as of April 2011), proposed in **Action 4**. 9
Table 2-1. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009. .. 15
Table 2-2. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009. 16
Table 2-3. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009. 17
Table 2-4. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location. 18
Table 2-5. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs. 18
Table 2-6. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs. 19
Table 2-7a. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. 20
Table 2-7b. Summary of effects under **Action 1**. 23
Table 2-8. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as EC species. 24
Table 2-9. Summary of effects under **Action 2** (assumes removal of species under preferreds in **Action 1**). 27
Table 2-10. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach. 28
Table 2-11. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach. 30
Table 2-12. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach. 31
Table 2-13. Summary of effects under **Action 3**. 33
Table 2-14. The South Atlantic Council's SSC's ABC control rule. 35
Table 2-15. The Gulf of Mexico Fishery Management Council's (Gulf of Mexico Council) SSC's ABC control rule for unassessed species. 36
Table 2-16. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC control rule (**Table 2-14**). 38
Table 2-17. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**. 38
Table 2-18. ABCs (landed catch) for assessed snapper grouper species. ABCs are being adopted in this amendment for greater amberjack, yellowtail snapper, mutton snapper, and black grouper. 41
Table 2-19. ABC values for unassessed species, which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2, 3** and **5**. 42

Table 2-20a. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3a from **Table 2-15**. 44
Table 2-20b. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3b from **Table 2-15**. 45
Table 2-21. Summary of effects under **Action 4**. 48
Table 2-22. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively. 50
Table 2-23. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**. 52
Table 2-24. Summary of effects under **Action 5**. 55
Table 2-25. Annual Catch Limits and OY information in place. 57
Table 2-26. ACLs and OYs for species based on **Alternative 2 (Preferred)** and **Alternatives 3** and **4**. 58
Table 2-27. Annual catch limits and optimum yield (lbs whole weight)for snapper gruper species to be set in this amendment. 60
Table 2-28. Summary of effects under **Action 6**. 62
Table 2-29. Summary of effects under **Action 7**. 66
Table 2-30. Species that are part of a species complex and require recreational AMs. ... 68
Table 2-31. Species that have been assigned individual ACLs and require recreational AMs. 68
Table 2-32. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**. 71
Table 2-33. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009. 72
Table 2-34. Summary of effects under **Action 8**. 77
Table 2-35. Allocation of wreckfish (lbs whole weight) by sector. 81
Table 2-36. Summary of effects under **Action 9**. 83
Table 2-37. ACLs (lbs whole weight) for wreckfish. 84
Table 2-38. Summary of effects under **Action 10**. 85
Table 2-39. Summary of effects under **Action 11**. 90
Table 2-40. Summary of effects under **Action 12**. 93
Table 2-41. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ABC of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**. 95
Table 2-42. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**. 95
Table 2-43. Summary of effects under **Action 13**. 97
Table 2-44. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**. 99
Table 2-45. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in **Subalternative 2e (Preferred)**....... 99

Table 2-46. Summary of effects under **Action 14**. 101
Table 2-47. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**. ... 103
Table 2-48. Summary of effects under **Action 15**. 105
Table 2-49. Current commercial regulations for black grouper.................................. 106
Table 2-50. Summary of effects under **Action 16**. 108
Table 2-51. Existing recreational regulations for black grouper................................. 109
Table 2-52. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 2-33**). Values are in lbs whole weight. 111
Table 2-53. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper. 111
Table 2-54. Summary of effects under **Action 17**. 115
Table 2-55a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdiction allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic. 118
Table 2-55b. Yellowtail snapper values (lbs whole weight) for ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic. 118
Table 2-56. Summary of effects under **Action 18.** 119
Table 2-57. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic. 123
Table 2-58. Summary of effects under **Action 19**. 123
Table 2-59. Summary of effects under **Action 20**. 125
Table 2-60. Summary of effects under **Action 21**. 127
Table 2-61. ACL formula, ACL/OY values (lbs whole weight) for dolphin under **Alternatives 2 (Preferred)-5**. Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in **Action 21**. 128
Table 2-62. Summary of effects under **Action 22**. 130
Table 2-63. The commercial sector ACT for dolphin for each of the alternatives. Values are in lbs gutted weight. 130
Table 2-64. Summary of effects under **Action 23**. 132
Table 2-65. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes.. 133
Table 2-66. The recreational ACT for each of the alternatives. Values are in lbs whole weight. 133
Table 2-67. Summary of effects under **Action 24**. 138
Table 2-68. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.. 143
Table 2-69. Summary of effects under **Action 25**. 146
Table 2-70. Summary of effects under **Action 26**. 150
Table 2-71. Summary of effects under **Action 27**. 153
Table 2-72. ACL formula, ACL/OY values (lbs whole weight) for wahoo under **Alternatives 2-5**. Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in **Action 26**. 154

Table 2-73. Summary of effects under **Action 28**. 155
Table 2-74. Commercial sector ACTs for wahoo for each of the alternatives. 156
Table 2-75. Summary of effects under **Action 29**. 158
Table 2-76. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes. 159
Table 2-77. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight. 159
Table 2-78. Summary of effects under **Action 30**. 164
Table 2-79. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions. 168
Table 2-80. Summary of effects under **Action 31**. 169
Table 2-81. Summary of effects under **Action 32**. 174
Table 2-82. Summary of effects under **Action 33**. 176
Table 3-1. Annual anticipated takes of ESA-listed species for Comprehensive ACL Amendment fisheries. 185
Table 3-2. Unique Numbers of Permits by Fishery, 2005-2010. 191
Table 3-3. Average annual economic activity associated with the harvest of the respective species. All dollar values are in 2008 dollars. 195
Table 3-4. Snapper grouper landings (not including wreckfish), vessels, dealers, effort (trips by species), price, and revenue, 2005-2009... 196
Table 3-5. Numbers of wreckfish dealers and vessels landing wreckfish, 2005-2009. 197
Table 3-6. Number of trips landing wreckfish, 2005-2009. 197
Table 3-7. Wreckfish landings (gutted weight), 2005-2009. 197
Table 3-8. Ex-vessel prices and revenues for wreckfish, 2005-2009.......................... 197
Table 3-9. Number of vessels, dealers, and trips landing dolphin, by state, 2005-2009.198
Table 3-10. Annual landings (lbs whole weight) and value (dollars) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction. 199
Table 3-11. Number of vessels, dealers, and trips landing wahoo, by state, 2005-2009.200
Table 3-12. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for wahoo, 2005-2009.. 201
Table 3-13. Number of vessels harvesting golden crab, 2005-2009. 202
Table 3-14. Number of trips landing golden crab, 2005-2009.................................... 202
Table 3-15. Landings (lbs) of golden crab, 2005-2009. 202
Table 3-16. Golden crab ex-vessel prices and revenue, 2005-2009............................ 202
Table 3-17. Landings (gutted weight) of snapper grouper species (not including wreckfish) by state and year, 2005-2009. 203
Table 3-18. Number of trips landing snapper grouper species (not including) by state, 2005-2009. 203
Table 3-19. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish, warsaw grouper, or speckled hind) by state and species, 2005-2009. .. 204
Table 3-20. Average annual price and ex-vessel revenues of snapper grouper species (not including wreckfish) by state, 2005-2009. 205
Table 3-21. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish) by major gear type, 2005-2009. 206
Table 3-22. Number of trips landing snapper grouper species (not including wreckfish) by gear, 2005-2009. 206
Table 3-23. Average annual price and ex-vessel revenue of snapper grouper species (not including wreckfish) by gear and year, 2005-2009. 207
Table 3-24. Number of vessels, dealers, and trips landing spadefish, by state, 2005-2009.208

Table 3-25. Landings (gutted lbs), average annual ex-vessel prices, and ex-vessel revenues for spadefish, 2005-2009. 208
Table 3-26. Number of vessels, dealers, and trips landing blue runner, by state, 2005-2009. 209
Table 3-27. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for blue runner, 2005-2009. 210
Table 3-28. Number of vessels, dealers, and trips landing yellowedge grouper 211
blueline tilefish and silk snapper, by state, 2005-2009. 211
Table 3-29. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowedge grouper 212
blueline tilefish and silk snapper, 2005-2009. 212
Table 3-30. Number of vessels, dealers, and trips landing greater amberjack, by state, 2005-2009. 213
Table 3-31. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for greater amberjack, 2005-2009. 214
Table 3-32. Number of vessels, dealers, and trips landing gray triggerfish, by state, 2005-2009. 215
Table 3-33. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray triggerfish, 2005-2009. 216
Table 3-34. Number of vessels, dealers, and trips landing hogfish, by state, 2005-2009. 217
Table 3-35. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for hogfish, 2005-2009. 218
Table 3-36. Number of vessels, dealers, and trips landing almaco jack, banded rudderfish, and lesser amberjack, by state, 2005-2009. 219
Table 3-37. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for lesser amberjack, banded rudderfish, and almaco jack, 2005-2009. 220
Table 3-38. Number of vessels, dealers, and trips landing mutton snapper, by state, 2005-2009. 221
Table 3-39. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for mutton snapper, 2005-2009. 222
Table 3-40. Number of vessels, dealers, and trips landing red hind, rock hind, tomtate, and white grunt, by state, 2005-2009. 223
Table 3-41. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red hind, rock hind, tomtate, and white grunt, 2005-2009. 224
Table 3-42. Number of vessels, dealers, and trips landing red porgy, by state, 2005-2009. 225
Table 3-43. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red porgy, 2005-2009. 226
Table 3-44. Number of vessels, dealers, and trips landing scamp, by state, 2005-2009. 227
Table 3-45. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for scamp, 2005-2009. 228
Table 3-46. Number of vessels, dealers, and trips landing gray snapper, lane snapper, and cubera snapper, by state, 2005-2009. 229
Table 3-47. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray snapper, lane snapper, and cubera snapper, 2005-2009. 230
Table 3-48. Number of vessels, dealers, and trips landing yellowtail snapper, by state, 2005-2009. 231
Table 3-49. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowtail snapper, 2005-2009. 232

Table 3-50. Number of vessels, dealers, and trips landing black grouper, by state, 2005-2009. 233
Table 3-51. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for black grouper, 2005-2009.......... 234
Table 3-52. Average annual snapper grouper recreational target effort in the South Atlantic, across all modes, 2005-2009.......... 239
Table 3-53. Average annual snapper grouper recreational catch effort in the South Atlantic, across all modes, 2005-2009.......... 240
Table 3-54. Average annual snapper grouper recreational target effort by mode in the South Atlantic, across all states, 2005-2009.......... 241
Table 3-55. Average annual snapper grouper recreational catch effort by mode in the South Atlantic, across all states, 2005-2009.......... 242
Table 3-56. Average annual snapper grouper recreational effort, Florida, 2005-2009. 243
Table 3-57. Average annual snapper grouper recreational effort, Georgia, 2005-2009.244
Table 3-58. Average annual snapper grouper recreational effort, North Carolina, 2005-2009. 245
Table 3-59. Average annual snapper grouper recreational effort, South Carolina, 2005-2009. 246
Table 3-60. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all modes, 2005-2009.......... 247
Table 3-61. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all modes, 2005-2009.......... 247
Table 3-62. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all states, 2005-2009. 247
Table 3-63. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all states, 2005-2009. 247
Table 3-64. Average annual dolphin and wahoo recreational effort, Florida, 2005-2009.248
Table 3-65. Average annual dolphin and wahoo recreational effort, Georgia, 2005-2009.248
Table 3-66. Average annual dolphin and wahoo recreational effort, North Carolina, 2005-2009. 248
Table 3-67. Average annual dolphin and wahoo recreational effort, South Carolina, 2005-2009. 248
Table 3-68. Southeast headboat angler days, 2005-2009. 249
Table 3-69. Number of South Atlantic for-hire snapper grouper vessel permits.......... 250
Table 3-70. Number of South Atlantic for-hire dolphin/wahoo vessel permits.......... 250
Table 3-71. Summary of snapper grouper target trips (2005-2009 average) and associated economic activity (2008 dollars) by state and mode.......... 254
Table 3-72. Summary of SWG target trips (2005-2009 average) and associated economic activity (2008 dollars). SWG = gag, red grouper, scamp, black grouper, yellowfin grouper, and speckled hind. 254
Table 3-73. Summary of SW snapper target trips (2005-2009 average) and associated economic activity (2008 dollars). SW snapper = yellowtail snapper, gray snapper, lane snapper, and mutton snapper.......... 255
Table 3-74. Summary of dolphin target trips (2005-2009 average) and associated economic activity (2008 dollars).......... 256
Table 3-75. Summary of wahoo target trips (2005-2009 average) and associated economic activity (2008 dollars).......... 257
Table 3-76. Marine Related Employment for 2007 in Florida East Coast Counties.......... 262
Table 3-77. Marine Related Employment for 2007 in Florida Southeast Coast Counties.270

Table 3-78. Marine Related Employment for 2007 in Georgia Coastal Counties. 283
Table 3-79. Marine Related Employment for 2007 in South Carolina Coastal Counties.289
Table 3-80. Marine Related Employment for 2007 in North Carolina Coastal Counties.296
Table 3-81. South Atlantic Recreational Fishing Communities. 308
Table 4-1. Summary of current federal regulations for species proposed to be removed from the snapper grouper FMU under **Action 1**, **Alternatives 2, 5,** and **9 (Preferreds)**. 319
Table 4-2. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.320
Table 4-3. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009. 321
Table 4-4. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009. 322
Table 4-5. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters. 323
Table 4-6. State and federal combined average commercial and recreational landings (lbs whole weight) of species considered for removal from the snapper grouper FMU under **Alternative 5 (Preferred)** during 2005-2009. 324
Table 4-7. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs. 324
Table 4-8. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs. 325
Table 4-9. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters. 326
Table 4-10. Average state and federal (combined) landings (lbs whole weight) from all sectors, for tomtate, knobbed porgy, jolthead porgy, and whitebone porgy, in **Alternative 8**, from 2005-2009. 328
Table 4-11. Taxa taken on trips during 2005-2009 when at least 1 pound of sheepshead was landed. 329
Table 4-12. Average landings (2005-2009) for species removed from the snapper grouper FMU under all alternatives for **Action 1**. 333
Table 4-13. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species. 340
Table 4-14. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs as specified in **Alternative 2**.***... 343
Table 4-15. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 1,000 lbs as specified in **Alternative 3**.[1,2] 344
Table 4-16. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 2,500 lbs as specified in **Alternative 4**.[1,2] 344
Table 4-17. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 5,000 lbs as specified in **Alternative 5**.[1,2] 345

Table 4-18. Snapper grouper species that met three out of four NS1 criteria as Ecosystem Component species, as specified in **Alternative 6 (Preferred)**. 346
Table 4-19. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.. 349
Table 4-20. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach. 351
Table 4-21. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach. 352
Table 4-22. The South Atlantic Council's SSC's ABC Control Rule. 365
Table 4-23. The Gulf of Mexico Council's SSC's Acceptable Biological Catch Control Rule for unassessed species. Note: The South Atlantic Council is only considering Tiers 3a and 3b in **Alternative 6**. 366
Table 4-24. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the Control Rule (**Table 4-22**). 367
Table 4-25. ABCs (landed catch) for assessed snapper grouper species based on recommendation from the S. Atlantic Council's SSC. 368
Table 4-26. OFL and ABC values for unassessed species which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2**, **3** and **5**. 369
Table 4-27. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**. 371
Table 4-28a. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3a from **Table 4-23**. 375
Table 4-28b. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3b from **Table 4-23**. 375
Table 4-29. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively. 381
Table 4-30. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**. Allocations will be established for red grouper in Amendment 24. Allocations for wreckfish and black grouper are addressed in **Actions 9** and **14**, respectively. 383
Table 4-31a. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5.** 389
Table 4-31b. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5.** 391
Table 4-32. Annual Catch Limits and OY information in place for snapper grouper species. 396
Table 4-33. ACLs and OYs for species based on preferred **Alternative 2** and **Alternatives 3** and **4**. The numbers below reflect the preferred ABC values as per **Table 4-27**. .. 397
Table 4-34. Annual catch limits and optimum yield (lbs whole weight) by sectors as set in this amendment. 399
Table 4-35. ACLs for snapper grouper species where ACL=OY=ABC, **Alternative 2 (Preferred)** for **Action 6**. 405

Table 4-36. ACLs for snapper grouper species where ACL=OY=90%ABC, **Alternative 3** for **Action 6**. ... 407
Table 4-37. ACLs for snapper grouper species where ACL=OY=80%ABC, **Alternative 4** for **Action 6**. ... 409
Table 4-38. Commercial ACTs as a proportion of the ACLs under **Subalternatives 2b** and **2c** relative to **Subalternative 2a** for **Action 7**. ... 419
Table 4-39. Species that are part of Species Complex ACLs that require recreational AMs ... 424
Table 4-40. Species that have been assigned individual ACLs and require recreational AMs ... 424
Table 4-41. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**. ... 428
Table 4-42. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009. ... 429
Table 4-43. Recreational ACTs as a proportion of the ACLs under **Subalternatives 2c** and **2d** relative to **Subalternative 2b** for **Action 8**. ... 438
Table 4-44. Changes in wreckfish landings, gross revenue and consumer surplus for **Action 9**. ... 448
Table 4-45. Changes in landings, gross revenue and consumer surplus under **Alternatives 3** and **4** relative to **Alternative 2** for **Action 10**. ... 452
Table 4-46. Black grouper landings and discard projections (lbs whole weight) for 2011-2015. ... 469
Table 4-47. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ACL of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**. ... 469
Table 4-48. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**. ... 469
Table 4-49. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for black grouper, **Action 13**. ACLs are in lbs whole weight. ... 474
Table 4-50. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**. ... 478
Table 4-51. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in preferred **Subalternative 2e**. ... 479
Table 4-52a. Changes in gross revenue and consumer surplus under **Alternative 2** for **Action 14**. ... 482
Table 4-52b. Changes in gross revenue and consumer surplus under **Alternative 3** for **Action 14**. ... 483
Table 4-53. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**. ... 486
Table 4-54. Changes in discounted gross revenue and consumer surplus under **Alternatives 2, 3, and 4** relative to **Alternative 1 (No Action)** for **Action 15**. ... 489
Table 4-55. Current commercial regulations for black grouper. ... 491
Table 4-56. Changes in gross revenue under **Alternative 2** for **Action 16**. ... 496
Table 4-57a. Current recreational regulations for black grouper. ... 498

Table 4-57b. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 4-42**). Values are in lbs whole weight. 500
Table 4-58. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper. 500
Table 4-59. Changes in recreational landings and consumer surplus under **Alternative 2** for **Action 17**. 505
Table 4-60a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic. 511
Table 4-60b. Values for ACL (lbs whole weight; commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic. 511
Table 4-61. The OFL and ABC recommendations for yellowtail snapper from the South Atlantic Scientific and Statistical Committee. 512
Table 4-62. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for Yellowtail Snapper, **Action 18**. ACLs are in lbs whole weight. 516
Table 4-63. OFL and ABC Recommendations from Gulf Council's SSC. 520
Table 4-64. Mutton snapper ABC (landed catch lbs ww) in Gulf of Mexico and South Atlantic based on jurisdictional allocation alternatives. 520
Values proposed by the South Atlantuc Council are shown in **Table 4-65** below......... 520
Table 4-65. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic. 520
Table 4-66. Changes in South Atlantic Commercial Gross Revenue, Recreational Consumer Surplus, and Total Economic Benefits for **Alternatives 2-4** relative to **Alternative 1 (No Action)** under **Action 19**. ACLs are in lbs whole weight. Based on ABC recommendation from South Atlantic Council's SSC. Assumes ACL = ABC. 523
Table 4-67a. Landings data used by the SSC in April 2010 to develop the OFL value. 528
Table 4-67b. Corrected and updated landings data for use by the SSC to develop the OFL value. 528
Table 4-68. ABC for dolphin (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009 (Tier 3a of the Gulf of Mexico Council's SSC ABC control rule. 530
Table 4-69. Predicted ex-vessel gross revenues attributed to dolphin landings after the establishment of an ABC control rule. 531
Table 4-70. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for dolphin. 532
Table 4-71. Annual landings (pounds whole weight) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction... 536
Table 4-72. Predicted ex-vessel gross revenues attributed to landings of dolphin after the establishment of sector allocations... 538
Table 4-73. Predicted potential economic value to the recreational sector after the establishment of sector allocations for dolphin... 539
Table 4-74. ACL formula, ACL, and OY values (lbs whole weight) for dolphin under **Alternatives 2-5**.. 543

Table 4-75. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACL formulas. 543
Table 4-76. Predicted potential economic value to the recreational sector for different ACL formulas for dolphin. 544
Table 4-77. The commercial sector ACT for each of the alternatives. 546
Table 4-78. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACT formulas. 548
Table 4-79. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes. 550
Table 4-80. The recreational ACT for dolphin for each of the alternatives. Values are in lbs whole weight. 551
Table 4-81. Predicted potential economic value to the recreational sector for different ACT formulas for dolphin. 555
Table 4-82. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions. 563
Table 4-83. Average size (inches FL) of dolphin landed by state during 2004-2008... 565
Table 4-84. Percentage of dolphin less than 20 inches FL for Florida, Georgia, South Carolina, and North Carolina during 2004-2008. 566
Table 4-85a. Reduction in harvest provided by establishing a minimum size limit in South Carolina and North Carolina of 20 inches FL or greater based on data from 2004-2008. 566
Table 4-85b. Reduction in harvest provided by increasing the minimum size limit for dolphin in Florida and Georgia from 20 inches FL based on data from 2004-2008. 567
Table 4-86. Reduction in harvest of dolphin for Atlantic states provided by a reduction in the vessel limit. 567
Table 4-87. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from Georgia, South Carolina, and North Carolina (North of 31^{o}N) for 2005-2008. 568
Table 4-88. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east Florida (South of 31^{o}N) for 2005-2008. 569
Table 4-89. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east FL to NC during 2005-2008. 570
Table 4-90. Reduction in harvest of dolphin provided by reduction in the bag limit. Based on data from NC to FL during 2007-2009. 571
Table 4-91. Predicted ex-vessel gross revenues attributed to commercial landings of dolphin after establishment of management measures for dolphin. 574
Table 4-92. Foregone revenue due to prohibiting bag limit sales of dolphin from for-hire vessels under **Alternative 2** for **Action 25.** 575
Table 4-93. Reduction in economic value to the recreational sector in South Carolina with a 20 inch minimum size limit for dolphin under **Alternative 3** for **Action 25**............. 576
Table 4-94. Reduction in economic value to the recreational sector in North and South Carolina with a 20 inch recreational minimum size limit for dolphin (**Alternative 4**)......... 577
Table 4-95. Reduction in economic value to the recreational sector in Florida and Georgia with a 22-inch recreational minimum size limit for dolphin (**Alternative 5**). 578
Table 4-96. Reduction in economic value to the recreational sector in Florida and Georgia with a 24 inch recreational minimum size limit for dolphin (**Alternative 5**). 579
Table 4-97. Reduction in economic value to the recreational sector with a 25% reduction in the boat limit to 45 dolphin (**Subalternative 6a)**. 580

Table 4-98. Reduction in economic value to the recreational sector with a 33% reduction in the boat limit to 40 dolphin (**Subalternative 6b**). 581
Table 4-99. Reduction in economic value to the recreational sector with a 50% reduction in the boat limit to 30 dolphin (**Subalternative 6c**). 582
Table 4-100. Reduction in economic value to the recreational sector with a reduction in the bag limit to 9 dolphin. 583
Table 4-101. Summary of the reduction in economic value to the recreational sector across alternatives in **Action 25**. 584
Table 4-102a. Wahoo landings (whole weight) used by the SSC in April 2010. 588
Table 4-102b. Wahoo landings (whole weight) used by the SSC in April 2011. 589
Table 4-103. ABC for wahoo (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009. 591
Table 4-104. Predicted ex-vessel gross revenues attributed to landings of wahoo after establishment of ABC Control Rule for wahoo. 592
Table 4-105. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for wahoo. 593
Table 4-106. Annual landings of wahoo by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction. 597
Table 4-107. Predicted ex-vessel gross revenue attributed to landings of wahoo after the establishment of sector allocations. Commercial ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and no commercial sector ACT for wahoo (**Action 29**). 598
Table 4-108. Predicted potential economic value to the recreational sector after the establishment of sector allocations for wahoo. 599
Table 4-109. ACL formula, ACL, and OY values (lbs whole weight) for wahoo under **Alternatives 2-5**. 601
Table 4-110. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACL formulas. 603
Table 4-111. Predicted potential economic value to the recreational sector for different ACL formulas for wahoo. 604
Table 4-112. Commercial sector ACTs for wahoo for each of the alternatives. 606
Table 4-113. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACT formulas. 608
Table 4-114. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes. 610
Table 4-115. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight. 610
Table 4-116. Predicted potential economic value to the recreational sector for different ACT formulas for wahoo. 615
Table 4-117. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions. 622
Table 4-118. Reduction (percent) in harvest of wahoo for Atlantic states provided by a reduction in the vessel limit. 623
Table 4-119. Change in economic value to the recreational sector with a 12-wahoo boat limit (**Subalternative 2a**). 625
Table 4-120. Change in economic value to the recreational sector with an 11-wahoo boat limit (**Subalternative 2b**). 626
Table 4-121. Change in economic value to the recreational sector with a 10-wahoo boat limit (**Subalternative 2c**). 627

Table 4-122. Change in economic value to the recreational sector with a 9-wahoo boat limit (**Subalternative 2d**). 628
Table 4-123. Change in economic value to the recreational sector with a 8-wahoo boat limit (**Subalternative 2e**).......... 629
Table 4-124. Change in economic value to the recreational sector with a 7-wahoo boat limit (**Subalternative 2f**). 630
Table 4-125. Change in economic value to the recreational sector with a 6-wahoo boat limit (**Subalternative 2g**). 631
Table 4-126. Change in economic value to the recreational sector with a 5-wahoo boat limit (**Subalternative 2h**). 632
Table 4-127. Change in economic value to the recreational sector with a 4-wahoo boat limit (**Subalternative 2i**). 633
Table 4-128. Change in economic value to the recreational sector with a 3-wahoo boat limit (**Subalternative 2j**). 634
Table 4-129. Change in economic value to the recreational sector with a 2-wahoo boat limit (**Subalternative 2k**). 635
Table 4-130. Summary of the change in economic value to the recreational sector across alternatives in **Action 31**. 636
Table 4-131. Anticipated change in golden crab landings and gross revenue for alternatives under **Action 31**. 644
Table 5-1. The cause and effect relationship of fishing and regulatory actions for snapper grouper species within the time period of the Cumulative Effects Analysis (CEA).658
Table 5-2. The cause and effect relationship of fishing and regulatory actions for dolphin and wahoo within the time period of the Cumulative Effects Analysis (CEA). 661
Table 5-3. The cause and effect relationship of fishing and regulatory actions for golden crab within the time period of the Cumulative Effects Analysis (CEA).......... 662

SUMMARY

of the
COMPREHENSIVE ANNUAL CATCH LIMIT AMENDMENT

The South Atlantic Fishery Management Council (South Atlantic Council) is developing actions for many species. The proposed actions are specified in the Comprehensive Annual Catch Limit (ACL) Amendment. The amendment is referred to as "comprehensive" because this one document amends two or more fishery management plans; actions are taken in one document as the actions are similar in nature.

This document is intended to serve as a SUMMARY for all the actions and alternatives in the Comprehensive ACL Amendment. It outlines the alternatives with a focus on the preferred alternatives. It also provides background information and includes a summary of the expected biological and socio-economic effects from the management measures.

<u>Table of Contents for the Summary</u>

Background S-2
- What Actions Are Being Proposed? S-2
- Who Is Proposing Action? S-2
- Where is the Project Located? S-3
- Which Species Will Be Affected? S-3
- Why Is The Council Considering Action? S-3

Categories of Actions S-4

Actions by Fishery Management Plan S-5
- Snapper Grouper S-5
  - Reorganization of Unit (Species Removal) S-5
  - Reorganization of Unit (Ecosystem Component) S-6
  - Reorganization of Unit (Groupings) S-7
  - Preferred Alternatives S-8
- Snapper Grouper (Wreckfish) S-16
- Snapper Grouper (Black Grouper) S-18
- Dolphin S-23
- Wahoo S-25
- Golden Crab S-27
- Sargassum S-29

Effects S-30

BACKGROUND

What Actions Are Being Proposed?

The South Atlantic Fishery Management Council (South Atlantic Council) is proposing, where applicable, the following actions for many managed species:

- changes to fishery management unit;
- control rules for acceptable biological catch;
- annual catch limits;
- annual catch targets;
- allocations; and
- accountability measures.

Who is Proposing Action?

The South Atlantic Council is proposing the actions. The South Atlantic Council develops the actions and submits them to the National Marine Fisheries Service (NOAA Fisheries Service) who ultimately approves, disapproves, or partially approves the actions in the amendment on behalf of the Secretary of Commerce. NOAA Fisheries Service is an agency in the National Oceanic and Atmospheric Administration.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks
- Consists of 13 voting members who are appointed by the Secretary of Commerce and 4 non-voting members
- Management area is from 3 to 200 miles off the coasts of North Carolina, South Carolina, Georgia, and Florida through the Atlantic side of Key West
- Develops fishery management plans and recommends actions to NMFS and NOAA for implementation

Where is the Project Located?

Management of the federal snapper grouper and golden crab fisheries is located off the South Atlantic in the 3-200 nautical mile (nm) U.S. Exclusive Economic Zone (EEZ) and is conducted under the Fishery Management Plans (FMPs) for Snapper Grouper and Golden Crab of the South Atlantic Region (SAFMC 1983 and 1995, respectively) (**Figure 1-1**). The dolphin wahoo fishery extends from Maine through the east coast of Florida, and is managed under the FMP for Dolphin Wahoo of the Atlantic (SAFMC 2003a). The FMP for pelagic *Sargassum* habitat in the South Atlantic Region (SAFMC 2002) prohibits harvest south of the North Carolina/South Carolina state boundary.

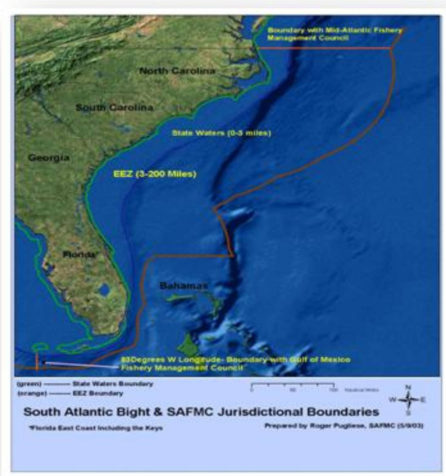


Figure 1-1. Jurisdictional boundaries of the South Atlantic Council.

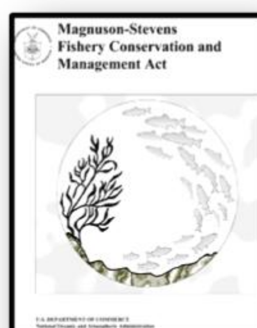
Which Species Will Be Affected?

These actions would apply to species in the following fishery management plans:

- Snapper Grouper
- Dolphin Wahoo
- Golden Crab
- Sargassum

Why is the South Atlantic Council Considering Action?

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. Revisions to the Magnuson-Stevens Act in 2006 required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A and 17B to the Snapper Grouper FMP specified ACLs for species subject to overfishing. The South Atlantic Council is addressing the remaining species in this amendment, in addition to dolphin, wahoo, golden crab, and *Sargassum*.



CATERGORIES OF ACTIONS

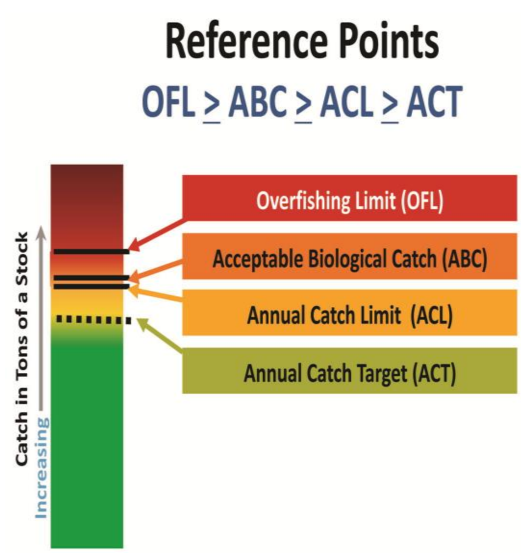
There are six categories of actions in the Comprehensive ACL Amendment.

- **Changes to Fishery Management Unit**

The South Atlantic Council is considering removing species from the Snapper Grouper Fishery Management Unit in addition to designating ecosystem component species, and organizing species into complexes.

- **Control Rules for Acceptable Biological Catch**

Acceptable Biological Catch (ABC) is the range of estimated allowable catch for a species or species group. The *ABC Control Rule* is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases.



- **Allocations**

Allocation is a distribution of the opportunity to fish among user groups or individuals. The share a user group gets is usually based on historic harvest amounts.

- **Annual Catch Limits**

Annual catch limit (ACL) is the level of catch that triggers accountability measures. It is expressed either in pounds or numbers of fish. The level may not exceed the Acceptable Biological Catch.

- **Annual Catch Targets**

Annual catch target (ACT) is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The ACTs are recommended in the system of accountability measures so that ACL is not exceeded, and may be considered “soft targets” (do not trigger action).

- **Accountability Measures**

Accountability measure (AM) is an action taken in order to avoid exceeding an identified catch level (usually the ACL). The following are four AMs: specification of an ACT, in-season regulations changes, post-season regulation changes, and specification of other management measures (e.g., bag limits).

ACTIONS BY FISHERY MANAGEMENT PLAN

Snapper Grouper

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(1. Removing Species from Unit)

The South Atlantic Council manages 73 species in the Snapper Grouper FMU. Most of these fish represent a small portion of the overall catch, or are mostly caught in state waters. Therefore, the Council is proposing a re-organization of the snapper grouper complex using the following three methods: (1) removing species from the complex, (2) designation of ecosystem component species, and (3) grouping species together for management purposes. The species highlighted below would be removed from the complex under the current preferred alternatives.

Removal

Snappers	Groupers	Grunts	Jacks
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

= Species to be Removed

The preferred alternative would remove species based on the following criteria:

(1) 95% (or greater) of landings in state waters*
(2) If managed under the Florida Marine Life Rule
(3) Zero reported landings from 2005-2009

*Except mutton snapper and hogfish

Will those species removed have less biological protection?
If species are removed from the FMU, federal regulations would no longer apply when caught in federal waters. Most of these species have little management in federal waters. State regulations would continue to apply when caught in state waters. Depending on the species removed, there would be no effects to the stocks or little potential for negative effects. Many of these fish to be removed are primarily caught in state waters so removing federal regulations would be expected to cause little to no effect.

A comparison of the effects for all the alternatives for actions considered can be found in Section 2 of the amendment.

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(2. Ecosystem Component Species)

In addition to removing species (those highlighted) in the previous action, the South Atlantic Council is proposing designation of some species as Ecosystem Component (EC) species. The EC species would be retained in the Snapper Grouper FMU, but would not have a specification for ACLs, AMs, or management measures such as bag limits and size limits. The Council is also proposing grouping many of the remaining species into six complexes (see next action).

Ecosystem

Snappers	**Groupers**	**Grunts**	**Jacks**
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

= Species to be Removed

= Species to be designated as Ecosystem Component Species

The National Standard 1 (NS 1) guidelines pertaining to ecosystem component species (74 FR 3178; Section 50 CFR 600.310 (d) (5) (i)) indicate a species should meet four criteria to be considered for possible classification as an EC species:

(1) Be a non-target species or non-target stock;
(2) not be determined to be subject to overfishing, approaching overfished, or overfished;
(3) not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and
(4) not generally be retained for sale or personal use.

The preferred alternative would designate species that meet three out of four criteria outlined in the NS 1 guidelines as ecosystem component species.

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(3. Grouping Species)

The South Atlantic Council is proposing grouping the species into six complexes. The species to be removed and those to be designated as ecosystem component species are highlighted brown and green, respectively. Ecosystem component species would be retained in the Snapper Grouper FMU, but would not have a specification for ACL, AM, or management measures such as bag limits and size limits.

The preferred alternative would group species based on species associations using one or more of the following criteria:

1. life history;
2. catch statistics from commercial logbook and observer data; and
3. recreational headboat logbook, private/charter survey, and fishery-independent MARMAP data.

Snappers	Groupers	Grunts	Jacks
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

The Remaining Species Would Not Be Grouped

Atlantic spadefish
Bar jack
Black grouper
Black sea bass
Blue runner
Gag
Golden tilefish
Goliath grouper
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau grouper
Red grouper
Scamp
Snowy grouper
Speckled hind
Red porgy
Red snapper
Vermilion snapper
Warsaw grouper
Wreckfish
Yellowtail snapper

Groupings

Complex 1
Deepwater
Black snapper
Blackfin snapper
Blueline tilefish
Misty grouper
Queen snapper
Sand tilefish
Silk snapper
Yellowedge grouper

Complex 2
Jacks
Almaco jack
Banded rudderfish
Lesser amberjack

Complex 3
Snappers
Cubera snapper
Dog snapper
Gray snapper
Lane snapper
Mahogany snapper

Complex 4
Grunts
Margate
Tomtate
Sailors choice
White grunt

Complex 5
Shallow-water Groupers
Coney
Graysby
Red hind
Rock hind
Yellowfin grouper
Yellowmouth grouper

Complex 6
Porgies
Jolthead porgy
Knobbed porgy
Saucereye porgy
Scup
Whitebone porgy

PREFERRED ALTERNATIVES

	Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**	unknown	
Acceptable Biological Catch **(ABC)**	bt: Highest pre-2006 landings x 2	bt: 592,602
	bf, bs, mg, qs, st: 3rd highest landings 1999-2008	bs: 382 bf: 4,154 mg: 2,863 qs: 9,344 st: 8,823
	ss, yg: Median landings 1999-2008	ss: 27,519 yg: 30,221
Allocations	(50% X average of 1986-2008) + (50% X average of 2006-2008)	bs: 91.52% comm.; 8.48%rec. bf:31.68% comm.; 68.32%rec. bt:47.39% comm.; 52.61%rec. mg:70.91%comm.; 29.09%rec. qs:93.12% comm.; 6.88%rec. st:16.22% comm.; 83.78%rec. ss:73.14% comm.; 26.86%rec. yg:96.19% comm.; 3.81%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	ACL=OY=ABC	343,869 comm. 332,039 rec.
Accountability Measures: Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	205,516
Accountability Measures: In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
Accountability Measures: Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 1
Deepwater

Black snapper (bs)
Blackfin snapper (bf)
Blueline tilefish (bt)
Misty grouper (mg)
Queen snapper (qs)
Sand tilefish (st)
Silk snapper (ss)
Yellowedge grouper (yg)

How would the groupings work?

The ACL for each species in a complex is totaled for one complex ACL. The total ACL will be the trigger for the AM. In other words, when reported landings are expected to exceed the complex ACL in a given fishing season, action will be taken.

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		3RD highest landings 1999-2008	aj: 291,922 br: 152,999 la: 10,568
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	aj: 51.53% comm.; 48.47%rec. br: 25.25% comm.; 74.75%rec. la: 46.62% comm.; 53.38%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	193,999 comm. 261,490 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	186,972
Accountability Measures	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
Accountability Measures	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 2
Jacks

Almaco jack
(aj)
Banded rudderfish
(br)
Lesser amberjack
(la)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level (OFL)		unknown	
Acceptable Biological Catch (ABC)		3[RD] highest landings 1999-2008	cs: 31,772 ds:7,523 gs: 894,019 ls: 153,466 ms: 160
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	cs:19.75% comm.; 80.25%rec. ds:9.41% comm.; 90.59%rec. gs: 20.00% comm.; 80.00%rec. ls: 12.21% comm.; 87.79%rec. ms: 5.05% comm.; 94.95%rec.
Complex Annual Catch Limit (ACL) & Optimum Yield (OY)		ACL=OY=ABC	204,552 comm. 882,388 rec.
Accountability Measures	Recreational Annual Catch Target (ACT)	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	775,001
Accountability Measures	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
Accountability Measures	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 3
Snappers

Cubera snapper (cs)
Dog snapper (ds)
Gray snapper (gs)
Lane snapper (ls)
Mahogany snapper (ms)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	unknown
Acceptable Biological Catch **(ABC)**		mg, tt, sc: 3RD highest landings 1999-2008	mg: 34,662 tt: 70,948 sc: 35,266
		Wg: Median landings 1999-2008	wg: 635,899
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	mg:19.83% comm.; 80.17%rec. tt:0.00% comm.; 100.00%rec. sc: 0.00% comm.; 100.00%rec. wg: 32.67% comm.; 67.33%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	214,624 comm. 562,151 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	466,864
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 4
Grunts

Margate (mg)
Tomtate (tt)
Sailors choice (sc)
White grunt (wg)

PREFERRED ALTERNATIVES

	Definition	Value (lbs whole weight)
Overfishing Level (OFL)	unknown	
Acceptable Biological Catch (ABC)	3RD highest landings 1999-2008	cg: 2,589 gg: 17,856 rh: 25,885 ro: 37,569 yg: 9,258 ym: 4,661
Allocations	(50% X average of 1986-2008) + (50% X average of 2006-2008)	cg:23.26%comm.; 76.74%rec. gg: 14.48% comm.; 85.52%rec. rh:73.28% comm.; 26.72%rec. ro:62.54%comm.; 37.46%rec. yg: 40.78% comm.; 59.22%rec. ym:1.35% comm.; 98.65%rec.
Complex Annual Catch Limit (ACL) & Optimum Yield (OY)	ACL=OY=ABC	49,488 comm. 48,329 rec.
Accountability Measures: Recreational Annual Catch Target (ACT)	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	33,082
Accountability Measures: In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
Accountability Measures: Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 5
Shallow-water Groupers

Coney (cg)
Graysby (gg)
Red hind (rh)
Rock hind (ro)
Yellowfin grouper (yg)
Yellowmouth grouper (ym)

PREFERRED ALTERNATIVES

<table>
<tr><th rowspan="2" colspan="2"></th><th colspan="2"></th></tr>
<tr><th>Definition</th><th>Value
(lbs whole weight)</th></tr>
<tr><td colspan="2">Overfishing Level
(OFL)</td><td colspan="2">unknown</td></tr>
<tr><td colspan="2" rowspan="5">Acceptable Biological Catch
(ABC)</td><td rowspan="5">3RD highest landings 1999-2008</td><td>jp: 42,533</td></tr>
<tr><td>kp: 61,194</td></tr>
<tr><td>sp: 4,205</td></tr>
<tr><td>cp: 8,999</td></tr>
<tr><td>wp: 30,684</td></tr>
<tr><td colspan="2">Allocations</td><td>(50% X average of 1986-2008) +
(50% X average of 2006-2008)</td><td>jp:4.05%comm.; 95.95%rec.
kp: 54.12% comm.; 45.88%rec.
sp:0.01% comm.; 99.99%rec.
cp:0.00%comm.; 100.00%rec.
wp: 0.96% comm.; 99.04%rec.</td></tr>
<tr><td colspan="2">Complex Annual Catch Limit (ACL) &
Optimum Yield (OY)</td><td>ACL=OY=ABC</td><td>35,129 comm.
112,485 rec.</td></tr>
<tr><td rowspan="3">Accountability Measures</td><td>Recreational Annual Catch Target
(ACT)</td><td>Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater</td><td>74,933</td></tr>
<tr><td>In-season</td><td colspan="2">Comm.: If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.</td></tr>
<tr><td>Post-season</td><td colspan="2">Comm.: If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished.

Rec.: If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.</td></tr>
</table>

Complex 6
Porgies

Jolthead porgy (jp)
Knobbed porgy (kp)
Saucereye porgy (sp)
Scup (cp)
Whitebone porgy (wp)

The Remaining Species Would Not Be Grouped

Atlantic spadefish
Bar jack
Black grouper
Black sea bass
Blue runner
Gag
Golden tilefish
Goliath grouper
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau grouper
Red grouper
Red porgy
Red snapper
Scamp
Snowy grouper
Speckled hind
Vermilion snapper
Warsaw grouper
Wreckfish
Yellowtail snapper

NOT specifying ACLs/AM in this amendment (done in Amendments 17A & 17B, will be done in Amendment 24)

Black sea bass
Gag
Golden tilefish
Red grouper
Red snapper
Snowy grouper
Speckled hind
Vermilion snapper
Warsaw grouper

Specifying ACLs/AMs in this amendment for ungrouped species

Atlantic spadefish
Bar jack
Black grouper
Blue runner
Goliath
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau
Red porgy
Scamp
Wreckfish
Yellowtail snapper

Individual Species
(Those Not Grouped)

Note: Black grouper ABC values are included in Action 13 (36.88% comm. & 63.12% rec.). Yellowtail and mutton snapper ABCs are based on jurisdictional allocations shown in Actions 18 & 19, respectively. Warsaw = 17.79% comm. & 82.21% rec.; Speckled hind = 65.59% comm. & 34.41% rec.; Goliath = 43.77% comm. & 56.23% rec.; Nassau = 9.52% comm. & 90.48% rec.; and Red snapper = 28.07% com. & 71.93% rec.

For red grouper, AMs will not be specified in this amendment; they will be specified in Amendment 24. Also, non-ABC black grouper actions and wreckfish actions are outlined in the next section. Red porgy's recreational ACL is included in this amendment; the commercial ACL has already

	Atlantic Spadefish	Bar Jack	Blue Runner	Gray Triggerfish	Greater Amberjack (assessed)	Hogfish	Goliath & Nassau	Scamp	Red Porgy[2] (assessed)	Yellowtail Snapper (assessed)	Mutton Snapper (assessed)
Overfishing Level (OFL)	Unknown										
Acceptable Biological Catch (ABC)	282,841	20,520	1,289,941	672,565	1,968,000	147,638	0	492,572	395,304	2,173,875	926,600
Allocations[1]	12.90% comm. 87.10% rec.	32.58% comm. 67.42% rec.	14.60% comm. 85.40% rec.	45.39% comm. 54.61% rec.	40.66% comm. 59.34% rec.	33.03% comm. 66.97% rec.	See note above	69.36% comm. 30.64% rec.	50.00% comm. 50.00% rec.	52.56% comm. 47.44% rec.	17.02% comm. 82.98% rec.
Annual Catch Limit (ACL) & Optimum Yield (OY)	ACL=OY=ABC										
	36,476 comm. 246,365 rec.	6,686 comm. 13,834 rec.	188,329 comm. 1,101,612 rec.	305,262 comm. 367,303 rec.	800,163 comm. 1,167,837 rec.	48,772 comm. 98,866 rec.	0	341,636 comm. 150,936 rec.	197,652 comm. 197,652 rec.	1,142,589 comm. 1,031,286 rec.	157,707 comm. 768,893 rec.
Accountability Measures – Rec. Annual Catch Target (ACT)	177,382	9,936	892,305	312,208	992,662	71,184	n/a	96,599	160,098	897,219	668,937
Accountability Measures – In-season and post-season	**Comm.:** If the commercial sector ACL is met or projected to be met, all purchase and sale is prohibited and harvest and/or possession is limited to the bag limit. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished. **Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.										

[1]Allocations are determined through the following equation: (50% X average of 1986-2008) + (50% X average of 2006-2008).
[2]Commercial quota (ACL) in place for red porgy of 190,050 lbs gutted weight (197,652 lbs whole weight).

Snapper Grouper Species
All Alternatives

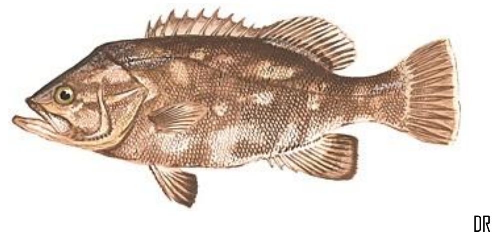
	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)	1 2 3 3a 3b 3c 3d 4 4a 4b 4c 5 6 7	No Action ABC=OFL Unassessed sp. (% OFL or median landings 99-08) ABC=65%OFL ABC=75%OFL ABC=85%OFL ABC=95%OFL Assessed sp. ABC=65%MFMT ABC=75%MFMT ABC=85%MFMT Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - ABC=median landings 99-08 Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - GMFMC SSC Control Rule Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. -SAFMC SSC Control Rule
Allocations	1 2 3 4 5 6 7	No Action 2 sectors:50%(86-08)+50%(06-08) 3 sectors:50%(86-08)+50%(06-08) 2 sectors: 86-08 2 sectors: 86-98 2 sectors: 99-08 2 sectors: 06-08 ***All calculations based on averages***
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4	No Action ACL=OY=ABC ACL=OY=90%ABC ACL=OY=80%ABC

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c	No ACT 90%ACL 80%ACL
	In-season	3	Close fishery if ACL met or projected to be met
	Post-season	4	Reduce ACL by overage only if species is overfished

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c 2d	No ACT 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL met
	Post-season	5a 5b 5c 5d 5e 5f 5g	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce ACL by overage

Wreckfish



Wreckfish *Polyprion americanus*

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level (OFL)		Unknown	n/a
Acceptable Biological Catch (ABC)		Average landings 97-08	250,000
Allocations		n/a	95% comm. 5% rec.
Annual Catch Limit (ACL) & Optimum Yield (OY)		ACL=OY=ABC	237,500 comm. 12,500 rec.
Accountability Measures	Post-season	**Comm.:** No changes proposed. Currently, the commercial sector is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year. **Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
	Management Measures	For the recreational sector, implement a one wreckfish per vessel per day bag limit. The recreational fishery would be open July 1 through August 31 each year.	

Wreckfish Life History
An Overview

- Occur in the Eastern and Western Atlantic Ocean, on the Mid-Atlantic Ridge, on Atlantic islands and seamounts, and in the Mediterranean Sea, southern Indian Ocean, and southwestern Pacific Ocean.
- The commercial fishery off the southeastern United States occurs primarily at the Charleston Bump, located 81-99 miles southeast of Charleston, South Carolina.
- Fishing occurs at water depths of 1,476-1,968 feet.
- Spawn from December through May, with a peak during February and March.
- Juvenile wreckfish are pelagic, and often associate with floating debris, which accounts for their common name.

ALL ALTERNATIVES

Wreckfish

	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)		SAFMC SSC recomm. – 250,000
Allocations	1 2 3 4	No action 90% comm./10% rec. 95% comm./5% rec. 100% comm.
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4	No Action ACL=OY=ABC ACL=OY=90%ABC ACL=OY=80%ABC

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	n/a	n/a
	AM Trigger	2a 2b 2c 2d 2e	No AM trigger If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	n/a	n/a
	Post-season	3a 3b 3c 3d 3e 3f 3g	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce ACL by overage

Proposed Management Measures:

1. Recreational bag limit of 1/vessel/day.
2. Recreational fishing season of July & August.

Black grouper

PREFERRED ALTERNATIVES

BLACK GROUPER *Mycteroperca bonaci*

	Definition	Value (lbs whole weight)		
Overfishing Level (OFL) Note: For both Gulf of Mexico and South Atlantic	2011 - landings only 2012 – landings only 2013 – landings only 2014 – landings only 2015 – landings only	695,007 652,810 627,552 619,665 615,801		
Acceptable Biological Catch (ABC) Note: For South Atlantic based on jurisdictional allocation	2011 – landings only 2012 – landings only 2013 – landings only 2014 – landings only 2015 – landings only	245,810 245,595 256,430 262,594 265,426		
Jurisdictional Allocations	(50% X average of 1986-2008) + (50% X average of 2006-2008)	47% South Atlantic 53% Gulf of Mexico of Mexico		
Sector Allocations for South Atlantic	(50% X average of 1991-2008) + (50% X average of 2006-2008)	36.88% comm. 63.12% rec.		
Annual Catch Limit (ACL) & Optimum Yield (OY)	ACL=OY=ABC (landings only)	Year	Comm	rec
		2012 2013 2014 and onwards	90,575 94,571 96,845	155,020 161,859 165,749
Accountability Measures: Recreational Annual Catch Target (ACT)	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	Year	ACT	
		2012 2013 2014 and onwards	94,562 98,734 101,107	
Accountability Measures: In-season	**Comm.:** After the commercial sector ACL is projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit. If the commercial sector ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished.			
Accountability Measures: Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.			

Black Grouper Life History
An Overview

- Occurs in the Western Atlantic, from North Carolina to Florida, Bermuda, the Gulf of Mexico of Mexico, West Indies, and from Central America to Southern Brazil
- Occur in water depths of 30-98 feet
- Live for at least 33 years
- Form spawning aggregations

ALL ALTERNATIVES
Black grouper

	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC) (done as Part of Action 4)	1 2 3 3a 3b 3c 3d 4 4a 4b 4c 5 6 7	No Action ABC=OFL Unassessed sp. (% OFL or median landings 99-08) ABC=65%OFL ABC=75%OFL ABC=85%OFL ABC=95%OFL Assessed sp. ABC=65%MFMT ABC=75%MFMT ABC=85%MFMT Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - ABC=median landings 99-08) Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - GMFMC SSC Control Rule Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - SAFMC SSC Control Rule
Allocations (Sector)	1 2a 2b 2c 2d 2e 3a 3b 3c 3d 3e	No Action 2 sectors: 86-08 2 sectors: 86-98 2 sectors: 99-08 2 sectors: 06-08 2 sectors:50%(91-08)+50%(06-08) 3 sectors: 86-08 3 sectors: 86-98 3 sectors: 99-08 3 sectors: 06-08 3 sectors:50%(91-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4	No Action ACL=OY=ABC ACL=OY=90%ABC ACL=OY=80%ABC

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c	No ACT 90%ACL 80%ACL
	In-season	3	Close fishery if ACL met or projected to be met
	Post-season	4	Reduce ACL by overage if overfished

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c 2d	No ACT 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL met or projected to be met
	Post-season	5a 5b 5c 5d 5e 5f 5g	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce ACL by overage

Black grouper

JURISDICTIONAL ALLOCATIONS

BLACK GROUPER *Mycteroperca bonaci*

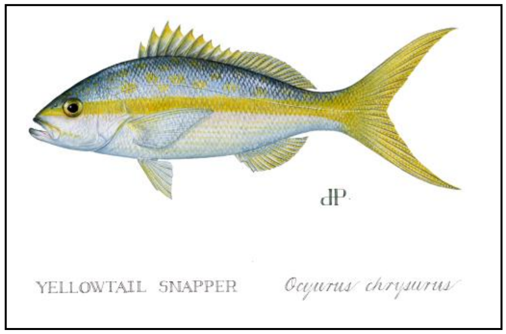
Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

- **Subalternative 2a.** South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).
- **Subalternative 2b (Preferred).** South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).
- **Subalternative 2c.** South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).
- **Subalternative 2d.** South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

Yellowtail Snapper

JURISDICTIONAL ALLOCATIONS



Alternative 1 (No Action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

- **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
- **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
- **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established using highest catch history from 1987-2001).
- **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established using lowest catch history from 1987-2001)

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

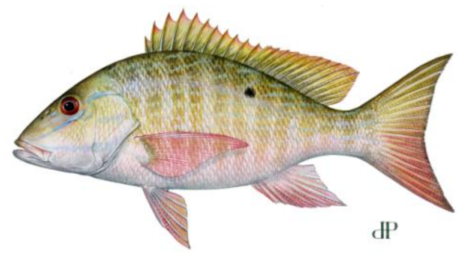
Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008+ 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Mutton Snapper

JURISDICTIONAL ALLOCATIONS



Alternative 1 (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

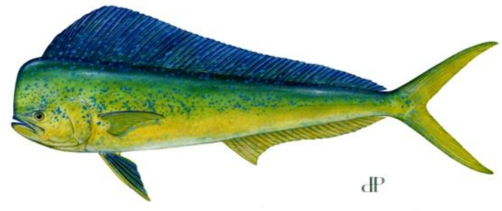
Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf of Mexico = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf of Mexico = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish jurisdictional allocation based on the Florida Keys (Monroe County) jurisdiction boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

Dolphin

PREFERRED ALTERNATIVES



DOLPHIN (male) *Coryphaena hippurus*

	Definition	Value (lbs whole weight)
Overfishing Level (OFL)		n/a
Acceptable Biological Catch (ABC)	SAFMC SSC	14,596,216
Allocations	(50% X average of 1999-2008) + (50% X average of 2006-2008)	7.3% comm. 92.7% rec.
Annual Catch Limit (ACL) & Optimum Yield (OY)	ACL=OY=ABC	1,065,524 comm. 13,530,692 rec.
Accountability Measures: Recreational Annual Catch Target (ACT)	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	11,595,803
Accountability Measures: In-season	**Comm.:** After the commercial sector ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit	
Accountability Measures: Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
Accountability Measures: Management Measures	Prohibit bag limit sales of dolphin from for-hire vessels. Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode. Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.	

Dolphin Life History *An Overview*

- Oceanic pelagic fish found worldwide in tropical and subtropical waters.
- Range in western Atlantic is from George's Bank, Nova Scotia to Rio de Janeiro, Brazil.
- The life span is short with a maximum of 5 years; males live longer than females.
- Growth is extremely rapid. Specific rates vary among regions and are sensitive to water temperatures.
- Reach maturity at 4 to 5 months.
- Young dolphin fish school, but older individuals are more solitary. Adults make seasonal north-south migrations.

ALL ALTERNATIVES
Dolphin

	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)	1 2 3 4	No Action ABC=OFL GMFMC ABC Control Rule SAFMC SSC ABC Control Rule
Allocations	1 2 3 4	No Action 2 sectors:(99-08) 2 sectors:50%(99-08)+50%(06-08) 3 sectors:50%(99-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC

Proposed Management Measures:

1. Prohibit bag limit sales of dolphin from for-hire vessels.
2. Establish a minimum size limit of 20" FL from Florida through South Carolina.

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c	No ACT. 90%ACL 80%ACL
	In-season	3	Close fishery if ACL is met or projected to be met
	Post-season	4	Reduce ACL by overage

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c 2d	No ACT. 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL met or projected to be met
	Post-season	5a 5b 5c 5d 5e 5f 5g 5h	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce bag limit Reduce ACL by overage

Wahoo

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		Unknown	n/a
Acceptable Biological Catch **(ABC)**		SAFMC SSC	1,491,785
Allocations		(50% X average of 1999-2008) + (50% X average of 2006-2008)	4.3% comm. 95.7% rec.
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	64,147 comm. 1,427,638 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	1,164,953
	In-season	**Comm.:** After the commercial sector ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
	Management Measures	No changes proposed as preferred alternative	

Wahoo Life History
An Overview

- An oceanic pelagic fish found worldwide in tropical and subtropical waters.
- Range in the western Atlantic from New York through Colombia including Bermuda, the Bahamas, the Gulf of Mexico of Mexico, and the Caribbean.
- Spawning season extends from June through August with peak spawning in June and July.
- Adult wahoo in the Atlantic are pelagic in nature and generally associated with *Sargassum.*
- Both females and males mature within the first year of life.

ALL ALTERNATIVES

Wahoo

	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)	1 2 3 4	No Action ABC=OFL GMFMC ABC Control Rule SAFMC SSC ABC Control Rule
Allocations	1 2 3 4	No Action 2 sectors:(06-08) 2 sectors:50%(99-08)+50%(06-08) 3 sectors:50%(99-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC

No Changes
to Existing Management Measures:

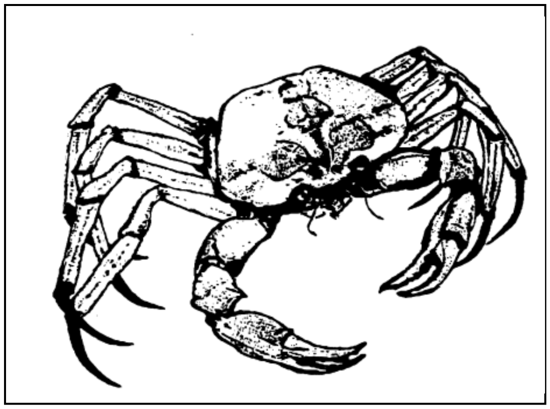
1. No sale of recreationally caught wahoo.
2. 500 pound commercial trip limit.
3. Recreational bag limit of 2/person/day.

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c	No ACT. 90%ACL 80%ACL
	In-season	3	Close fishery if ACL is met or projected to be met
	Post-season	4	Reduce ACL by overage

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c 2d	No ACT. 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL is met or projected to be met
	Post-season	5a 5b 5c 5d 5e 5f 5g 5h	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce bag limit & shorten season Reduce ACL by overage

Golden Crab



PREFERRED ALTERNATIVES

	Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**	Unknown	n/a
Acceptable Biological Catch **(ABC)**	SAFMC SSC	2 million
Annual Catch Limit **(ACL)** and Optimum Yield **(OY)**	ACL=OY=ABC	2 million
Accountability Measures **(AM)**	After the ACL is projected to be met, all harvest, purchase, and sale of golden crab are prohibited. If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage, only if overfished.	

Golden Crab Life History
An Overview

- Inhabits the continental slope of Bermuda and the southeastern United States from off Chesapeake Bay, south through the Straits of Florida and into the eastern Gulf of Mexico of Mexico.
- Reported depth distributions of range from 673 feet off the Dry Tortugas to 3,304 feet off Bermuda.
- Scavengers that feed opportunistically on dead carcasses deposited on the bottom from overlying waters.

ALL ALTERNATIVES

Golden Crab

	No.	Definition	Value (lbs)
Overfishing Level (OFL)	n/a	Unknown	n/a
Acceptable Biological Catch (ABC)	n/a	SAFMC SSC	2 million
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC	 2 million 1.7 million 1.5 million 1.3 million
Accountability Measure (AM)	1 2 3	No Action After the ACL is projected to be met, all harvest, purchase, and sale of golden crab is prohibited. If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage, only if overfished.	n/a

No Changes Proposed to the extensive list of management measures specified for the Golden Crab fishery.

Sargassum

PREFERRED ALTERNATIVES

	Current definitions and values	
	Definition	**Value (lbs wet weight)**
Overfishing Level **(OFL)**	Unknown	n/a
Acceptable Biological Catch **(ABC)**	Avg. catch (1976 - 2009)	12,800
Annual Catch Limit **(ACL)** and Optimum Yield **(OY)**	ACL=OY=ABC	5,000
Accountability Measures **(AM)**	Restrict all harvest of the species after the quota (ACL) (5,000 lbs) is met or projected to be met.	
Management Measures	(1) Harvest and possession of *Sargassum* is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude); (2) all harvest is prohibited within 100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border; (3) harvest is limited to the months of November through June; (4) official observers are required on any harvesting trip; (5) an annual quota of 5,000 pounds landed wet weight; and (6) nets used to harvest *Sargassum* must be constructed of 4” stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.	

SUMMARY OF EFFECTS

Biological effects

The Comprehensive ACL Amendment proposes the implementation of a system of management benchmarks in the form of Annual Catch Targets (ACTs), Annual Catch Limits (ACLs), and Accountability Measures (AMs). The ACLs are derived from Acceptable Biological Catches (ABCs) recommended by the South Atlantic Council's Scientific and Statistical Committee (SSC). The amendment also proposes allocation of the catch between the commercial and recreational sectors for some snapper grouper species, dolphin, and wahoo; the allocations are necessary in order to develop sector-specific ACLs and ACTs.

The system of management benchmarks, accountability measures, and allocations (Snapper Grouper and Dolphin Wahoo) are being proposed for species in the Snapper Grouper, Dolphin Wahoo, and Golden Crab Fishery Management Units (FMUs) to meet new Magnuson-Steven Act requirements. The South Atlantic Council is specifying such a system for many of these species for the first time, including those in the Snapper Grouper FMU. For other species, such as those in the Dolphin Wahoo FMU, catch levels have been established; however, the South Atlantic Council proposes to update these values based upon the most recent scientific information.

In general, establishing such a system would be expected to have a beneficial effect to the biological environment, including the managed species as long as the quota monitoring system is sufficient to ensure the sector ACLs are not exceeded. More specifically, setting ACTs, ACLs, and AMs would provide a greater assurance that overfishing is prevented and the long-term average biomass is near or above the biomass when fishing at the maximum sustainable yield. The establishment of AMs would provide beneficial effects by establishing a mechanism to maintain harvest levels at or below the ACLs. Overall, the South Atlantic Council believes the implementation of this system is necessary to manage the resources sustainably.

Socio-economic effects

The establishment of ACLs is intended to reduce the risk of overfishing for those snapper grouper species that do not currently have them. For those stocks requiring biological protection, ACLs constrain existing catch levels to increase the long-run abundance of these stocks.

By constraining current harvest levels, ACLs may lead to short-run reductions in gross revenue for the commercial sector, but may also generate higher long-run gross revenue as annual allowable harvest levels are raised due to the reduction of the risk of overfishing. As the long-run abundance of these stocks increases, the potential for economic benefits and the likelihood of achieving Optimum Yield (OY) is improved. However, the magnitude of the actual economic benefits as well as whether and when OY is achieved will depend on the regulatory framework in place (e.g., quotas with trip limits or some form of catch shares in the commercial sector case or bag limits versus season length in the recreational sector case) and the continued compliance with the ACLs. The quota monitoring systems must be sufficient to ensure the sector ACLs are not exceeded. Also, the resulting benefits will be a function of the actual behavioral response, which is presently unknown.

Establishing AMs for the commercial and recreational sectors is an administrative action and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

TABLE OF CONTENTS FOR ENVIRONMENTAL IMPACT STATEMENT

Abstract..………………………………………………………………… IV

Summary………………………………………………………………………… S-1

Purpose and need…………………………………………………………... 3

Actions and Alternatives…………………………………………………… 13

Affected environment……………………………………………………..... 177

Environmental effects……………………………………………………… 315

List of preparers…………………………………………………………… 671

List of agencies, organizations, and persons
to whom copies of the statement are sent……………………………………. 673

Index……………………………………………………………………………. 688

1 Introduction

1.1 Background

Management of the federal snapper grouper, dolphin wahoo, golden crab, and *Sargassum* fisheries located off the South Atlantic in the 3-200 nautical mile (nm) U.S. Exclusive Economic Zone (**Figure 1-1**) is conducted under the fisheries' respective Fishery Management Plans (FMPs). The FMPs and their amendments were developed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), other applicable federal laws, and executive orders and affect the management of 73 species of snapper grouper, two species of *Sargassum*, and dolphin, wahoo, and golden crab (**Table 1-1**; **Appendix I.** Other Applicable Laws).

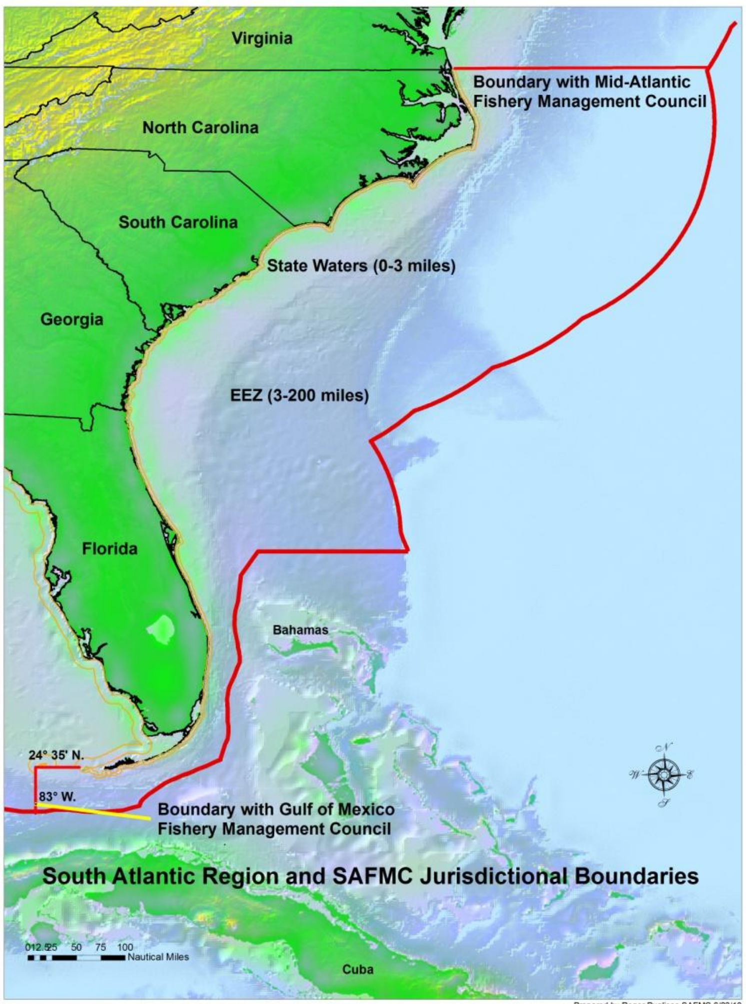


Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

Table 1-1. Species in the fishery management units for Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum.*

Snapper Grouper FMU
Almaco jack, *Seriola rivoliana*
Atlantic spadefish, *Chaetodipterus faber*
Banded rudderfish, *Seriola zonata*
Bank sea bass, *Centropristis ocyurus*
Bar jack, *Carangoides ruber*
Black grouper, *Mycteroperca bonaci*
Black margate, *Anisotremus surinamensis*
Black Sea Bass, *Centropristis striata*
Black snapper, *Apsilus dentatus*
Blackfin snapper, *Lutjanus buccanella*
Blue runner, *Caranx crysos*
Blueline tilefish, *Caulolatilus microps*
Bluestriped grunt, *Haemulon sciurus*
Coney, *Cephalopholis fulva*
Cottonwick, *Haemulon melanurum*
Crevalle jack, *Caranx hippos*
Cubera snapper, *Lutjanus cyanopterus*
Dog snapper, *Lutjanus jocu*
French grunt, *Haemulon flavolineatum*
Gag, *Mycteroperca microlepis*
Golden tilefish, *Lopholatilus chamaeleonticeps*
Goliath grouper, *Epinephelus itajara*
Grass porgy, *Calamus arctifrons*
Gray (mangrove) snapper, *Lutjanus griseus*
Gray triggerfish, *Balistes capriscus*
Graysby, *Cephalopholis cruentata*
Greater amberjack, *Seriola dumerili*
Hogfish, *Lachnolaimus maximus*
Jolthead porgy, *Calamus bajonado*
Knobbed porgy, *Calamus nodosus*
Lane snapper, *Lutjanus synagris*
Lesser amberjack, *Seriola fasciata*
Longspine porgy, *Stenotomus caprinus*
Mahogany snapper, *Lutjanus mahogoni*
Margate, *Haemulon album*
Misty grouper, *Epinephelus mystacinus*
Mutton snapper, *Lutjanus analis*
Nassau grouper, *Epinephelus striatus*
Ocean triggerfish, *Canthidermis sufflamen*
Porkfish, *Anisotremus virginicus*
Puddingwife, *Halichoeres radiatus*
Queen snapper, *Etelis oculatus*
Queen triggerfish, *Balistes vetula*
Red grouper, *Epinephelus morio*
Red hind, *Epinephelus guttatus*
Red porgy, *Pagrus pagrus*
Red snapper, *Lutjanus campechanus*
Rock hind, *Epinephelus adscensionis*
Rock Sea Bass, *Centropristis philadelphica*
Sailors choice, *Haemulon parra*
Sand tilefish, *Malacanthus plumieri*
Saucereye porgy, *Calamus calamus*
Scamp, *Mycteroperca phenax*
Schoolmaster, *Lutjanus apodus*
Scup, *Stenotomus chrysops*
Sheepshead, *Archosargus probatocephalus*
Silk snapper, *Lutjanus vivanus*
Smallmouth grunt, *Haemulon chrysargyreum*
Snowy Grouper, *Epinephelus niveatus*
Spanish grunt, *Haemulon macrostomum*
Speckled hind, *Epinephelus drummondhayi*
Tiger grouper, *Mycteroperca tigris*
Tomtate, *Haemulon aurolineatum*
Yellow jack, *Carangoides bartholomaei*
Yellowedge grouper, *Epinephelus flavolimbatus*
Yellowfin grouper, *Mycteroperca venenosa*
Yellowmouth grouper, *Mycteroperca interstitialis*
Yellowtail snapper, *Ocyurus chrysurus*
Vermilion snapper, *Rhomboplites aurorubens*
Warsaw grouper, *Epinephelus nigritus*
White grunt, *Haemulon plumierii*
Whitebone porgy, *Calamus leucosteus*
Wreckfish, *Polyprion americanus*

Dolphin Wahoo FMU
Dolphinfish *Coryphaena hippurus*
Wahoo *Acanthocybium solandri*

Golden Crab FMU
Chaceon fenneri

***Sargassum* FMU**
Sargassum fluitans
Sargassum natans

1.2 Purpose of the Proposed Action

The *purpose* of the Comprehensive Annual Catch Limit Amendment for the South Atlantic Region (Comprehensive ACL Amendment) is to implement measures expected to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. Optimum yield, the ultimate goal of any fishery management plan, is the portion of the fish stock that provides the greatest economic, social, and ecological benefit to the nation.

Measures include the implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species, designation of Ecosystem Component (EC) species, and the development of species groups; 2) acceptable biological catch (ABC) control rules; 3) annual catch limits (ACLs) and annual catch targets (ACT); 4) jurisdictional and sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets.

1.3 Need for the Proposed Action

The *need* for action is to specify overfishing limits (OFLs), ACLs, and AMs, where needed, and comply with the Magnuson-Stevens Act requirements.

1.4. Process for Defining Limits and Targets

The South Atlantic Fishery Management Council (South Atlantic Council) is utilizing several tools to achieve OY for stocks addressed in this comprehensive amendment **(Table 1-2)**. These tools include a determination from the South Atlantic Council's Scientific and Statistical Committee (SSC) for ABC based on an ABC control rule. Another tool is the OFL, which is an estimate of the catch level above which overfishing is occurring. This value may stem from the outcome of a stock assessment and is equivalent to the yield at the maximum fishing mortality threshold (MFMT). An SSC may use other methods to estimate OFL in the absence of a stock assessment. The ABC is defined as the annual catch of a stock or stock complex that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule. The South Atlantic Council is proposing an ACL for the stocks in the South Atlantic based on ABC. The ACL is an annual limit expressed in pounds or numbers of fish that serves as the basis for invoking AMs. AMs are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur (50 CFR 600.310 (g) (1)). The South Atlantic Council is proposing the implementation of AMs in this amendment. While AMs act to prevent overfishing in a fishery, the South Atlantic Council must specify actions in order to ensure that overfishing does not occur. **Figure 1-2** summarizes the generalized process to specify tools to achieve OY.

Table 1-2. A summary of the tools being used to achieve OY in this amendment. Source: National Standard 1 Guidelines (**Appendix J**) and NMFS Glossary (**Appendix B**).

Tool	Acronym	Who sets?	Definition
Overfishing Limit	OFL	SSC	An estimate of the catch level above which overfishing is occurring and is expressed in terms of numbers or weight of fish.
Acceptable Biological Catch	ABC	Council with advice of SSC	A level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty and should be specified based on the ABC control rule.
Annual Catch Limit	ACL	Council	The level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed the ABC, but may be divided into sector-ACLs.
Annual Catch Target	ACT	Council	The amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL.
Accountability Measures	AM	Council	Management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.
Allocations	n/a	Council	Distribution of the quantity of catch, effort, or biomass among user groups or individuals.
Management Measures	n/a	Council	Actions that affect a resource and its exploitation with a view to achieve certain objectives, such as maximizing the production of that resource. Examples include catch quotas, bag limits, size limits, seasonal closures, and area closures.

Step 1. Council considers removing species from FMU and designating EC species
Step 2. SSC specifies OFL and recommends ABC
Step 3. Council implements ABC Control Rule
Step 4. Council specifies ACL
Step 5. Council divides ACL into sectors. Sector ACLs determined using allocations
Step 6. Council specifies Sector ACTs when needed, and may sub-divide within a sector
Step 7. Council determines management measures to keep total mortality (landings + release/discard mortality) less than or equal to sector ACTs
Step 8. Council determines sector accountability measures to keep total mortality below ACL and respond to overages of the ACL
Step 9. Council determines necessary data to implement and monitor ACLs, AMs, and management measures

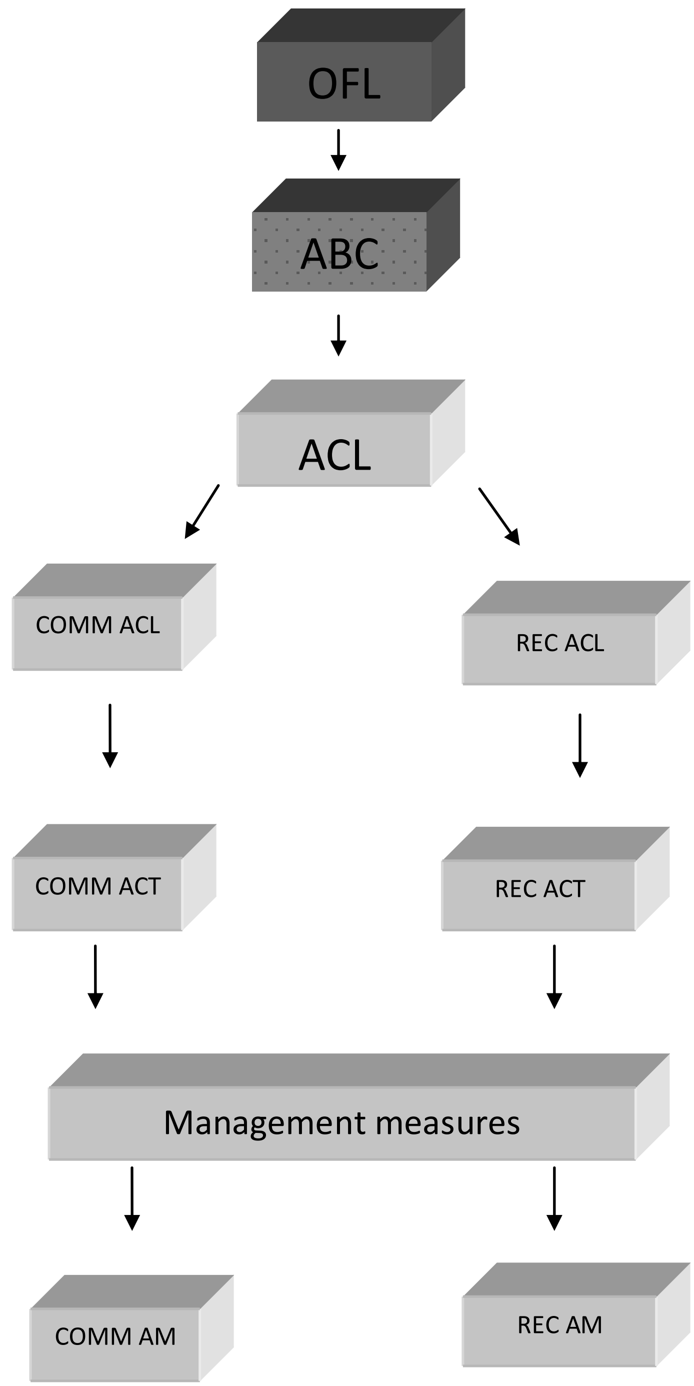


Figure 1-2. The process employed in the Comprehensive ACL Amendment. The South Atlantic Council is proposing allocating to two sectors (commercial and recreational) in this amendment.

SSC Designation of OFL and ABC
The Magnuson-Stevens Act in 2006 required specification of additional management criteria in federal fisheries management plans. These criteria include an OFL, an ACL, and appropriate AMs. The Magnuson-Stevens Act also stated that the fishery management council's SSCs should specify an ABC that is reduced from the OFL to address scientific uncertainty. The Magnuson-Stevens Act national standard 1 (NS1) suggests that the fishery management councils should establish a process for developing ABC control rules, and establishing ABC control rules based on scientific advice from their SSCs. ABC control rules should specify a level of separation between OFL and ABC that is based on scientific uncertainty in the estimate of OFL and the level of scientific knowledge about the stock. The SSC is charged with recommending an ABC to the Council based on the ABC control rule, while also having a role in advising fishery management councils on establishing the ABC control rule.

The following excerpts from the NS 1 guidelines describe the process for establishing ABCs:

Specification of ABC. ABC may not exceed OFL. Fishery management councils should develop a process for receiving scientific information and advice used to establish ABC. This process should identify the entity that will apply the ABC control rule (i.e., calculates the ABC), and identify the review process that will evaluate the resulting ABC. The SSC must recommend the ABC to the fishery management council. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why. While the ABC is allowed to equal OFL, NOAA Fisheries Service expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year.

Expression of ABC. ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC.

ABC for overfished stocks. For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan.

ABC control rule. For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its SSC. The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50% and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed. The process of establishing an ABC control rule could also involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E). The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC control rule should consider uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, and projections. The control rule may be used in a tiered approach to address different levels of scientific uncertainty.

The South Atlantic Council's SSC first discussed ABC control rules in June 2008. An issue paper outlining various alternative approaches to establishing ABC was provided to the South Atlantic Council in September 2008. The intent was to obtain initial feedback on control rules and the level of overfishing risk that the South Atlantic Council considered appropriate for various stock information levels. Control rule options were therefore presented in general terms rather than as specific alternatives and sub-alternatives. The South Atlantic Council supported further developing a control rule approach, which specified ABC as a function of yield at maximum sustainable yield (MSY) and assessment uncertainty. The South Atlantic Council further specified that ABC should be set at a level providing a 25% chance of overfishing, with a range of values corresponding to a 10 to 40% chance of overfishing.

While the approach suggested in September 2008 provided general guidance for assessed stocks for which the probability of overfishing can be provided in terms of yield, it did not address those stocks that lacked assessments and it did not explicitly account for varying levels of uncertainty in assessments. Therefore, the SSC requested a special meeting for March 2009 devoted solely to developing an ABC control rule that could be applied to all managed stocks and which would provide an objective means to evaluate levels of uncertainty. During that meeting, the SSC decided on general characteristics and components of the rule and developed a framework of dimensions and tiers. The SSC agreed that the ABC control rule should provide an objective means of determining the buffer between the overfishing level (typically MSY) and the ABC. The resulting approach, however, was only applicable when the OFL could be stated in fish weight and some measure of statistical uncertainty about the OFL could be estimated. Adjustments to the level of buffer for assessed species, which are not overfished, are based on the probability of overfishing, which can be reflected in yield through frequency distributions or a "P*" analysis.

Discussion of the general concept and approach led to creation of a system of dimensions composed of multiple tiers that are scored to provide a value that can be used to select the appropriate probability of overfishing for each stock. Each stock evaluated receives a single "adjustment factor", which is the sum of tier scores across dimensions and which ultimately determines the amount of buffer or separation between OFL and ABC. Adjustment factors are subtracted from the "base probability of overfishing" to provide the "critical probability". The base probability of overfishing is the value used to determine OFL. The critical probability is a probability of overfishing that is used to determine ABC in the same manner that the base probability is used to determine MSY and OFL. Through this process, tier scores equate to an adjustment in the probability of overfishing occurring, and do not represent, or necessarily correspond to, a specific poundage or percentage of the OFL. Recommended ABC values for assessed species are derived from probability density functions that provide the probability of overfishing occurring for any particular yield.

At its December 2008 meeting, the SSC recommended that the ABC levels for overfished species be set consistent with the rebuilding plans for those species until they can be further amended using more updated scientific information. The SSC reaffirmed, at its April 2010 meeting, that "For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan."

Also at their April 2010 meeting, the SSC further developed the ABC control rule for stocks which are unassessed and for which no P* analyses are available. An alternative control rule was developed and presented to the South Atlantic Council in June 2010. However, some aspects of the proposed rule and its criteria were considered inappropriate considering guidance that the rule should account for scientific uncertainty. The South Atlantic Council ultimately rejected the unassessed stocks control rule as put forth by the SSC, and provided specific recommendations and guidance for further consideration. The SSC met again in August 2010 to reconsider the control rule for unassessed stocks. During this meeting, they developed a rule incorporating several tiers reflecting varying levels of data availability for the unassessed stocks. This approach was presented to the South Atlantic Council in September 2010 and the revised ABC control rule was used for both assessed and unassessed stocks. The SSC finalized their approach for specifying ABCs for unassessed species in April 2011 (**Table 1-3**). The South Atlantic Council is adopting the SSC's ABC control rule in **Action 4** of this amendment.

Table 1-3. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC Control Rule (as of April 2011), proposed in **Action 4**.

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend). YES: GO to 2.
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3.
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008. Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Annual Catch Limits (ACLs) , Annual Catch Targets (ACTs), and Accountability Measures (AMs)

The Magnuson-Stevens Act also required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective fishery management council's SSC or other established peer review processes. These FMPs also are required to establish within this timeframe, measures to ensure accountability. AMs are management controls that ensure that the ACLs are not exceeded; examples include corrective measures if overages occur and implementation of an in-season monitoring program. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements.

The South Atlantic Council is employing a step-wise decision-making process in setting ACLs, ACTs, and management measures to ensure harvest is at or below the ACL. The ACL is expressed in pounds or numbers of fish that serves as the basis for invoking AMs. Setting the ACL provides an opportunity to divide the total ACL into sector-specific ACLs, but this division is not required. The ACT is the target specified in pounds or numbers of fish. Specifying an ACT is optional and up to the discretion of the South

Atlantic Council. Catch includes fish that are retained for any purpose, as well as dead discards. For fisheries where bycatch estimates are not available in a timely enough manner to manage annual catch, targets may be specified for landings, as long as an estimate of bycatch is accounted for such that total of landings and bycatch will not exceed the stock's ACL.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations, the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. Therefore, the Comprehensive ACL Amendment includes a discussion of existing harvest level designations, which could be used by the South Atlantic Council to specify OFLs, ACLs, ACTs, ABCs, and AMs.

AMs are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. In-season AMs include prohibiting retention of species once the sector ACL is met or is projected to be met. Post-season AMs include shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to pay back ACL overages.

Modify management measures as needed to limit harvest to the ACL or ACT

The South Atlantic Council is responsible for choosing actions that ensure annual catches do not exceed the ACL to ensure overfishing does not occur. The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. To meet these mandates, the South Atlantic Council put in place Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the FMP for the Snapper Grouper Fishery of the South Atlantic Region, and is developing the current Comprehensive ACL Amendment, the Comprehensive Ecosystem-Based Amendment 2, as well as two joint amendments with the Gulf of Mexico Fishery Management Council (Amendment 18 to the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico and Amendment 10 to the FMP for Spiny Lobster in the Gulf of Mexico and South Atlantic). The NS1 guidelines, however, do not specify that management measures need to be put in place alongside the new limits and targets. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of additional management measures for snapper grouper species in this amendment. The public should be aware, however, that the South Atlantic Council intends to move quickly as the need arises to put in place additional management measures (i.e., bag limit changes, seasonal closures, etc.) to ensure that ACLs are not exceeded. Action for snapper grouper species can be taken through the Framework (modified through Amendment 17B to the Snapper Grouper FMP) to allow for any needed changes to ABC, ACL, ACT and AM, which is a more rapid process than a plan amendment. In addition, the current amendment establishes AMs to correct for ACL overages. Given trends in landings over the recent years, the South Atlantic Council anticipates that some overages will occur in 2012. Thus, the public should expect some of the AMs put in place through this amendment to take effect in 2012 without any further action by the South Atlantic Council. For instance, the South Atlantic Council's preferred post-season AM to address an overage in the recreational ACL for greater amberjack, would be for the Regional Administrator to publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season. This AM would not require any further action by the South Atlantic Council to be implemented.

Removing Species From the Snapper Grouper FMU and Designating Others As Ecosystem Component Species

There are currently 73 species in the snapper grouper FMU. Some of these species are taken predominantly in state waters, or are rarely landed. The South Atlantic Council evaluated why the 73 species were originally included in the FMU, the need for federal management for species that are landed predominantly in state waters, and if infrequently taken species meet the criteria for removal from the FMU. The Council also considered designating some species as Ecosystem Components based on the criteria specified in the NS 1 guidelines.

Recreational Data

The Marine Recreational Information Program (MRIP) is modifying the catch estimation method for recreational harvest from 2004-2010 to address improvements identified for estimation algorithms. The modifications will address concerns raised in the 2006 National Resource Council review that estimation methods may not be consistent with the sampling probabilities of individually sampled access sites and could result in biased estimates. Revised estimation procedures have been developed and are undergoing review, and will be applied to existing data going back to 2004. Correction of estimates prior to 2004 will also be considered in the future.

Due to planned changes in the estimation procedure, MRIP estimates of recreational catch for 2004-2010 are likely to change. Estimates for 2011 and beyond will be based on the new method. Changes in recreational catch estimates for 2004-2010 raise several concerns for developing South Atlantic Council amendments, the Comprehensive ACL Amendment in particular, since the new MRIP values could result in changes to the values of ABC, OFL, and sector-based allocations and ACLs included in this document. If proposed ACL, ABC, OFL values are not updated with the new MRIP estimates, there could be a disjunction between the information used to set targets and limits and the information used to evaluate current conditions to determine if ACLs are met and AMs are triggered. As of September 2011, the new MRIP estimates had not yet been released.

While the South Atlantic Council is fully aware of these issues, the Reauthorized Magnuson-Stevens mandate of establishing ACLs and AMs by 2011 has not been revised to account for the impending change to recreational data. Hence, the South Atlantic Council and NOAA Fisheries Service must still meet the 2011 deadline to establish the required limits and targets. The South Atlantic Council will take action as needed via plan amendment or framework amendment to revise the appropriate values as needed in 2012 and beyond.

1.5 History of Management

The South Atlantic fisheries are highly regulated; some of the species included in this amendment have been regulated since 1983. A detailed history of management for all species in the amendment may be found in **Appendix D**.

2 Actions and Alternatives

Section 2.1 outlines alternatives considered by the South Atlantic Fishery Management Council (South Atlantic Council) in this comprehensive amendment and compares their environmental consequences (described in detail in **Section 4.0**). These alternatives were identified and developed through multiple processes, including the scoping process, public hearings and/or comments, interdisciplinary plan team (IPT) meetings, and meetings of the South Atlantic Council, including its Committees and Advisory Panels (AP) for Snapper Grouper, Dolphin Wahoo, Golden Crab, Habitat, and the SSC. Species affected by the proposed actions and alternatives below include: 73 species in the snapper grouper complex, dolphin, wahoo, golden crab, and 2 species of *Sargassum*. Alternatives the South Atlantic Council considered but eliminated from detailed study during the development of this document are described in **Appendix A**.

2.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers)

2.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU)

Alternative 1 (No Action). Do not remove any species from the Snapper Grouper FMU.

Alternative 2 (Preferred). Remove species from the Snapper Grouper FMU with 95% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate		

Alternative 3. Remove species from the Snapper Grouper FMU with 90% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice	

Alternative 4. Remove species from the Snapper Grouper FMU with 80% (or greater) of landings in state waters, except hogfish and mutton snapper.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice
Graysby	Schoolmaster	Saucereye porgy	Puddingwife	Margate

Alternative 5 (Preferred). Remove all the species under the Florida Marine Life Species Rule from the Snapper Grouper FMU.

Queen triggerfish	Porkfish	Puddingwife

Alternative 6. Remove species with state and federal (combined) landings that are less than, or equal to 10,000 lbs (with the exception of speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Spanish grunt
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Puddingwife
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 7. Remove species with state and federal (combined) landings that are less than, or equal to 20,000 lbs (with the exception of cubera snapper, warsaw grouper, lesser amberjack and speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Puddingwife
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Bar jack
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	Ocean triggerfish
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	
Sand tilefish	Yellowfin grouper	Graysby	Sailors choice	Spanish grunt	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 8. Remove tomtate, knobbed porgy, jolthead porgy, and whitebone porgy from the Snapper Grouper FMU.

Tomtate Knobbed porgy Jolthead porgy Whitebone porgy

Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the Snapper Grouper FMU.

Tiger grouper Smallmouth grunt

Note: Zero landings for both species.

Table 2-1. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**98,080**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 2-2. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	% State	MRFSS	HBS
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,872,331**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 2-3. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

COMMON NAME	2005 EEZ	2005 State	2006 EEZ	2006 State	2007 EEZ	2007 State	2008 EEZ	2008 State	2009 EEZ	2009 State	TOTAL EEZ	TOTAL State	% State	TOP STATE MRFSS	TOP STATE HBS
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**
Schoolmaster	115	868	0	5,623	1,904	4,722	1,492	3,836	10	6,159	**3,521**	**21,208**	**86%**	**FL**	**FL**
Margate	1,727	28,788	2,676	18,025	3,071	18,104	1,815	4,650	3,721	5,283	**13,010**	**74,850**	**85%**	**FL**	**FL**
Saucereye porgy	139	4,453	591	769	325	0	0	0	0	223	**1,055**	**5,445**	**84%**	**FL**	**FL**
Graysby	1,624	8,722	2,620	7,266	530	4,428	1,099	8,132	1,219	1,953	**7,091**	**30,500**	**81%**	**FL**	**SC**

Source: SEFSC ACL and SE HBS CRNF datasets.*

*Note: **MRFSS**, **TPWD**, and **Commercial** data are from SEFSC ACL datasets and **HBS** data are from the SE HBS CRNF files. Therefore, **all sectors** are being considered for the state vs. federal landings analysis. Note that the CRNF files state vs. federal determination was based upon the headboat's "Distance from Shore" field. This field is sometimes not completed, and the weights of fish landed may not be very accurate. Additionally, the CRNF files may represent an incomplete landings dataset due to non-compliance with reporting requirements. As such, the landings values from the HBS component of the state vs. federal analysis will likely be underestimates of the total lbs landed and should not be substituted for the HBS landings data found within the SEFSC ACL dataset (which does not contain a state vs. federal breakout for headboat). Note ACL recreational dataset landings estimates may differ from MRFSS website queries because 'For Hire' includes headboat and charter, and SEFSC has used improved weight substitution and charter boat estimation procedures that differ from those on the MRFSS website. Note 'Atlantic' for recreational data includes MRFSS: SE Atl. states (NC-FLE) and Headboat: Atlantic (NC-FL Keys areas 1-17). Note gag and black grouper landings have been adjusted for misidentification prior to 1990.

Tiger grouper, black snapper, smallmouth grunt, misty grouper, and cottonwick did not have any reported landings. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest and sale is prohibited as per Amendment 17B.

Table 2-4. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location.
If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	**Alternative(s)**	**Commercial**	**Recreational**	**Total**	**Primary Harvest Location**
Queen triggerfish	5	0	3,503	3,503	Federal
Sheepshead	2	251,552	1,743,372	1,994,924	FL
Crevalle jack	2	208,540	551,131	759,671	FL
Black margate	2	0	86,428	86,428	FL
Bluestriped grunt	2	0	44,873	44,873	FL
Yellow jack	2	8	35,209	35,217	FL
Porkfish	2,5	0	20,756	20,756	FL
French grunt	2	0	1,142	1,142	FL
Grass porgy	2	0	791	791	FL
Puddingwife	2,5	0	418	418	FL
Spanish grunt	2	0	138	138	FL
Smallmouth grunt	9	0	0	0	N/A
Tiger grouper	9	0	0	0	N/A

Table 2-5. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	**AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS**
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325

Table 2-5. Continued. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)*
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 2-6. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503

Table 2-6. Continued. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)*
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511
Bar jack	10,726
Ocean triggerfish	10,962
Sand tilefish	11,168
Yellowfin grouper	12,930
Graysby	14,648
Sailors choice	19,239

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 2-7a. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location.
If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Yellowfin grouper	7	5,562	7,368	12,930	Federal
Scup	6,7	0	8,511	8,511	Federal
Queen snapper	6,7	4,804	282	5,086	Federal
Yellowmouth grouper	6,7	17	3,487	3,504	Federal
Queen triggerfish	5,6,7	0	3,503	3,503	Federal
Rock sea bass	6,7	609	1,716	2,325	FL
Misty grouper	6,7	1,833	0	1,834	Federal
Mahogany snapper	6,7	8	459	467	Federal
Longspine porgy	6,7	12	360	372	Federal
Black snapper	6,7	141	0	141	Federal
Sailors choice	3,4,7	0	19,239	19,239	FL
Graysby	4,6,7	520	14,129	14,648	FL

Table 2-7. Continued. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Sand tilefish	7	2,205	8,963	11,168	FL
Ocean triggerfish	7	0	10,962	10,962	FL
Bar jack	7	4,528	6,198	10,726	Federal
Dog snapper	6,7	528	5,930	6,458	FL
Schoolmaster	4,6,7	186	5,237	5,423	FL
Coney	6,7	8	2,445	2,453	Federal
Blackfin snapper	6,7	816	1,271	2,087	Federal
Saucereye porgy	4,6,7	0	1,975	1,975	FL
Bank sea bass	6,7	355	5,212	5,567	Federal
French grunt	2,3,4,6,7	0	1,142	1,142	FL
Grass porgy	2,3,6,7	0	791	791	FL
Puddingwife	2,3,4,5,6,7	0	418	418	FL
Spanish grunt	2,3,4,6,7	0	138	138	FL
Cottonwick	6,7	0	6	6	N/A
Smallmouth grunt	6,7	0	0	0	N/A
Tiger grouper	6,7	0	0	0	N/A

SOURCE: SEFSC ACL Datasets (2010).

Comparison of Alternatives

Landings of species in the alternatives are shown in **Tables 2-1** through **2-7**. Under **Alternative 1 (No Action)**, all 73 species in the snapper grouper FMU would remain subject to current federal regulations. Additionally, that alternative would make all 73 species subject to the ABC control rule the South Atlantic Council chooses to adopt in this comprehensive amendment to generate ACLs for managed species. Moreover, adoption of **Alternative 1 (No Action)** would imply that each of the 73 species in the snapper grouper FMU is in need of federal fishery conservation and management, including species for which few or no landings were recorded in federal waters between 2005-2009. **Alternatives 2, 5,** and **9 (Preferreds)** would remove select species from the snapper grouper FMU, using criteria intended to identify species that meet NMFS guidelines regarding the need for federal fishery conservation and management.

NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)): The importance of the fishery to the Nation and the regional economy; whether an FMP can improve the condition of the stock; extent to which the fishery could be or already is adequately managed by states; whether an FMP can further the resolution of competing interests and conflicts; whether an FMP can produce more efficient utilization of the fishery; whether an FMP can foster orderly growth of a developing fishery; and costs of the FMP balanced against benefits. Based on these criteria, the South Atlantic Council has determined 13 species identified in **Alternatives 2, 5**, and **9 (Preferreds)** should be removed from the FMU. Greater than 95% of the landings of ten of these 13 species occur in state waters, and three species are already subject to management by the Florida Marine Life Rule. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE reports) to determine whether they should be added back into the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU. The South Atlantic Council evaluated whether the species included in the FMU could be considered as ecosystem component (EC) species (see **Action 2**), and determined six of the 73 species met criteria established for classification as EC species in the NS1 Guidelines.

The potential effects of **Alternatives 2, 5,** and **9 (Preferreds)** on bycatch are expected to be minimal in most cases because the species proposed for removal are not generally targeted or desired.

The biological effects (positive or negative) of **Alternatives 4** and **5 (Preferred)** are expected to be relatively minor. In addition, as the species listed in **Alternative 7** and **8** constitute about 1% of the total snapper grouper species, removal of these species from the FMU is not expected to have significant biological effects. Therefore, there is very little difference in the biological effects of **Alternatives 2, 5,** and **9 (Preferreds)**. Among the alternatives considered, **Alternatives 4** and **7** would have the greatest negative biological effect because they would remove the most species from the FMU.

The economic benefits associated with retaining management of the 13 snapper grouper species' effective landings would be relatively small. The impact of removing these landings from federal management under the preferred alternatives (**Preferred Alternatives 2, 5**, and **9**) would be reduced by other factors, such as the fact that individual states can still manage species directly if landings occur at ports within their respective jurisdictions. Further, removing species effectively managed by the states from the snapper grouper FMP is expected to result in more efficient management of all snapper grouper species. Specifically, the states will obtain management authority over snapper grouper species which they have more direct control over and federal authorities (SAFMC and NOAA Fisheries Service) will retain management over snapper grouper species which, to some or a large extent, fall within their jurisdiction and are harvested in relatively significant numbers based on landings. In turn, federal resources (labor and capital) could be used to more effectively manage the remaining snapper grouper species in the FMU. In general, the allocation of management authority over all snapper grouper species and thus the associated costs will more closely mirror the distribution of the resource.

The overall social effects of removal should be beneficial as management may be less encumbered with oversight of species that are not encountered or targeted on a regular basis and may still be accounted for through state landings. If budgets are reduced in the future, the removal of these species may lessen the burden of monitoring and assessment so that key species can continue to be assessed with the best available science through quality data collection.

Table 2-7b. Summary of effects under **Action 1**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action). Do not remove any species from the FMU	(+) No species removed from FMU.	(+-) Positive short-term socioeconomic impacts. Negative administrative impact.
Alternative 2 (Preferred). Remove species with ≥ 95% landings in state waters from the FMU	(+-) 10 species removed from FMU, minimal effect on bycatch mortality.	(+-) Would incur a lower level social and administrative impacts compared to **Alternatives 3, 4, 6, 7,** and **8**.
Alternative 3. Remove species with ≥ 90% landings in state waters from the FMU	(-) 11 species removed from FMU, possible increase in landings and bycatch mortality.	(+-)Would incur a lower level of social and administrative impacts compared to **Alternatives 4, 6, 7,** and **8**.
Alternative 4. Remove species with ≥ 80% landings in state waters from the FMU	(-) 15 species removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 5, 6, 7,** and **8**.
Alternative 5 (Preferred). Remove species covered under the Florida Marine Life Species Rule from the FMU	(+) 3 species removed from FMU. Non-lethal methods of harvest, small landings.	(+) Would incur lowest level of socioeconomic impact because landings are small. Highest net benefits over time in conjunction with **Alternatives 4, 6, 7,** and **8**.
Alternative 6. Remove species with combined landings ≤ 10,000 lbs from the FMU	(-) 22 species removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 4, 5, 7,** and **8**.
Alternative 7. Remove species with combined landings ≤ 20,000 lbs from the FMU	(-) Largest number of species (28) removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 4, 6, 7,** and **8**.
Alternative 8. Remove tomtate, knobbed porgy, whitebone porgy, and jolthead porgy from the FMU.	(+-) Four species removed from FMU, small landings.	(+) Would incur a lower level of socioeconomic impact because landings are small. Highest net benefits over time in conjunction with **Alternatives 4, 5, 6,** and **7**.
Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the FMU.	(+) Two species with zero landings removed.	(+) Would not incur socioeconomic impact because landings are zero.

2.1.2 Action 2: Designate Ecosystem Component (EC) Species

Alternative 1 (No Action). Do not designate EC species.

Alternative 2. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as EC species.

Alternative 3. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species.

Alternative 4. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 2,500 lbs, as EC species.

Alternative 5. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 5,000 lbs, as EC species.

Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS1 criteria, as EC species.

Table 2-8. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as EC species.
A score of 0 indicates ecosystem criteria are met for the category. A total score of less than 2 suggests the species could be considered as an EC species. Thirteen species met this criterion, but seven overlapping species (highlighted in yellow) are excluded under the preferred alternatives in **Action 1**. Six EC candidate species qualified and are highlighted in green.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Almaco jack	1	0	1	1	3
Atlantic spadefish	1	0	1	1	3
Banded rudderfish	1	0	1	1	3
Bank sea bass	0	0	1	0	1
Bar jack	1	0	1	0	2
Black grouper	1	0	1	1	3
Black margate	1	0	1	1	3
Black sea bass	1	1	1	1	4
Black snapper	0	0	1	1	2
Blackfin snapper	0	0	1	1	2
Blue runner	1	0	1	1	3
Blueline tilefish	1	0	1	1	3
Bluestriped grunt	1	0	0	0	1

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Coney	0	0	1	1	2
Cottonwick	0	0	0	1	1
Crevalle jack	1	0	1	1	3
Cubera snapper	1	0	1	1	3
Dog snapper	0	0	1	1	2
French grunt	0	0	0	0	0
Gag	1	1	1	1	4
Grass porgy	0	0	1	0	1
Gray snapper	1	0	1	1	3
Gray triggerfish	1	0	0	1	2
Graysby	1	0	0	1	2
Greater amberjack	1	0	1	1	3
Hogfish	1	0	1	1	3
Jolthead porgy	1	0	1	1	3
Knobbed porgy	1	0	1	1	3
Lane snapper	1	0	0	1	2
Lesser amberjack	1	0	1	1	3
Longspine porgy	0	0	1	0	1
Mahogany snapper	0	0	1	1	2
Margate	1	0	1	0	2
Misty grouper	0	0	1	1	2
Mutton snapper	1	0	1	1	3
Ocean triggerfish	0	0	1	0	1
Porkfish	1	0	1	0	2
Puddingwife	0	0	1	0	1
Queen snapper	0	0	1	1	2
Queen triggerfish	0	0	1	0	1
Red grouper	1	1	1	1	4
Red hind	1	0	1	1	3
Red porgy	1	1	1	1	4
Red snapper	1	1	1	1	4
Rock hind	1	0	1	1	3
Rock sea bass	0	0	1	0	1
Sailors choice	1	0	1	0	2
Sand tilefish	1	0	1	0	2
Saucereye porgy	0	0	1	1	2

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Scamp	1	0	1	0	2
Schoolmaster	0	0	1	0	1
Scup	1	0	0	1	2
Sheepshead	1	0	1	1	3
Silk snapper	1	0	1	1	3
Smallmouth grunt	0	0	0	1	1
Snowy grouper	1	1	1	1	4
Spanish grunt	0	0	1	1	2
Tiger grouper	0	0	1	0	1
Tilefish (Golden)	1	1	1	1	4
Tomtate	1	0	0	1	2
Vermilion snapper	1	1	1	1	4
White grunt	1	0	0	1	2
Whitebone porgy	1	0	1	1	3
Yellow jack	1	0	1	0	2
Yellowedge grouper	1	0	1	1	3
Yellowfin grouper	1	0	1	1	3
Yellowmouth grouper	0	0	1	1	2
Yellowtail snapper	1	0	1	1	3
Wreckfish	1	0	1	1	3

In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Comparison of Alternatives

Most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed. Exceptions include the grouper (coney, misty grouper, yellowmouth grouper) and snapper species (dog snapper, mahogany snapper, blackfin snapper, and black snapper), which have limits on the number of individuals that can be retained by recreational fishermen. Furthermore, coney and yellowmouth grouper are included in the four-month spawning season closure for shallow water grouper species. Therefore, designating grouper (coney, misty grouper, and yellowmouth grouper) and snapper (mahogany snapper, blackfin snapper, dog snapper, and black snapper) species through proposed actions in **Alternatives 2-5** could result in increased harvest (albeit small) of the species by commercial and recreational fishermen since they would no longer be subject to management. Therefore, the beneficial biological effects for these species would be greatest for **Alternative 1 (No Action)** and would be least for **Alternative 2**.

In general, the net economic effects of designating species as EC species in the snapper grouper FMU are expected to be beneficial. More specifically, net economic benefits are expected to be maximized under **Alternative 6 (Preferred)** relative to the other alternatives. Since the designation of species as EC species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net benefits are the result of indirect rather than direct economic effects.

The overall social effects should be positive for both recreational and commercial sectors as these species will not require unnecessary management thresholds that could trigger further management for species that are rarely encountered.

Table 2-9. Summary of effects under **Action 2** (assumes removal of species under preferreds in **Action 1**).

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action). Do not designate EC species	(+) No species designated as EC. Highest biological benefits.	(+-) Least reduction in administrative costs.
Alternative 2. Designate snapper grouper species with combined landings ≤10,000 lbs, as EC species	(-) 4 species designated as EC. Least beneficial impacts.	(+-) Higher benefits compared to **Alternatives 3-5.**
Alternative 3. Designate snapper grouper species with combined landings ≤ 1,000 lbs, as EC species.	(+-) 2 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher beneficial impacts compared to **Alternative 1 (No Action).**
Alternative 4. Designate snapper grouper species with combined landings ≤ 2,500 lbs, as EC species.	(+-) 3 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher benefits compared to **Alternatives 5** and **3**.
Alternative 5. Designate snapper grouper species with combined landings ≤ 5,000 lbs, as EC species.	(+-) 3 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher benefits compared to **Alternative 3**.
Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS 1 criteria, as EC species.	(+-) 6 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+) Highest net benefits. Highest reduction in administrative costs.

2.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species

Alternative 1 (No Action). Do not establish multi-species groupings for the Snapper Grouper FMU.

Alternative 2. Establish species groups (**Table 2-10**) for the Snapper Grouper FMU using associations based on life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. Establish sub-complexes within species complexes. Complex and/or sub-complex ACLs will be a sum of the individual ACLs included in that complex (all sectors combined) and/or sub-complex. When a complex ACL is exceeded, all species in that complex, as well as those in sub-complexes will be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex will be subject to AMs.

Table 2-10. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Deepwater Complex	Deepwater Subcomplexes	Individual ACLs w/o Complex
Yellowedge grouper	Yellowedge grouper	Atlantic spadefish
Snowy grouper$_1$	Snowy grouper$_1$	Bar jack
Golden tilefish$_1$	Golden tilefish$_1$	Black sea bass$_1$
Blueline tilefish	Blueline tilefish	Blue runner
Silk Snapper	Silk Snapper	Goliath grouper$_{1,3}$
Misty grouper$_2$	Misty grouper$_2$	Gray triggerfish
Sand tilefish	Sand tilefish	Hogfish$_1$
Queen snapper	Queen snapper	Nassau grouper$_3$
Black snapper	Black snapper	Red snapper$_{1,3}$
Blackfin snapper	Blackfin snapper	Speckled hind$_3$
Jacks Complex	**Jacks Subcomplexes**	Vermilion snapper$_1$
Greater amberjack$_1$	Greater amberjack$_1$	Warsaw grouper$_3$
Almaco jack	Almaco jack	Wreckfish
Banded rudderfish	Banded rudderfish	
Lesser amberjack$_2$	Lesser amberjack$_2$	

Table 2-10. Continued. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Snappers Complex	Snappers Subcomplexes
Yellowtail snapper[1]	Yellowtail snapper[1]
Mutton snapper[1]	Mutton snapper[1]
Gray snapper	Gray snapper
Lane snapper	Lane snapper
Cubera snapper[2]	Cubera snapper[2]
Dog snapper	Dog snapper
Mahogany snapper	Mahogany snapper
Grunts Complex	**Grunts Subcomplex**
White grunt	White grunt
Sailors choice[2]	Sailors choice[2]
Tomtate	Tomtate
Margate	Margate
Shallow-Water Groupers Complex	**Shallow-Water Groupers Subcomplexes**
Gag[1,2]	Gag[1,2]
Red grouper[1]	Red grouper[1]
Black grouper[1]	Black grouper[1]
Scamp	Scamp
Red hind	Red hind
Rock hind	Rock hind
Yellowmouth grouper	Yellowmouth grouper
Yellowfin grouper	Yellowfin grouper
Coney	Coney
Graysby	Graysby
Porgies Complex	**Porgies Subcomplexes**
Red porgy[1]	Red porgy[1]
Jolthead porgy	Jolthead porgy
Knobbed porgy	Knobbed porgy
Saucereye porgy[2]	Saucereye porgy[2]
Scup	Scup
Whitebone porgy[2]	Whitebone porgy[2]

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Alternative 3. Establish species groups (**Table 2-11**) for the Snapper Grouper FMU based on similar life histories. (indicator species in bold).

Table 2-11. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach.

SHALLOW WATER GROUPER	**JACK UNIT**
UNIT 1	**Greater amberjack**
Gag	Almaco jack
Red grouper	Banded rudderfish
Black grouper	Lesser amberjack
Scamp	Bar jack
Red hind	Blue runner
Rock hind	**GRUNT AND PORGY UNIT**
Yellowmouth grouper	**UNIT 1**
Yellowfin grouper	**White grunt**
Coney	Sailor's choice
Graysby	Tomtate
UNIT 2	Margate
Goliath grouper	
UNIT 3	**UNIT 2**
Nassau grouper	**Red porgy**
DEEP WATER GROUPER UNIT	Jolthead porgy
Snowy grouper	Knobbed porgy
Yellowedge grouper	Saucereye porgy
Speckled hind	Scup
Warsaw grouper	Whitebone porgy
Misty grouper	**SEA BASS UNIT**
TILEFISH UNIT	**Black sea bass**
Golden tilefish	**SHALLOW WATER SNAPPER AND**
	WRASSE UNIT
Blueline tilefish	**Yellowtail snapper**
Sand tilefish	**Mutton snapper**
WRECKFISH	Gray snapper
Wreckfish	Lane snapper
MID-SHELF SNAPPER UNIT	Cubera snapper
Vermilion snapper	Dog snapper
Red snapper	Mahogany snapper
Silk Snapper	Hogfish
Queen snapper	**TRIGGERFISH AND SPADEFISH UNIT**
Black snapper	**Gray triggerfish**
Blackfin snapper	Atlantic spadefish

Alternative 4 (Preferred). Establish single species ACLs and grouped species complexes for the establishment of ACLs (**Table 2-12**). Single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on the criteria below. Complexes for groups of species would be established for other species using associations based on one or more of the following: life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. When a complex ACL is exceeded, all species in that complex will be subject to AMs. When an individual ACL is exceeded, the individual stock will be subject to AMs.

Table 2-12. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach.

Deepwater Complex	Individual ACLs
Yellowedge grouper	Atlantic spadefish
Blueline tilefish	Greater amberjack[1]
Silk Snapper	Blue runner
Misty grouper[2]	Bar jack
Sand tilefish	Gray triggerfish
Queen snapper	Snowy grouper[1]
Black snapper	Golden tilefish[1]
Blackfin snapper	Warsaw grouper[3]
Jacks Complex	Wreckfish
Almaco jack	Scamp
Banded rudderfish	Gag[1]
Lesser amberjack[2]	Red grouper[1]
Snappers Complex	Goliath grouper[1,3]
Gray snapper	Nassau grouper[3]
Lane snapper	Black sea bass[1]
Cubera snapper[2]	Black grouper[1]
Dog snapper	Speckled hind[3]
Mahogany snapper	Red porgy[1]
Grunts Complex	Hogfish[1]
White grunt	Yellowtail snapper[1]
Sailors choice[2]	Red snapper[1,3]
Tomtate	Vermilion snapper[1]
Margate	Mutton snapper[1]
Shallow-Water Groupers Complex	**Porgies**
Red hind	Jolthead porgy
Rock hind	Knobbed porgy
Yellowmouth grouper	Saucereye porgy[2]
Yellowfin grouper[2]	Scup
Coney	Whitebone porgy[2]
Graysby	

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Comparison of Alternatives

The Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires regional fishery management councils to implement ACLs and accountability measures (AMs) for all stocks under federal management by 2011 to ensure overfishing does not occur. **Alternative 1 (No Action)** would not accomplish this since stock assessments and values for determining overfished/overfishing status are not available for many of these species. **Alternatives 2, 3,** and **4 (Preferred)** would help to accomplish the Magnuson-Stevens Act goal of ensuring overfishing does not occur, with **Alternative 2** and **Alternative 4 (Preferred)** having the highest potential of yielding the best biological effect. Similar to **Alternative 2**, the approach in **Alternative 4 (Preferred)** helps prevent overfishing of all species in stock complexes while mitigating variability in landings data by combining species into a single, complex-level ACL. **Alternative 2** and **Alternative 4 (Preferred)** also allow individual ACL management of assessed or prohibited species. This approach streamlines and simplifies ACL management, and provides an incentive to move stocks up the scientific and statistical committee's (SSC) ABC tiers by promoting individual ACLs for species with completed assessments. Additionally, **Alternative 4 (Preferred)** promotes attaining optimum yield (OY) for assessed stocks while providing a mechanism to prevent overfishing of the unassessed stocks, which are potentially less productive and/or more vulnerable. The approach proposed in **Alternative 4 (Preferred)** is relatively simple and carries a minimal administrative burden with regards to quota monitoring as compared to the other alternatives. The proposed establishment of species complexes in **Alternative 2** and **Alternative 4 (Preferred)** explicitly considered discard information when available (**Appendix O**).

Administrative costs arise from fishery management and the required scientific research to support management. Administrative costs would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. Relative to **Alternative 1 (No Action)**, the reduction in number of species with ACLs and thus expected administrative costs is 64% under **Alternative 3**, 24% under **Alternative 4 (Preferred)**, and 12% under **Alternative 2**. Since the methodology under **Alternative 2** is considered more scientifically complex, and thus more costly in terms of research costs, relative to **Alternative 4 (Preferred)**, the difference in administrative costs is even greater than the difference in the number of ACLs suggests. On the other hand, the probability of triggering an AM action in the future is inversely related to the number of ACLs, all else being equal. Thus, the probability of triggering an AM action in the future would be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. AM actions in the future are expected to generate adverse indirect economic effects on fishery participants. Thus, total expected economic costs are expected to be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**.

Although quantitative estimates of the expected net economic benefits cannot be generated for these alternatives, a qualitative assessment based on the available information can be conducted. An analysis of the information discussed above suggests that expected net economic benefits would be greatest under **Alternative 4 (Preferred)**, followed by **Alternative 2**, **Alternative 3**, and **Alternative 1 (No Action)**. However, this conclusion must be cautioned by the fact that it is unknown how fishing behavior will be altered under the different species grouping methodologies and potential AMs in the future.

It is difficult to determine what the social effects would be from species groupings as many of the impacts would come from the thresholds for ACLs that are determined for each species group as a result. If thresholds are set lower than actual harvest rates, then there will be negative social impacts as species complexes are closed, forcing fishermen to switch to other species, use catch and release only, or not fish at all. Catch and release could increase discards/bycatch mortality and not fishing at all could have negative impacts on local economies.

If the number of ACLs in the snapper grouper FMU can be reduced by incorporating species complexes and groupings, the administrative impacts of establishing, monitoring, and implementing ACLs, ACTs, and AMs will be reduced.

Table 2-13. Summary of effects under **Action 3**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action).	(-) No species groups. ACLs/AMs required for all 73 species. Stock assessments and SDC are not available for many of these species.	(+-) Smallest net economic benefits.
Alternative 2.	(+) Species grouped into complexes/sub-complexes, and individual ACLs. ACLs/AMs will apply to species included in groups.	(+-) Benefits between **Alternative 1 (No Action)** and **Alternative 3**.
Alternative 3.	(+) Species grouped into complexes/sub-complexes, and individual ACLs, less quantitative analysis compared with **Alternative 2**.	(+-) Benefits lower than Alternative 3, but greater than **Alternatives 1 (No Action)** and **2**.
Alternative 4 (Preferred).	(+) Species grouped into complexes and individual ACLs. ACLs/AMs will apply to species included in groups.	(+-) Greatest net economic benefits.

2.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species

Alternative 1 (No Action). Do not establish an ABC Control Rule for species in the Snapper Grouper FMU.

Alternative 2. Where applicable, establish an ABC Control Rule where ABC equals OFL.

Alternative 3. For unassessed species: establish an ABC Control Rule where ABC equals a percentage of OFL or a percentage of the median landings 1999-2008, as appropriate.

- **Subalternative 3a.** ABC=65% (OFL or median landings 1999-2008)
- **Subalternative 3b.** ABC=75% (OFL or median landings 1999-2008)
- **Subalternative 3c.** ABC=85% (OFL or median landings 1999-2008)
- **Subalternative 3d.** ABC=95% (OFL or median landings 1999-2008)

Alternative 4. For assessed species: establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

- **Subalternative 4a.** ABC=yield at 65%MFMT
- **Subalternative 4b.** ABC=yield at 75%MFMT
- **Subalternative 4c.** ABC=yield at 85%MFMT

Alternative 5. For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. For unassessed species: adopt the South Atlantic Council SSC's Control Rule in **Table 2-14** but establish an interim ABC = median landings 1999-2008 and OFL = unknown until the SSC's control rule can be fully applied.

Alternative 6. For assessed species: establish ABCs based on the South Atlantic's SSC's ABC control rule. For unassessed species: Adopt the Gulf of Mexico Council SSC's ABC Control Rule for unassessed species as described in **Table 2-15**. The indicated default ABC buffer levels for Tier 3a and 3b are to be used unless specified otherwise by the Council on a stock by stock basis.

Alternative 7 (Preferred). For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. Recommended ABC values are shown in **Table 2-18.** For unassessed species: When the ABC control rule portion for unassessed species is complete, establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. Until the ABC Control Rule is complete, establish ABCs based upon the approach in **Table 2-16** and OFL = unknown. Recommended ABC values are shown in **Table 2-17**.

Table 2-14. The South Atlantic Council's SSC's ABC control rule.
Note: The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. See **Appendix Q** for details on the methodology.

<table>
<tr><th colspan="2">Level 1 – Assessed Stocks</th></tr>
<tr><th>Tier</th><th>Tier Classification and Methodology to Compute ABC</th></tr>
<tr><td>1. Assessment Information (10%)</td><td>1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)
2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%)
3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%)
4. Reliable catch history. (7.5%)
5. Scarce or unreliable catch records. (10%)</td></tr>
<tr><td>2. Uncertainty Characterization (10%)</td><td>1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%)
2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%)
3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%)
4. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%)
5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)</td></tr>
<tr><td>3. Stock Status (10%)</td><td>1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%)
2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%)
3. Stock is either overfished or overfishing. (5%)
4. Stock is both overfished and overfishing. (7.5%)
5. Either status criterion is unknown. (10%)</td></tr>
<tr><td>4. Productivity and Susceptibility – Risk Analysis (10%)</td><td>1. Low risk. High productivity, low vulnerability, low susceptibility. (0%)
2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)
3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)</td></tr>
<tr><th colspan="2">Level 2 - Unassessed Stocks. Reliable landings and life history information available</th></tr>
<tr><td colspan="2">OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA).
ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.</td></tr>
<tr><th colspan="2">Level 3 - Unassessed Stocks. Inadequate data to support DBSRA</th></tr>
<tr><td colspan="2">ABC derived directly, from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.</td></tr>
<tr><th colspan="2">Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA</th></tr>
<tr><td colspan="2">OFL and ABC derived on a case-by-case basis. ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC.</td></tr>
</table>

Table 2-15. The Gulf of Mexico Fishery Management Council's (Gulf of Mexico Council) SSC's ABC control rule for unassessed species.
Note: The South Atlantic Council is only considering Tiers 3a and 3b in **Alternative 6**.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. a. Risk of exceeding OFL = 45% b. Risk of exceeding OFL = 35% c. Risk of exceeding OFL = 25% (default level for unassigned stocks) d. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.

Table 2-15. Continued. The Gulf of Mexico Fishery Management Council's (Gulf of Mexico Council) SSC's ABC control rule for unassessed species.

ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: a. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) b. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) c. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) d. ABC = mean of the landings (risk of exceeding OFL = 2.3%)
Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: e. ABC = 100% of OFL f. ABC = 85% of OFL g. ABC = 75% of OFL (default level for unassigned stocks) h. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.

Table 2-16. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC control rule (**Table 2-14**).

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend) YES: GO to 2
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Table 2-17. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.
The table excludes species that would be removed from the FMU (**Action 1**) and those proposed for designation as Ecosystem Component (EC) species (**Action 2**). OFL is unknown.

Species Common Name	Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Yellowedge grouper	30,221[1]
Blueline tilefish	592,602[4]
Silk Snapper	27,519[1]
Misty grouper	2,863[3]
Sand tilefish	8,823[3]

Table 2-17. Continued. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.

Species Common Name	Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Queen snapper	9,344[3]
Black snapper	382[3]
Blackfin snapper	4,154[3]
Almaco jack	291,922[2]
Banded rudderfish	152,999[2]
Lesser amberjack	10,568[2]
Gray snapper	894,019[2]
Lane snapper	153,466[2]
Cubera snapper	31,772[2]
Dog snapper	7,523[3]
Mahogany snapper	160[3]
White grunt*	635,899[1]
Sailors choice	35,266[3]
Tomtate	70,948[3]
Margate	34,662[3]
Red hind	25,885[2]
Rock hind	37,569[2]
Yellowmouth grouper	4,661[3]
Yellowfin grouper	9,258[3]
Coney	2,589[3]

Table 2-17. Continued. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.

Species Common Name	**Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)**
Graysby	17,856[3]
Jolthead porgy	42,533[3]
Knobbed porgy	61,194[3]
Saucereye porgy	4,205[3]
Scup	8,9993
Whitebone porgy	30,6843
Atlantic spadefish	282,8412
Blue runner	1,289,9412
Bar jack	20,5203
Gray triggerfish*	672,5652
Nassau grouper	0
Goliath grouper	0
Scamp	492,5721
Hogfish	147,6382

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]ABC based on median landings (1999-2008) as per South Atlantic SSC; [2]ABC based on 3rd highest landings (1999-2008) as per South Atlantic SSC; [3]ABC proxy value based on the South Atlantic SSC's ABC control rule, to be discussed by the South Atlantic SSC at a later date; and [4]ABC based on modified approach as per South Atlantic SSC.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 2-18. ABCs (landed catch) for assessed snapper grouper species. ABCs are being adopted in this amendment for greater amberjack, yellowtail snapper, mutton snapper, and black grouper.

Species[1]	ABC
Black sea bass	847,000 lbs ww
Gag	949,000 lbs ww
Snowy grouper	102,960 lbs ww
Red porgy	395,304 lbs ww
Vermilion snapper	1,109,000 lbs ww
Greater amberjack	1,968,000 lbs ww
Yellowtail snapper[2]	2,173,875 lbs ww
Mutton snapper[2]	926,600 lbs ww
Black grouper[2,3]	245,595 lbs ww
Red grouper[4]	622,000 lbs ww

[1] The SSC chose not to specify an ABC for golden tilefish in June 2009 because the age of the 2004 assessment and lack of a current estimate of abundance. In April 2010, however, the SSC provided an ABC recommendation of 311,000 lbs. A new ABC will be provided for golden tilefish through SEDAR 25 in December 2011. The Council will take action to adopt the new ABC for golden tilefish in Amendment 18B, currently under development.
[2] Values for ABC for black grouper, yellowtail snapper and mutton snapper are for South Atlantic only (see **Actions 13 18** and **19** for jurisdictional separation of ABC between the South Atlantic and Gulf of Mexico)
[3] ABC recommended by the Gulf Council's SSC
[4] ABC recommended by South Atlantic's SSC, but may change in Amendment 24.

Table 2-19. ABC values for unassessed species, which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2, 3** and **5**.
The table excludes species that would be removed from the FMU (**Action 1**). OFL is unknown.

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Yellowedge grouper	30,221	n/a	19,643	22,665	25,687	28,710
Blueline tilefish	146,134	n/a	94,987	109,600	124,214	138,827
Silk Snapper	27,519	n/a	17,887	20,639	23,391	26,143
Misty grouper	2,346	n/a	1,525	1,760	1,994	2,229
Sand tilefish	6,353	n/a	4,130	4,765	5,400	6,036
Queen snapper	7,584	n/a	4,930	5,688	6,446	7,205
Black snapper	229	n/a	149	171	194	217
Blackfin snapper	2,154	n/a	1,400	1,615	1,830	2,046
Almaco jack	229,236	n/a	149,004	171,927	194,851	217,775
Banded rudderfish	119,916	n/a	77,945	89,937	101,928	113,920
Lesser amberjack	7,490	n/a	4,869	5,618	6,367	7,116
Gray snapper	769,475	n/a	500,159	577,107	654,054	731,002
Lane snapper	114,395	n/a	74,357	85,797	97,236	108,676
Cubera snapper	22,362	n/a	14,535	16,771	19,007	21,244
Dog snapper	2,586	n/a	1,681	1,940	2,198	2,457
Mahogany snapper	53	n/a	34	40	45	50
White grunt*	635,899	n/a	413,335	476,925	540,514	604,104
Sailors choice	18,458	n/a	11,998	13,844	15,689	17,535
Tomtate	64,454	n/a	41,895	48,341	54,786	61,231
Margate	25,412	n/a	16,518	19,059	21,600	24,142
Red hind	24,406	n/a	15,864	18,304	20,745	23,185
Rock hind	32,792	n/a	21,315	24,594	27,873	31,152
Yellowmouth grouper	2,147	n/a	1,396	1,610	1,825	2,040
Yellowfin grouper	4,414	n/a	2,869	3,310	3,752	4,193
Coney	1,975	n/a	1,284	1,481	1,678	1,876
Graysby	16,265	n/a	10,573	12,199	13,826	15,452
Jolthead porgy	32,829	n/a	21,339	24,622	27,905	31,188

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Knobbed porgy	45,912	n/a	29,843	34,434	39,025	43,616
Saucereye porgy	2,952	n/a	1,919	2,214	2,509	2,805
Scup	6,579	n/a	4,276	4,934	5,592	6,250
Whitebone porgy	24,715	n/a	16,065	18,537	21,008	23,480
Atlantic spadefish	231,056	n/a	150,187	173,292	196,398	219,503
Blue runner	1,007,120	n/a	654,628	755,340	856,052	956,764
Bar jack	10,009	n/a	6,506	7,507	8,508	9,509
Gray triggerfish*	529,309	n/a	344,051	396,981	449,912	502,843
Scamp	492,572	n/a	320,172	369,429	418,686	467,944
Hogfish	133,136	n/a	86,539	99,852	113,166	126,479
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 2-20a. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3a from **Table 2-15**.

Species Common Name	OFL (Mean + 2 SD)	Mean + 0.5 SD	Mean + 1 SD (Default)	Mean + 1.5 SD
Yellowedge grouper	52,025	35,458	40,980	46,503
Blueline tilefish	747,365	392,193	510,584	628,975
Silk Snapper	69,988	42,887	51,921	60,954
Misty grouper	4,518	2,813	3,381	3,950
Sand tilefish	18,775	10,576	13,309	16,042
Queen snapper	17,090	10,095	12,427	14,759
Black snapper	604	309	407	506
Blackfin snapper	6,113	3,626	4,455	5,284
Almaco jack	366,092	261,828	296,583	331,338
Banded rudderfish	212,007	147,439	168,962	190,485
Lesser amberjack	17,566	11,114	13,264	15,415
Gray snapper	1,104,046	875,775	951,865	1,027,955
Lane snapper	184,619	140,153	154,975	169,797
Cubera snapper	54,401	30,935	38,757	46,579
Dog snapper	15,697	7,763	10,408	13,053
Mahogany snapper	3,020	1,192	1,802	2,411
White grunt*	773,769	675,044	707,952	740,860
Sailors choice	49,021	28,946	35,638	42,329
Tomtate	100,360	74,989	83,446	91,903
Margate	59,750	35,930	43,870	51,810
Red hind	30,162	24,771	26,568	28,365
Rock hind	47,791	35,886	39,854	43,823
Yellowmouth grouper	9,704	4,722	6,383	8,044
Yellowfin grouper	33,789	15,197	21,395	27,592
Coney	3,956	2,259	2,825	3,390
Graysby	29,763	19,075	22,638	26,200
Jolthead porgy	63,190	43,307	49,934	56,562
Knobbed porgy	76,545	56,714	63,325	69,935
Saucereye porgy	5,937	3,821	4,526	5,232
Scup	14,904	8,572	10,682	12,793
Whitebone porgy	39,634	28,016	31,889	35,761
Atlantic spadefish	577,785	347,101	423,996	500,890
Blue runner	1,534,169	1,116,354	1,255,626	1,394,897
Bar jack	27,908	16,316	20,180	24,044
Gray triggerfish*	873,883	641,940	719,255	796,569
Scamp	642,258	522,282	562,274	602,266
Hogfish	208,964	152,939	171,614	190,289
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Table 2-20b. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3b from **Table 2-15**.

Species Common Name	OFL (Mean)	85% OFL	75% OFL (Default)	65% OFL
Yellowedge grouper	29,936	25,445	22,452	19,458
Blueline tilefish	273,802	232,732	205,352	177,971
Silk Snapper	33,854	28,776	25,390	22,005
Misty grouper	2,244	1,908	1,683	1,459
Sand tilefish	7,844	6,667	5,883	5,098
Queen snapper	7,763	6,599	5,822	5,046
Black snapper	211	179	158	137
Blackfin snapper	2,798	2,378	2,098	1,818
Almaco jack	227,074	193,013	170,305	147,598
Banded rudderfish	125,917	107,029	94,438	81,846
Lesser amberjack	8,963	7,618	6,722	5,826
Gray snapper	799,685	679,732	599,764	519,795
Lane snapper	125,331	106,531	93,998	81,465
Cubera snapper	23,113	19,646	17,335	15,023
Dog snapper	5,119	4,351	3,839	3,327
Mahogany snapper	583	496	438	379
White grunt*	642,136	545,816	481,602	417,388
Sailors choice	22,255	18,916	16,691	14,466
Tomtate	66,533	56,553	49,900	43,246
Margate	27,990	23,791	20,992	18,193
Red hind	22,974	19,528	17,231	14,933
Rock hind	31,918	27,130	23,938	20,746
Yellowmouth grouper	3,062	2,603	2,296	1,990
Yellowfin grouper	9,000	7,650	6,750	5,850
Coney	1,694	1,440	1,270	1,101
Graysby	15,513	13,186	11,635	10,083
Jolthead porgy	36,679	31,177	27,509	23,841
Knobbed porgy	50,104	42,588	37,578	32,568
Saucereye porgy	3,115	2,648	2,336	2,025
Scup	6,461	5,492	4,846	4,200
Whitebone porgy	24,144	20,522	18,108	15,693
Atlantic spadefish	270,206	229,675	202,655	175,634
Blue runner	977,083	830,520	732,812	635,104
Bar jack	12,452	10,584	9,339	8,094
Gray triggerfish*	564,626	479,932	423,470	367,007
Scamp	482,290	409,946	361,717	313,488
Hogfish	134,264	114,125	100,698	87,272
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Comparison of Alternatives

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act, since it would not establish an ABC control rule for all species in the Snapper Grouper FMU. Although there are currently no ABC control rules, there are status quo ABC values for some snapper grouper species based on recommendations from the South Atlantic Council's SSC. For overfished species, the SSC previously recommended ABCs equal to the value specified in the rebuilding plan, and for other species experiencing overfishing, ABCs are specified and included in Amendments 15A, 16, 17A, and 17B to the Snapper Grouper FMP.

Alternatives 2-4 would specify an ABC control rule for assessed and non-assessed species or species groups where needed. Under **Alternative 2**, ABC would be equal to OFL. The NS 1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3-6**, which would account for scientific and management uncertainty. However, the Council's SSC has indicated that OFL cannot be determined for most unassessed species based on their recommended ABC control rule. Therefore, given the SSC's recommendation, **Alternative 2** could only be applied to species that have an OFL from a stock assessment.

Alternative 3 would set the ABC for unassessed species as a percentage of the OFL (equal to the median landings from 1999-2008) where **Subalternative 3a** would be the most conservative subalternative where ABC = 65%OFL and **Subalternative 3d** would be the least conservative subalternative where ABC = 95%OFL. Therefore, **Alternative 3** would be expected to have a greater biological benefit among **Alternatives 1 (No Action), 2,** and **3**.

Alternative 4 and its subalternatives would set ABC to a percentage of the yield at the maximum fishing mortality threshold (MFMT) for assessed species. **Subalternative 4a**, the most conservative subalternative under **Alternative 4**, would set ABC = yield at 65%MFMT, which is equivalent to about 93.6%OFL. **Subalternative 4b** would set ABC = yield at 75%MFMT, which is equivalent to 97.1%OFL. **Subalternative 4c** would be the least conservative subalternative under **Alternative 4** and would set ABC = yield at 85%MFMT, which is equivalent to about 98.9%OFL. Stock assessments have provided values for the yield a 65%, 75%, and 85% of MFMT for many of these species when the stock is at the biomass associated with the Maximum Sustainable Yield (B_{MSY}); however, values are not available for these species at current biomass levels.

For assessed species, **Alternative 5** would consider the probability of overfishing in determining ABC. **Alternative 5** would establish ABCs based on the SSC's ABC control rule for assessed species that have four dimensions included in the control rule framework: Assessment information; characterization of uncertainty; stock status; and productivity/susceptibility of the stock. Since the ABC would be specific to the stock, the ABC from **Alternative 5** could be greater or less than the ABC that would result from **Alternatives 2-4**. Therefore, the associated biological effects could be greater or less, but they would be considered to be appropriate for the stock.

Similar to **Alternative 5**, **Alternative 6** would specify an ABC control rule based on the South Atlantic SSC's control rule for assessed species. However, for unassessed species, the Gulf of Mexico Council SSC's ABC control rule would be used. **Alternative 6** would follow Tier 3a of the

Gulf of Mexico's Council SSC's ABC control rule where landings are small relative to stock biomass and recent historical landings are without trend. For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b. The Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in a higher allowable catch than an ABC control rule based on median landings 1999-2008. Therefore, the biological effect of **Alternative 6** would likely be less than **Alternative 5**.

Alternative 7 (Preferred) would establish ABCs for assessed species, based on the South Atlantic SSC's ABC control rule **(Table 2-14)**. However, ABCs for unassessed species would be based upon the approach shown in **Table 2-16**, with OFL being unknown. In April 2011, the SSC further developed their ABC control rule and recommended ABC values for unassessed species, which are higher for all species compared with those in **Alternatives 1 (No Action)** through **5**, except for those in **Alternative 6** (**Table 2-15)**. The biological effects of **Alternative 7 (Preferred)** may be similar to **Alternative 5**, since the SSC took into account many different sources of uncertainty in their ABC recommendations.

The ranking of alternatives with respect to generating the least short-term adverse economic effects and potential long-term positive economic effects is as follows: **Alternative 1 (No Action), Alternative 2, Alternative 7 (Preferred)**, **Alternative 6** (Tier 3a), **Alternative 5**, **Subalternative 3d**, **Subalternative 3c**, **Subalternative 3b** and **Alternative 6** (Tier 3b), and **Subalternative 3a**. Since MFMT values at current biomass levels are not available for the unassessed species that do not already have ABCs, it is difficult to determine the economic effects of **Alternative 4**. These conclusions must be used with caution as the cumulative economic effects of reduced harvests from all these species is difficult to determine. If the ACL is restrictive as a result the selected ABC and the harvest of all species is subsequently reduced, the effects on fishing behavior will differ across vessels depending on their physical and operational characteristics. Such behavioral changes cannot be predicted using the currently available science.

One of the difficulties in understanding what the social effects would be is that the cumulative effect of reduced harvest from the combination of all these different species is difficult to ascertain. If a restrictive ABC level is chosen and harvests for all species are reduced, how those reductions will affect fishing behavior will depend upon individual fishing behaviors and sector makeup. These effects can differ dramatically from one region to another or from state to state depending upon the species that are predominant in that area and the composition of the respective fishing sector.

The establishment of an ABC Control Rule is a purely administrative process. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

Table 2-21. Summary of effects under **Action 4**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Only 11 Snapper Grouper species would have ABCs, with no ABC specified for unassessed species. Would not meet MSA requirements.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 2. ABC=ACL	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC, does not account for scientific and management uncertainty like **Alternatives 3-6**.	(+-) Smaller long-term, bigger short-term positive benefits compared with subalternatives under **Alternatives 3** and **4**.
Alternative 3: Subalternative 3a. ABC=65% OFL OFL=Median landings (1999-2008)	(+-) Most conservative of the four subalternatives under **Alternative 3**. Offers a large buffer between ACL and ABC.	(+-) Smallest short-term benefits, largest long-term benefits.
Subalternative 3b. ABC=75% OFL OFL=Median landings (1999-2008)	(+-) Benefits could be less than **Subalternative 3a**, and more than **Subalternatives 3c** and **3d**.	(+-) Short-term benefits could be less than **Subalternative 3a**, and more than **Subalternatives 3c** and **3d**.
Subalternative 3c. ABC=85% OFL OFL=Median landings (1999-2008)	(+-) Benefits between **Subalternatives 3b** and **3d**.	(+-) Benefits between **Subalternatives 3b** and **3d**.
Subalternative 3d. ABC=95% OFL OFL=Median landings (1999-2008)	(+-) Least conservative of the four subalternatives under **Alternative 3**. Offers the smallest buffer between ACL and ABC.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 4: Subalternative 4a. ABC=65% MFMT	(+-) Translates to 93.6% of OFL, benefits close to **Subalternative 3d**. Most conservative of the subalternatives under **Alternative 4**.	(+-) Benefits close to **Subalternative 3d**.
Subalternative 4b. ABC=75% MFMT	(+-) Benefits between **Subalternatives 4a** and **4c**.	(+-) Benefits between **Subalternatives 4a** and **4c**.

Table 2-21. Continued. Summary of effects under **Action 4**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative. ABC=85% MFMT	(+-) Translates to 98.9% of OFL, benefits close to **Subalternative 3d**. Least conservative of the subalternatives under **Alternative 4**.	(+-) Benefits close to **Subalternative 3d**.
Alternative 5. Assessed sp.= SAFMC SSC's ABC Control Rule Unassessed sp. = 75% OFL OFL = Median landings (1999-2008) (until ABC Control Rule established)	(+-) Benefits include a buffer between OFL and AC for assessed species. Benefits for unassessed species would be identical to **Subalternative 3b** until an ABC Control Rule is established for them, and then, unknown.	(+-) Larger long-term and smaller short-term benefits for assessed species. Benefits similar to **Subalternative 3b** for unassessed species until an ABC Control Rule is established for them, and then unknown.
Alternative 6. Assessed sp.=SAFMC SSC's ABC Control Rule Unassessed sp. = Gulf of Mexico SSC's ABC Control Rule (option with ABC = 1.5*S.D. (above Mean landings, 1999-2008).	(+-) Benefits for assessed species would be identical to **Alternative 5**. Benefits for unassessed species would be less than **Alternative 5**, since the Gulf of Mexico's ABC Control Rule results in more fish that can be landed.	(+-) Larger long-term and smaller short-term benefits for assessed species. Larger short-term, and smaller long-term benefits for unassessed species. Smaller long-term benefits compared to **Alternative 5**.
Alternative 7 (Preferred). Assessed sp.= SAFMC SSC's ABC Control Rule Unassessed sp. = approach in Table 2-16 and OFL = unknown	(+-) Benefits include a buffer between OFL and AC for assessed species. Benefits for unassessed species would be similar to **Alternative 5**, with a better analysis regarding scientific uncertainty.	(+-) Larger long-term and smaller short-term benefits for assessed species. Benefits better than **Alternative 5**, since the new ABC values allow for an increase in landings.

2.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do Not Currently Have Allocations

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Alternative 1 (No Action). Retain the current allocations (**Table 2-22**). Do not specify allocations for those species where no allocations have been specified.

Table 2-22. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively.

	Allocations	
	Commercial	**Recreational**
Black sea bass	43%	57%
Gag	51%	49%
Golden tilefish	97%	3%
Red porgy	50%	50%
Snowy grouper	95%	5%
Vermilion snapper	68%	32%
Red grouper (proposed in Am 24)	44%	56%

Alternative 2 (Preferred). Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3. Specify allocations for species that do not currently have allocations among three sectors, commercial, recreational, and for-hire, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1986-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 5. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1986-1998. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 6. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1999-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 7. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 2006-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Table 2-23. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**.
Allocations will be established for red grouper in Amendment 24. Allocations for wreckfish and black grouper are addressed in **Actions 9** and **14**, respectively.

Species or Species Complex	**Preferred Alternative 2**		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Deepwater Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Yellowedge grouper	96.19%	3.81%	96.19%	3.14%	0.67%	94.00%	6.00%	98.48%	1.52%	88.28%	11.72%	99.64%	0.36%
Blueline tilefish	47.39%	52.61%	47.39%	16.94%	35.67%	73.25%	26.75%	94.69%	5.31%	57.03%	42.97%	38.11%	61.89%
Silk Snapper	73.14%	26.86%	73.14%	2.02%	24.84%	74.17%	25.83%	67.34%	32.66%	84.95%	15.05%	71.34%	28.66%
Misty grouper	70.91%	29.09%	70.91%	28.69%	0.39%	47.26%	52.74%	15.11%	84.89%	98.33%	1.67%	99.97%	0.03%
Sand tilefish	16.22%	83.78%	16.22%	52.77%	31.00%	16.82%	83.18%	8.59%	91.41%	23.62%	76.38%	15.86%	84.14%
Queen snapper	93.12%	6.88%	93.12%	0.69%	6.19%	87.95%	12.05%	78.18%	21.82%	97.76%	2.24%	100.00 %	0.00%
Black snapper	91.52%	8.48%	91.52%	8.37%	0.11%	86.46%	13.54%	82.36%	17.64%	100.00%	0.00%	100.00 %	0.00%
Blackfin snapper	31.68%	68.32%	31.68%	37.90%	30.42%	34.56%	65.44%	21.09%	78.91%	46.51%	53.49%	29.33%	70.67%
Jacks Complex													
Almaco jack	51.53%	48.47%	51.53%	14.87%	33.60%	51.06%	48.94%	40.18%	59.82%	47.08%	52.92%	51.77%	48.23%
Banded rudderfish	25.25%	74.75%	25.25%	14.11%	60.64%	28.08%	71.92%	25.21%	74.79%	26.33%	73.67%	23.20%	76.80%
Lesser amberjack	46.62%	53.38%	46.62%	17.28%	36.10%	67.06%	32.94%	79.68%	20.32%	52.75%	47.25%	28.79%	71.21%
Snappers Complex													
Gray snapper	20.00%	80.00%	20.00%	46.87%	33.13%	29.59%	70.41%	39.85%	60.15%	18.72%	81.28%	11.87%	88.13%
Lane snapper	12.21%	87.79%	12.21%	54.14%	33.64%	16.95%	83.05%	21.90%	78.10%	10.32%	89.68%	6.15%	93.85%
Cubera snapper	19.75%	80.25%	19.75%	44.45%	35.80%	16.25%	83.75%	16.12%	83.88%	16.58%	83.42%	25.55%	74.45%
Dog snapper	9.41%	90.59%	9.41%	75.83%	14.76%	15.72%	84.28%	27.37%	72.63%	11.13%	88.87%	6.66%	93.34%
Mahogany snapper	5.05%	94.95%	5.05%	84.71%	10.25%	10.95%	89.05%	47.80%	52.20%	6.43%	93.57%	2.17%	97.83%
Grunts Complex													
White grunt	32.67%	67.33%	32.67%	27.00%	40.33%	35.79%	64.21%	37.01%	62.99%	33.68%	66.32%	29.22%	70.78%
Sailors choice	0.00%	100.00%	0.00%	62.66%	37.34%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00 %	0.00%	100.00%
Tomtate	0.00%	100.00%	0.00%	30.80%	69.20%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00 %	0.00%	100.00%
Margate	19.83%	80.17%	19.83%	29.01%	51.16%	21.73%	78.27%	28.83%	71.17%	13.78%	86.22%	17.57%	82.43%
Shallow-Water Groupers Complex													
Red hind	73.28%	26.72%	73.28%	16.88%	9.84%	76.03%	23.97%	77.55%	22.45%	73.71%	26.29%	70.28%	29.72%
Rock hind	62.54%	37.46%	62.54%	11.97%	25.49%	55.19%	44.81%	40.43%	59.57%	65.33%	34.67%	67.17%	32.83%
Yellowmouth grouper	1.35%	98.65%	1.35%	52.97%	45.69%	2.86%	97.14%	2.62%	97.38%	2.95%	97.05%	0.69%	99.31%
Yellowfin grouper	40.78%	59.22%	40.78%	54.48%	4.75%	46.16%	53.84%	42.62%	57.38%	53.00%	47.00%	37.57%	62.43%
Coney	23.26%	76.74%	23.26%	64.79%	11.95%	49.31%	50.69%	70.56%	29.44%	1.29%	98.71%	0.25%	99.75%
Graysby	14.48%	85.52%	14.48%	34.06%	51.46%	32.29%	67.71%	55.76%	44.24%	18.77%	81.23%	2.64%	97.36%

Table 2-23. Continued. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4, 5, 6**, and **7** as well as commercial, private, and for-hire sectors under Alternative 3.

Porgies													
Jolthead porgy	4.05%	95.95%	4.05%	55.82%	40.13%	3.77%	96.23%	2.24%	97.76%	5.84%	94.16%	4.29%	95.71%
Knobbed porgy	54.12%	45.88%	54.12%	5.59%	40.30%	51.58%	48.42%	50.02%	49.98%	55.16%	44.84%	58.89%	41.11%
Saucereye porgy	0.01%	99.99%	0.01%	43.41%	56.58%	0.01%	99.99%	0.01%	99.99%	0.00%	100.00 %	0.00%	100.00%
Scup	0.00%	100.00%	0.00%	19.70%	80.30%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00 %	0.00%	100.00%
Whitebone porgy	0.96%	99.04%	0.96%	51.36%	47.69%	1.70%	98.30%	2.54%	97.46%	0.01%	99.99%	0.01%	99.99%
Individual ACLs													
Atlantic spadefish	12.90%	87.10%	12.90%	43.98%	43.13%	15.06%	84.94%	14.46%	85.54%	15.74%	84.26%	10.87%	89.13%
Greater amberjack	40.66%	59.34%	Data not available by mode			42.79%	57.21%	42.53%	57.47%	43.32%	56.68%	37.35%	62.65%
Blue runner	14.60%	85.40%	14.60%	29.24%	56.16%	15.51%	84.49%	15.30%	84.70%	15.67%	84.33%	14.00%	86.00%
Bar jack	32.58%	67.42%	32.58%	21.25%	46.17%	17.42%	82.58%	6.88%	93.12%	35.53%	64.47%	59.42%	40.58%
Gray triggerfish	45.39%	54.61%	45.39%	27.74%	26.87%	47.46%	52.54%	48.80%	51.20%	45.55%	54.45%	43.63%	56.37%
Warsaw grouper	17.79%	82.21%	17.79%	53.23%	28.97%	21.17%	78.83%	23.75%	76.25%	10.62%	89.38%	5.73%	94.27%
Mutton snapper[1]	17.02%	82.98%	Data not available by mode			25.75%	74.25%	30.07%	69.93%	19.24%	80.76%	9.84%	25.75%
Scamp	69.36%	30.64%	69.36%	9.86%	20.78%	71.78%	28.22%	77.06%	22.94%	65.52%	34.48%	67.14%	32.86%
Goliath grouper	43.77%	56.23%	43.77%	44.36%	11.86%	51.80%	48.20%	53.32%	46.68%	0.00%	100.00 %	0.00%	100.00%
Nassau grouper	9.52%	90.48%	9.52%	68.69%	21.79%	9.52%	90.48%	10.04%	89.96%	0.01%	99.99%	n/a	n/a
Speckled hind	65.59%	34.41%	65.59%	5.82%	28.59%	73.97%	26.03%	76.60%	23.40%	60.08%	39.92%	40.95%	59.05%
Hogfish	33.03%	66.97%	33.03%	62.16%	4.81%	37.56%	62.44%	42.31%	57.69%	30.43%	69.57%	28.30%	71.70%
Yellowtail snapper[1]	52.56%	47.44%	Data not available by mode			53.53%	46.47%	47.22%	52.78%	64.46%	35.54%	51.38%	48.62%
Red snapper	28.07%	71.93%	28.07%	41.90%	30.04%	33.35%	66.65%	40.34%	59.66%	26.38%	73.62%	24.07%	75.93%

Note: Greater amberjack were not identified to species in the commercial data prior to 1992; thus, commercial landings from SEDAR-15 and recreational landings from the ACL dataset were deemed 'best available' per the SEFSC. For the other amberjacks (banded rudderfish, almaco jack, lesser amberjack), no commercial landings data were available for 1986-1991; thus, the commercial average was computed from 1992-2008. All unclassified grunt landings were assigned to white grunt. All unclassified triggerfish landings were assigned to gray triggerfish.

[1] Post-stratifies MRFSS data for Monroe County to the South Atlantic.

Comparison of Alternatives
Alternative 1 (No Action) would retain the allocations that are currently in place for some species (**Table 2-22**), but would not specify commercial or recreational allocations for the remaining species or species groups in the Snapper Grouper FMP. **Alternatives 2 (Preferred)-5** would divide the ABC specified in **Action 4** between the recreational and commercial sectors. There is little difference in the biological effects among the five alternatives, as a similar amount of ABC would generally be allocated to the commercial and recreational sectors.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information from 1986-2008 and 2006-2008 (**Table 2-23**), and therefore considers past and present participation. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components (**Table 2-23**). The commercial allocation under **Alternatives 2 (Preferred)** and **Alternative 3** would be identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for private recreational and for-hire recreational sectors under **Alternative 3** than for private recreational and for-hire recreational combined under **Alternative 2 (Preferred)**. Furthermore, estimates of recreational landings could be less certain for rarely encountered species or species groups when recreational data are divided into sectors.

Alternative 4, which would set allocations based on data from 1986 to 2008, is almost identical to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008 (**Table 2-21**). **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than allocation alternatives that include more recent landings information (**Table 2-23**). Allocation **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than alternatives that include data from earlier years (**Table 2-23**).

Alternatives 5, **6**, and **7** will likely generate less economic disruption to the snapper grouper fishery relative to **Alternatives 2**, **3**, and **4** since these more closely capture the status quo.

It is difficult to predict the social effects with any allocation scheme, as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

Alternatives 2 (Preferred) through **7** would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

Table 2-24. Summary of effects under **Action 5**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Only six out of 73 Snapper Grouper species would have allocations. A single ACL would be established for both sectors, no ACLs in the recreational sector, and limited options for AMs.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2 (Preferred).	(+) Would divide allocations between two sectors based on historical landings from 1986-2008, and 2006-2008. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector). Sector specific ACLs would be based on allocations.	(+-) Groups with a higher allocation would have a higher economic benefit. This alternative considers both sectors, with two time frames that may represent them in a fair manner.
Alternative 3.	(+-) Benefits could be identical to **Alternative 2 (Preferred)**, except that a third sector (for-hire) would be added. This could have a lower benefit compared to **Alternative 2 (Preferred)** due to a greater chance of the ACLs to be exceeded for the recreational sector(s).	(+-) Benefits could be identical to **Alternative 2 (Preferred)**, with greater financial stability to the for-hire sector.
Alternative 4.	(+-) Benefits could be almost identical to **Alternative 2 (Preferred)**, except that all landings data would be from 1986-2008.	(+-) Benefits could be higher for the recreational sector than the commercial sector.
Alternative 5.	(+-) Benefits could favor the commercial sector more than the recreational sector since they would consider landings data from 1986-1998.	(+-) Benefits could favor the commercial sector more than the recreational sector.

Table 2-24. Continued. Summary of effects under **Action 5**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 6.	(+-) Benefits could favor the recreational sector more than the commercial sector since they would consider more recent landings data, from 1999-2008.	(+-) Benefits could favor the recreational sector more than the commercial sector.
Alternative 7.	(+-) Benefits could favor the recreational sector more than the commercial sector since they would consider more recent landings data, from 2006-2008.	(+-) Benefits could favor the recreational sector more than the commercial sector.

2.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

Alternative 1 (No Action). Retain existing ACLs and OYs (**Table 2-25**) for snapper grouper species or species groups. Do not specify ACLs and OYs for species that already have them.

Table 2-25. Annual Catch Limits and OY information in place.

Species	ACLs In Place	OY Information in Place
Black grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	To be established in Action 14 of Comprehensive ACL Amendment.
Black sea bass	309,000 lbs gw comm. (364,620 lbs ww) 409,000 lbs gw (rec.)	Yield @ 75% MFMT (Amendment 15A) 2,324,196 lbs gw (2,742,551 lbs ww) when stock is at B_{MSY}
Gag	352,940 lbs gw comm. (416,469 lbs ww) 340,060 lbs gw rec. (401,271 lbs ww) IN ADDITION Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,636 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Yield @ 75% MFMT (Amendment 16) 1,238,000 lbs gw (1,460,840 lbs ww) when stock is at B_{MSY}
Golden tilefish	282,819 lbs comm. (316,757 lbs ww) 1,578 fish rec.	Yield @ 75% MFMT (Amendment 15B) 291,566 lbs gw (326,554 lbs ww)
Red grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Will be specified in Amendment 24
Snowy grouper	82,900 lbs gw comm. (97,822 lbs ww) 523 fish rec.	Yield @ 75% MFMT (Amendment 15A) 255,747 lbs gw (301,781 lbs ww) when stock is at B_{MSY}
Speckled hind	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Vermilion snapper	315,523 lb gw (350,231 lbs ww) Jan-June; comm. 302,523 lbs gw (335,801,lbs ww) July-Dec; comm. 307,315 lbs gw (341,120 lbs ww) recreational	Yield @ 75% MFMT (Amendment 16) 2,306,731 lbs gw (2,560,471 lbs ww) When stock at B_{MSY}, biomass and MSY values determined unreliable from assessment. (Value from Vermilion Snapper Update Assessment 2007)
Warsaw grouper	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Red snapper	0 (landings only) comm. and rec.	Yield @ 98% MFMT (Amendment 17A) 2,184,685 lbs gw (2,425,000 lbs ww) when stock is at B_{MSY}

Table 2-25. Continued. Annual Catch Limits and OY information in place.

Species	ACLs In Place	OY Information in Place
Red porgy	190,050 lbs gw comm. (197,652 lbs ww) Recreational ACL specified in Action 5 Table 4-27 of Comprehensive ACL Amendment	Yield @ 75% MFMT (Amendment 15A) 584,711 lbs gw (608,099 ww) when stock is at B_{MSY}
Greater amberjack	1,169,931 lbs gw comm.(1,216,782 lbs ww) Recreational ACL specified in Action 5 Table 4-27 of Comprehensive ACL Amendment	Specified in Action 5, Table 4-27 of Comprehensive ACL Amendment

Alternative 2 (Preferred). Establish ACLs for species as needed where ACL = OY = ABC. (Current values by species are shown in **Table 2-26**. Individual ACLs are summed to get the complex ACLs and allocated to get the sector ACLs shown in **Table 2-27**.)

Alternative 3. Establish ACLs for species as needed where ACL = OY = 90% of the ABC.

Alternative 4. Establish ACLs for species as needed where ACL = OY = 80% of the ABC.

Table 2-26. ACLs and OYs for species based on **Alternative 2 (Preferred)** and **Alternatives 3** and **4**.

Species Common Name	ACL=OY=100% of ABC Preferred Alternative 2	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Yellowedge grouper	30,221	27,199	24,177
Blueline tilefish	592,602	533,342	474,082
Silk Snapper	27,519	24,767	22,015
Misty grouper	2,863	2,577	2,290
Sand tilefish	8,823	7,941	7,058
Queen snapper	9,344	8,409	7,475
Black snapper	382	344	306
Blackfin snapper	4,154	3,739	3,323
Almaco jack	291,922	262,730	233,538
Banded rudderfish	152,999	137,699	122,399
Lesser amberjack	10,568	9,511	8,454
Gray snapper	894,019	804,617	715,215
Lane snapper	153,466	138,119	122,773
Cubera snapper	31,772	28,595	25,418
Dog snapper	7,523	6,770	6,018
Mahogany snapper	160	144	128

Table 2-26. Continued. ACLs and OYs for species based on Alternative 2 (Preferred) and **Alternatives 3** and **4**.

Species Common Name	ACL=OY=100% of ABC Preferred Alternative 2	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
White grunt	635,899	572,309	508,719
Sailors choice	35,266	31,739	28,213
Tomtate	70,948	63,853	56,758
Margate	34,662	31,196	27,730
Red hind	25,885	23,297	20,708
Rock hind	37,569	33,812	30,055
Yellowmouth grouper	4,661	4,195	3,729
Yellowfin grouper	9,258	8,333	7,407
Coney	2,589	2,330	2,071
Graysby	17,856	16,070	14,284
Jolthead porgy	42,533	38,279	34,026
Knobbed porgy	61,194	55,074	48,955
Saucereye porgy	4,205	3,785	3,364
Scup	8,999	8,099	7,199
Whitebone porgy	30,684	27,615	24,547
Atlantic spadefish	282,841	254,557	226,273
Black grouper[1,2]	245,595	221,036	196,476
Blue runner	1,289,941	1,160,947	1,031,953
Bar jack	20,520	18,468	16,416
Gray triggerfish	672,565	605,309	538,052
Scamp	492,572	443,315	394,058
Hogfish	147,638	132,874	118,110
Yellowtail snapper[1]	2,173,875	1,956,488	1,739,100
Greater amberjack	1,968,000	1,771,200	1,574,400
Mutton snapper[1]	926,600	833,940	741,280
Red porgy	395,304	355,774	316,243

NOTE: The values above reflect the preferred ABC values per Table 2-17
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Recommended ABC for 2012. See **Table 4-48** for ABC projections for 2013-2015. ACL = 0 landings for Speckled hind and Warsaw grouper. ACL = 0 for Goliath and Nassau grouper.

Table 2-27. Annual catch limits and optimum yield (lbs whole weight)for snapper grouper species to be set in this amendment.
ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and Alternative 2 (Preferred) in Action 6 (ACLs and OY). ACLs for black grouper, yellowtail snapper, and mutton snapper based on applying ABCs in **Actions 13, 18**, and **19**, respectively, to preferred allocation alternative in **Action 5**. The ACL for wreckfish is specified in **Action 10** and allocations are identified in **Action 11**. The ACL for red grouper will be re-examined in Amendment 24.

Deepwater Complex	Comm.	Rec.
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	343,869	332,039
Jacks Complex	**Comm.**	**Rec.**
Almaco jack Banded rudderfish Lesser amberjack	193,999	261,490
Snappers Complex	**Comm.**	**Rec.**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	204,552	882,388
Porgies Complex	**Comm.**	**Rec.**
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	35,129	112,485
Grunts Complex	**Comm.**	**Rec.**
White grunt* Margate Sailor's choice Tomtate	214,624	562,151

Shallow-Water Groupers Complex	Comm.	Rec.
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	49,488	48,329
Individual ACLs	**Comm.**	**Rec.**
Atlantic Spadefish	36,476	246,365
Bar Jack	6,686	13,834
Black grouper[1,2]	90,575	155,020
Blue Runner	188,329	1,101,612
Goliath Grouper	0	0
Gray Triggerfish*	305,262	367,303
Greater Amberjack[3]	800,163	1,167,837
Hogfish	48,772	98,866
Mutton Snapper[1]	157,707	768,893
Nassau Grouper	0	0
Red porgy[3]	197,652	197,652
Scamp	341,636	150,936
Wreckfish	237,500	12,500
Yellowtail Snapper[1]	1,142,589	1,031,286
Speckled hind	0 landings	0 landings
Warsaw grouper	0 landings	0 landings

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Based on 2012 ABC recommendation. See **Table 4-48** for 2013-2015. [3] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment.

Comparison of Alternatives
Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL/OY and ABC, with **Alternative 4** setting the most conservative ACL at 80% of the ABC. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above B_{MSY}. However, the South Atlantic Council's SSC ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicated ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The preferred alternative in **Action 8** would establish an ACT for the recreational sector. Similar to **Alternative 2 (Preferred)**, subalternatives to **Alternatives 3** and **4** provide the opportunity to set sector specific ACLs for species or species groups.

The potential foregone gross revenue to the commercial fleet and foregone consumer surplus to the recreational fleet are presented in **Section 4.0.** However, the values should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple snapper grouper ACLs, particularly those for overfished and/or less productive species. For example, if commercial fishing firms could readily re-organize their product mix, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if commercial fishing firms had the flexibility to modify the composition of their catches, then they could reduce their overall snapper grouper landings, switch to other fishing gears, or exit the fishery altogether depending on how restrictive the ACLs are. Thus, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. **Alternatives 3** and **4** presumably will achieve higher long-run stock abundances than **Alternative 2 (Preferred)**, which could allow the ACLs to be increased sooner allowing for higher ACLs in the long-run. Thus, **Alternatives 3** and **4** are anticipated to generate larger long-run economic benefits (i.e., higher gross revenue for the commercial sector and higher consumer surplus in the recreational sector) relative to **Alternative 2 (Preferred)**.

But it is likely that **Alternatives 3 and 4** could have negative social effects as reductions in current harvest levels may occur. Those reductions could cause fishermen to switch to other species, which could further trigger AMs in other fisheries. At this time, we do not have the capability to conduct an analysis to predict how that behavior would change. Under **Alternative 1 (No Action)** there may likely be few direct effects depending upon how other actions affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the later alternatives and would not further compound any negative effects of reduced harvest from other alternatives.

Table 2-28. Summary of effects under **Action 6**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Least conservative of the alternatives, since there is no buffer between ACL and ABC.	(+-) Smaller long-term short-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Provides a buffer between ABC and ACL. Benefits could fall in-between **Alternatives 2 (Preferred)** and **4**.	(+-) Greater long-term benefits than **Alternative 2 (Preferred)**.
Alternative 4. ACL=OY=80% ABC	(+) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Smallest short-term, and largest long-term benefits.

2.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU

Alternative 1 (No Action). Do not specify new commercial AMs for the following species:

Yellowedge grouper	Blueline tilefish	Silk snapper	Almaco jack	Banded rudderfish	Lesser amberjack
Gray snapper	Lane snapper	Cubera snapper	White grunt	Atlantic spadefish	Greater amberjack
Red hind	Rock hind	Scamp	Hogfish	Yellowtail snapper	Blue runner
Gray triggerfish	Mutton snapper	Misty grouper	Queen snapper	Sand tilefish	Black snapper
Yellowmouth grouper	Yellowfin grouper	Coney	Graysby	Bar jack	Dog snapper
Mahogany snapper	Sailors choice	Tomtate	Margate		

Alternative 2. Specify individual Annual Catch Targets (ACT) for the species listed above.

> **Subalternative 2a (Preferred).** Do not establish a commercial sector ACT.
> **Subalternative 2b.** The individual ACT equals 90% of the individual ACL. The complex ACT equals 90% of the complex ACL.
>
> **Subalternative 2c.** The individual ACT equals 80% of the individual ACL. The complex ACT equals 80% of the complex ACL.

Alternative 3 (Preferred). For the species listed above, if an ACL (i.e., individual or complex) is met or is projected to be met, all subsequent purchase and sale is prohibited and harvest and/or possession is limited to the bag limit for the species covered by that ACL. For example, if a complex ACL is met or projected to be met, all purchase and sale of all the species in the complex is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). For the species listed above, if an ACL (i.e., individual or complex) is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

Comparison of Alternatives

Because there are currently management measures in place that could be considered AMs for only some of the snapper grouper species in this amendment, **Alternative 1 (No Action)** would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

Alternative 2 invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provides a disincentive to target snapper grouper species once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** in that it would correct for an ACL overage post-season if one were to occur during the fishing season. Because the ACL for unassessed species is equal to the ABC, which would cap landings at a level to ensure overfishing did not occur, it is possible the season for those species could be shortened under **Alternative 3 (Preferred)** since the ACL could be projected to be met earlier in the season than under the status quo conditions for species where there would be no restriction on the amount of commercial harvest. For assessed species, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for those species or species groups would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

With regards to economic impacts, anticipated forgone landings and gross revenue increase as the ACTs become more conservative. **Alternative 3 (Preferred)** may generate lower short-run gross revenue in the commercial sector, but will still be bound by the estimated gross revenue changes, since this alternative theoretically prevents the commercial sector from harvesting snapper grouper species in quantities exceeding their respective ACLs. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if the species is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

The setting of AMs or ACTs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest, either during the current season or the next. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects.

The burden on the administrative environment from **Alternative 1 (No Action)** could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

Table 2-29. Summary of effects under **Action 7**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and possible smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Greater short-term and possible smaller long-term benefits.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(+-) Possible smaller short-term and long-term benefits.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4 (Preferred)**, but less than **Alternative 1 (No Action)**.
Alternative 4 (Preferred). Commercial sector AM: ACL reduced in the following season by amount of overage if species is overfished.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greatest long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **Alternative 1 (No Action)**.

2.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU

I. Types of Recreational AMs Under Consideration

1) ACTs
2) In-season AMs to prevent the ACL from being exceeded (i.e., closing fishery)
3) Post-season AMs
   - Payback provisions applied in a year following an ACL overage
   - Actions to prevent the ACL from being exceeded in the year following an ACL overage (i.e., shortening the following season, changing a bag limit).

II. Council Decision Process for Choosing Recreational AMs

The South Atlantic Council is employing a four-pronged approach to assessing the AM alternatives for the recreational sector (**Figure 2-1**). First, the South Atlantic Council determines whether or not to specify an ACT. The ACT alone would not trigger any corrective action. Second, the South Atlantic Council determines what years of landings would be used to determine whether or not an ACL overage has occurred. Next, the South Atlantic Council determines whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decides whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM. The resultant AM would be applied separately to species that have been assigned ACLs as part of a species complex, and to snapper grouper species that have been assigned individual ACLs (See **Tables 2-30** and **2-31**).

Step 1. Determine if an ACT will be specified.
Step 2. Specify an AM trigger, by determining whether data from a single year, a three-year running mean (average), or a modified mean would be used to determine if an ACL has been exceeded.
Step 3. Determine whether an in-season action would be taken to prevent an ACL from being exceeded.
Step 4. Determine whether post-season action would be taken to correct for an ACL overage, or to prevent future ACL overages from occurring.

Figure 2-1. Decision process for choosing preferred AM alternatives for the recreational sector of the snapper grouper fishery.

Table 2-30. Species that are part of a species complex and require recreational AMs.

Deepwater Complex	Jacks Complex	Snappers Complex	Grunts Complex	Porgies Complex	Shallow-water groupers Complex
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

*AMs for species in this table would be applied on a species complex basis.

Table 2-31. Species that have been assigned individual ACLs and require recreational AMs.

Snapper Grouper Species With Individual ACLs
Atlantic Spadefish
Bar Jack
Greater Amberjack
Scamp
Red Porgy
Hogfish
Yellowtail Snapper
Blue Runner
Gray Triggerfish
Mutton snapper

*AMs for species in this table would be applied on an individual basis.

III. Recreational AM Alternatives

Alternative 1 (No Action). Do not specify new recreational AMs for the species in **Table 2-30**.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.
Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2]For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Why would an ACL change?

An ACL could change for the following reasons:

(1) From a rebuilding plan that specifies increasing ACLs.
(2) Based on new ABC recommendations from the SSC, including those from an updated stock assessment.
(3) From payback provisions if implemented.
(4) From a re-estimate of data.

Table 2-32. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**.
ACTs are based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACT for black grouper can be found in **Action 17**.

Deepwater Complex	**Rec. ACT**
Yellowedge grouper	205,516
Blueline tilefish	
Silk snapper	
Misty grouper	
Queen snapper	
Sand tilefish	
Black snapper	
Blackfin snapper	

Jacks Complex	**Rec. ACT**
Almaco jack	186,972
Banded rudderfish	
Lesser amberjack	

Snappers Complex	**Rec. ACT**
Cubera snapper	775,001
Gray snapper	
Lane snapper	
Dog snapper	
Mahogany snapper	

Porgies Complex	**Rec. ACT**
Knobbed porgy	74,933
Saucereye porgy	
Whitebone porgy	
Scup	

Grunts	**Rec.**
White grunt*	466,864
Margate	
Sailor's choice	
Tomtate	

Shallow-Water Groupers Complex	**Rec. ACT**
Red hind	33,082
Rock hind	
Coney	
Graysby	
Yellowfin grouper	
Yellowmouth grouper	

Individual ACTs	**Rec. ACT**
Atlantic Spadefish	177,382
Bar Jack	9,936
Black grouper[1,2]	94,562
Blue Runner	892,305
Goliath Grouper	0
Gray Triggerfish*	312,208
Greater Amberjack[3]	992,662
Hogfish	71,184
Mutton Snapper[1]	668,906
Nassau Grouper	0
Red porgy[3]	160,098
Scamp	96,599
Yellowtail Snapper[1]	897,160

Source: Average PSEs from MRFSS (2005-2009).
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

[1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively.
[2] Based on ABC/ACL for 2012. For projected ABC/ACLs for 2013-2015 see **Table 4-48**.
Note: Nassau grouper and Goliath grouper are not included in the table above since these are prohibited species, and ACL = 0. [3]Assessed species, but with no current recreational ACL, commercial ACL shown here represents the preferred allocation percentage in **Action 5**.

Table 2-33. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Almaco Jack	24%
Atlantic Spadefish	28%
Banded Rudderfish	33%
Bank Sea Bass	32%
Bar Jack	28%
Black Grouper	39%
Black Margate	30%
Black Sea Bass	13%
Black Snapper	n/a
Blackfin Snapper	16%
Blue Runner	19%
Blueline Tilefish	39%
Bluestriped Grunt	16%
Coney	21%
Cottonwick	n/a
Crevalle Jack	21%
Cubera Snapper	36%
Dog Snapper	16%
French Grunt	2%
Gag	18%
Golden Tilefish	49%
Goliath Grouper	0
Grass Porgy	n/a
Gray Snapper	10%
Gray Triggerfish	15%
Graysby	39%
Greater Amberjack	15%
Hogfish	28%
Jolthead Porgy	34%
Knobbed Porgy	35%

Table 2-33. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Lane Snapper	19%
Lesser Amberjack	77%
Longspine Porgy	14%
Mahogany Snapper	0
Margate	16%
Misty Grouper	n/a
Mutton Snapper	13%
Nassau Grouper	0
Ocean Triggerfish	59%
Porkfish	26%
Puddingwife	26%
Queen Snapper	0
Queen Triggerfish	0
Red Grouper	31%
Red Hind	40%
Red Porgy	19%
Red Snapper	21%
Rock Hind	42%
Rock Sea Bass	50%
Sailors Choice	41%
Sand Tilefish	33%
Saucereye Porgy	8%
Scamp	36%
Schoolmaster	16%
Scup	34%
Sheepshead	11%
Silk Snapper	25%
Smallmouth Grunt	n/a
Snowy Grouper	41%
Spanish Grunt	0
Speckled Hind	4%
Tiger Grouper	n/a
Tomtate	23%
Vermilion Snapper	15%
Warsaw Grouper	2%

Table 2-33. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
White Grunt	14%
Whitebone Porgy	34%
Wreckfish	0
Yellowedge Grouper	20%
Yellowfin Grouper	0
Yellowmouth Grouper	6%
Yellowtail Snapper	13%

Comparison of Alternatives

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 6**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or by one minus the percent standard error (PSE) from the recreational fishery, whichever is greater (**Table 2-32**).

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives since it would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if regulations have been implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag in when recreational data become available. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its sub-alternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If **Subalternative 5b** is not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**.

Alternative 1 (No Action) has the most potential to cause the greatest economic dislocation in the long term. **Subalternative 2c** generates higher short-term losses in consumer surplus for all species relative to **Subalternative 2b**, with the exception of those species with a zero recreational ACL. These estimates assume the recreational sector can harvest the ACT. The short-run losses are expected to be offset in the long term when stock abundance is anticipated to increase. Higher stock abundances are expected to increase harvest and thus consumer surplus, and also reduce the long-term harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, the results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus.

Subalternative 3a would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4a (Preferred) would not generate any indirect economic effects. **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if the fishery is closed too soon or too late due to inaccurate projections.

Subalternatives 5a and 5b would not generate any indirect economic effects. **Subalternative 5c** may generate the same indirect economic effects in the short-term as **Subalternative 5d (Preferred)** and **Subalternative 5e**. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternative 5c, Subalternative 5d (Preferred)** and **Subalternative 5e** in the short term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** would further assist with protecting the stocks whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

Alternative 1 (No Action) may have negative social effects if stocks are not sufficiently protected through other management. **Subalternatives 2a-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. **Subalternative 3e** could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met as in **Subalternative 4b**. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. In **Subalternative 5g**, payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

The administrative impacts of this action are expected to be similar to those for **Action 7**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. The alternatives and associated subalternatives are not likely to differ much in their administrative impacts.

Table 2-34. Summary of effects under **Action 8**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest long-term negative effects.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.

Table 2-34. Continued. Summary of effects under **Action 8.**

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with Subalternative 2b.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred)**.	(+-) No indirect economic effects.

Table 2-34. Continued. Summary of effects under **Action 8**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a**.
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5f**.

2.2 Snapper Grouper Fishery Management Plan (wreckfish)

Acceptable Biological Catch Control Rule for Wreckfish

The South Atlantic Council's SSC met in April 2010 to discuss ABC Control Rules for unassessed species. After extensive discussion of wreckfish issues, the SSC established that ABC was unknown and the South Atlantic Council should consider an ACL that did not exceed 200,000 lbs. One of the issues discussed was whether the management system of individual quotas tied to portions of the allowable harvest level potentially alters the relation between the recommended harvest and the realized harvest. Effort is reduced in the fishery, to the extent that recent landings are confidential because fewer than 3 harvesters have been in operation in recent years. Landings are reduced and recent trends in landings, even if such landings could be publicly disseminated, are possibly not representative of fishery productivity.

The SSC discussed setting an ABC for wreckfish during their August 2010 meeting. The SSC stated that the 2001 assessment (Vaughan et al. 2001) indicated depletion at higher historical levels of effort and that the catch reductions appeared to have come mainly from gear restrictions, spawning season closure, and individual transferable quota (ITQ) implementation. Since stock size cannot be projected, an estimate of overfishing limit from the 2001 assessment could not be produced. A Depletion-Based Stock Reduction Analysis (DBSRA) or Depletion-Corrected Average Catch DCAC estimate (**Table 2-14**) could be calculated, but recent landings are confidential, therefore the SSC was not be able to perform the calculations to produce these estimates. The SSC agreed the 2001 assessment was dated and did not apply to current landings and conditions. The SSC concluded that a control rule based on catch-only data should be used even though a stock assessment exists for wreckfish.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes a category that labels a catch as "moderate." In these cases, it is possible that any increase in catch could result in overfishing.

In the absence of a current assessment and using a catch-only scenario at "moderate" historical catch, the SSC reached consensus that it was inappropriate to use an old assessment applied to new catch data for catches coming from potentially different fishing conditions than at the time of the assessment. Although an estimate of F_{MSY} exists, it cannot be applied to current stock biomass. A recent estimate of F is close to F_{MSY}, so increasing F could lead to overfishing if there were increases in catch. Even though B_{MSY} is unknown, fishing at F_{MSY} on a stock that is below B_{MSY} is acceptable for a stock that is not overfished and this will allow rebuilding. Therefore, in September 2010, the SSC recommended setting the ABC at the average historical catch (1997-recent) of 250,000 lbs whole weight. Due to confidentially of data, a more precise level could not be set. This level of harvest would cap fishery where it is, consistent with the "moderate" level of historical catch in Methot's table for catch-only scenarios. The SSC also recommended conducting DCAC or DBSRA analysis in the next year to compare with the current catch-only recommendation.

2.2.1 Action 9: Specify Allocations for the Wreckfish Fishery

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).]

Alternative 1 (No Action). Do not specify allocation. In this scenario, the total allowable catch is essentially allocated 100% to the commercial sector.

Alternative 2. Divide allocations as 90% Commercial and 10% Recreational.

Alternative 3 (Preferred). Divide allocations as 95% Commercial and 5% Recreational.

Alternative 4. Allocate 100% of the allowable catch to the commercial sector.

Table 2-35. Allocation of wreckfish (lbs whole weight) by sector.

Alternative	Commercial		Recreational	
	Allocation(%)	Lbs (ww)	Allocation(%)	Lbs (ww)
1 (No Action)	100	250,000	0	0
2	90	225,000	10	25,000
3 (Preferred)	**95**	**237,500**	**5**	**12,500**
4	100	250,000	0	0

Comparison of Alternatives

Alternative 1 (No Action) would not specify allocations, thereby not allowing for an ACL for the recreational sector. **Alternative 2** would provide 90% (225,000 lbs whole weight) of the allowable biological catch (ABC) to the commercial sector and 10% (25,000 lbs whole weight) to the recreational sector (**Table 2-35**). **Alternative 3 (Preferred)** would allocate 95% (237,500 lbs whole weight) to the commercial sector and 5% (12,500 lbs whole weight) to the recreational sector (**Table 2-35**). Under **Alternative 4**, 100% of the ABC (250,000 lbs whole weight) would be allocated to the commercial sector, which is identical to **Alternative 1 (No Action)** (**Table 2-35**). The amount of wreckfish that would be allocated to recreational fishermen would be very small. Under **Alternative 3 (Preferred)**, approximately 300-350 fish would be allocated to the recreational sector as wreckfish average weight is 35 to 40 lbs whole weight. However, **Alternative 3 (Preferred) and Alternative 2** would allow for the incidental catch of wreckfish when targeting co-occurring species.

Current permits and regulations would not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

Estimates of recreational landings are generally less certain for rarely encountered species in a survey-based system like MRFSS. Therefore, there is a greater chance that annual catch limits would be exceeded for the recreational sector under allocations specified in **Alternatives 2** and **3 (Preferred)** than for the commercial sector. In this situation, alternatives that allocate a greater portion of the catch to the commercial sector could have a greater biological benefit, since the commercial sector has better reporting and quotas can be monitored better to prevent overages.

However, if all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2-4** would be very similar. Furthermore, a recreational allocation could help mitigate bycatch mortality in this fishery. Currently, recreational fishermen have to discard any wreckfish they catch, and since the species inhabits deep water, discard mortality is high.

Alternative 1 (No Action) and **Alternative 4** provide the commercial sector with the greatest economic benefits, as measured by gross revenue, relative to **Alternative 2** and **Alternative 3 (Preferred)** because they give the entire ACL to the commercial sector. **Alternative 1 (No Action)** and **Alternative 4** are basically equivalent with respect to their economic effects since the commercial sector would implicitly or explicitly receive the entire ACL consistent with current and historical practice. On the other hand, the recreational sector would benefit the most under **Alternative 2**, followed by **Alternative 3 (Preferred)**.

Quantifying economic benefits of each of the alternatives to the commercial sector is complicated by the fact that the decrease in the TAC from 2 million lbs to 250,000 lbs decreases the annual poundage each shareholder can land by 88% under the Individual Transferable Quota (ITQ) Program that was implemented under Snapper Grouper Amendment 5 (SAFMC 1991). That is, each fisherman's wreckfish shares, which dictate the annual pounds that can be landed by that individual, will be reduced by 88%. If a fisherman wants to harvest more than this amount, the shareholder needs to purchase additional wreckfish shares or annual pounds from another wreckfish shareholder. Without purchase of additional shares or annual pounds, all of the alternatives will result in very small landings of wreckfish, if any at all since most fishermen have stated that they do not have the funds to purchase additional shares. Therefore, **Alternatives 1-4** differ little for the commercial sector since all alternatives will likely result in even smaller landings than currently are harvested, if any landings are made at all. However, if one or more of the highliners in the fishery are able to purchase additional shares or annual pounds, the fishery may continue and there would be a greater difference between the alternatives. **Alternatives 2** and **3 (Preferred)** make this situation worse for the commercial sector and require the purchase of even more shares or pounds. Under all alternatives, total commercial landings are expected to decline significantly.

Alternative 1 (No Action) would establish an overall ACL within the wreckfish component of the snapper grouper fishery with an allocation for the commercial sector only. This would not allow for a recreational fishery as the ITQ program only allows for transfer of quota to someone within the program. Because there has been increasing interest within the recreational sector in being allowed harvest of this species, other alternatives offer benefits to the recreational sector for harvest. The different allocation alternatives vary with **Alternative 2** allowing the most allocation to the recreational fishery and less with **Alternative 3 (Preferred)**. **Alternative 4** would keep all allocation with the commercial fishery. Again, with any allocation regime, the social effects would depend upon other alternatives and whether or not further harvest restrictions are implemented. While there may be benefits to allowing recreational harvest, dividing the allocation in combination with other actions could result in harvest restrictions that have negative effects upon the commercial sector. The commercial wreckfish fishery is small with only a few harvesters, but if there is a significant decrease in harvest thresholds as anticipated, there could be more negative social effects that accrue to the commercial fishery with the allocation to the recreational fishery. However, the recreational fishery has and may see further restrictions for other species, which would make reallocation of wreckfish a possible alternative when other species are not available and therefore would have positive social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2** through **4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for.

Table 2-36. Summary of effects under **Action 9**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) ACL would not be specified for the recreational sector.	(+-) No recreational allocation, less level of stability and predictability. Greatest long-term benefit to commercial fishery.
Alternative 2. 90% Comm./10% Rec.	(+-) ACLs would be specified for both sectors. Lesser benefit than **Alternative 3 (Preferred)** due to higher uncertainty in estimates of recreational landings. Could help mitigate bycatch mortality.	(+-) Greater benefits to recreational fishery compared with **Alternative 3 (Preferred)**.
Alternative 3 (Preferred). 95% Comm./5% Rec.	(+-) ACLs would be specified for both sectors. Higher benefit than **Alternative 2**, especially if all landings are tracked closely, with mandatory reporting in both sectors. Could help mitigate bycatch mortality.	(+-) Smaller benefits to recreational fishery compared with **Alternative 2**.
Alternative 4. 100% Comm.	(-) Identical to **Alternative 1 (No Action)**.	(+-) Identical to **Alternative 1 (No Action)**.

2.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish

Alternative 1 (No Action). Do not establish an Annual Catch Limit (ACL) for wreckfish.

Alternative 2 (Preferred). ACL = OY = ABC.

Alternative 3. ACL = OY = 90% of the ABC.

Alternative 4. ACL = OY = 80% of the ABC.

Table 2-37. ACLs (lbs whole weight) for wreckfish.

Alternative	ACL (lbs ww)
1 (No Action)	N/A (TAC=2 Million lbs)
2 (Preferred) (ACL=OY=ABC)	**250,000**
3 (ACL=OY=90% ABC)	225,000
4 (ACL=OY=80% ABC)	200,000

Comparison of Alternatives

Alternative 1 (No Action), would retain the current regulations established for wreckfish, which includes a total allowable catch (quota) equal to 2 million lbs whole weight. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. **Alternative 2 (Preferred)** would set the ACL/OY equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. The South Atlantic Council chose to allocate between two sectors (commercial and recreational) as their preferred alternative under **Action 9**. Under **Alternative 2 (Preferred)**, and with an ABC equal to an ACL/OY of 250,000 lbs whole weight (**Table 2-37**), the ACL for the commercial sector would be 237,500 lbs whole weight and the ACL for the recreational sector would be 12,500 lbs whole weight. **Alternatives 3** and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 3** setting an ACL at 90% (225,000 lbs whole weight) and **Alternative 4** setting the most conservative ACL at 80% (200,000 lbs whole weight) of the ABC (**Table 2-37**). However, the South Atlantic Council's SSC took scientific uncertainty into consideration in the specification of ABC, so establishing a buffer between the ACL and ABC may not be needed.

Alternative 1 (No Action) would likely generate the least long-run economic benefits relative to the other alternatives since it fails to adopt an ACL, which would increase the risk of overfishing. **Alternative 2 (Preferred)** would most likely generate the least forgone economic benefits in the short-run (relative to **Alternatives 3** and **4**), and the lowest long-run benefits. **Alternative 3** and **Alternative 4** would generate the highest short-run forgone economic benefits, but would likely generate the highest long-term economic benefits.

In **Alternative 1 (No Action),** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. **Alternative 2 (Preferred)** would be less restrictive than the other alternatives and would likely have more positive social effects. **Alternative 4** would likely have more negative social effects in the short term than would **Alternative 3**.

The administrative impacts of specifying an ACL through **Alternatives 2-4** are minimal and would not differ much between the three alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-38. Summary of effects under **Action 10**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would allow for an ACL = 2 million lbs whole weight, higher than the current ABC recommendation of 250,000 lbs whole weight. Would not meet NS 1 guidelines.	(+-) Smallest long-term positive benefits of all alternatives.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would not allow for a buffer between ACL and ABC. Possible risk of exceeding ABC.	(+-) Higher positive short-term benefits, smallest positive long-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would allow for a buffer between ACL and ABC.	(+-) Benefits in-between **Alternative 2 (Preferred)** and **Alternative 4**.
Alternative 4. ACL=OY=80% ABC	(+-) Would allow for a larger buffer between ACL and ABC, greatest biological benefit.	(+-) Higher positive long-term benefits compared with **Alternative 3**.

2.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery

Alternative 1 (No Action). Do not specify AMs for a recreational sector of the wreckfish fishery. Do not add new AMs for the commercial sector of the wreckfish fishery. Currently, the commercial sector for wreckfish is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year.

Decision 1. Specify an ACT?

The specification of a recreational ACT for wreckfish was moved to the rejected alternatives appendix (Appendix A).

Decision 2. What is the AM trigger?

Alternative 2. Specify the AM trigger.

- **Subalternative 2a**. Do not specify an AM trigger.
- **Subalternative 2b (Preferred).** If the _annual landings_ exceed the ACL in a given year.
- **Subalternative 2c.** If the _mean landings_ for the past three years exceed the ACL.[1, 2]
- **Subalternative 2d.** If the _modified mean landings_ exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]
- **Subalternative 2e.** If the lower bound of the 90% _confidence interval_ estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] _Start the clock over._ In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

The specification of a commercial and recreational in-season AM for wreckfish (closing recreational fishery when ACL met) was moved to the considered but rejected alternatives appendix (Appendix A).

Decision 4. Is there a post-season AM?

Alternative 3. Specify the recreational post-season AM.

- **Subalternative 3a**. Do not specify a recreational post-season AM.

Subalternative 3b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 3c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 3d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 3e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 3f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 3g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives

Under **Alternative 1 (No Action)**, 100% of the allowable catch is currently allocated to the commercial sector, although **Action 9** contains alternatives that provide allocations to the recreational sector. Theoretically, when the commercial quota is reached the fishery would be closed. The commercial AM would be to close to the commercial sector when the commercial ACL is met or projected to be met. Because the proposed ACL is lower than the status quo quota, greater biological benefits may be expected if commercial fishing is prohibited once this much lower harvest threshold is reached.

As is the case for many fisheries, accurate in-season monitoring of ACLs can be very difficult for the recreational sector. With the exception of **Subalternative 2a**, **Alternative 2** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 2b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 2c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 2d** is similar to **Subalternative 2c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL then the AMs would be triggered. **Subalternative 2e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 2c-2e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. The biological benefits would increase in order from **Subalternatives 2e-2b (Preferred).**

With the exception of **Subalternative 3a**, which would not specify a post-season AM, **Alternative 3** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 3b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If the ACL is exceeded, **Subalternatives 3c-3e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 3c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 3d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 3e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 3f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 3g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 3d (Preferred) and **3f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 3c-3e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 3f)**.

Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Because the probability that a post-season AM will be required is greater under **Subalternative 3f** and **Subalternative 3g** relative to **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e**, the expected adverse indirect economic effects resulting from

Subalternative 3f and **Subalternative 3g** are also expected to be greater than under **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e** in the short-term. Due to the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 3g** relative to **Subalternative 3f**.

Depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. **Alternative 1 (No Action)** may have negative social effects if the stock is made unsustainable over time as a result of no AMs. Under **Alternative 2** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 2a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 2b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 2c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 2d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 2e,** which could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 3a** could have negative social effects if stock status is affected by the lack of any accountability measures. **Subalternative 3b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 3c,** which uses only the next years for monitoring. **Subalternative 3d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 3e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 3f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 3d (Preferred)**. In **Subalternative 3g** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives are not likely to have any administrative impacts. **Alternative 3** and associated subalternatives will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

Table 2-39. Summary of effects under **Action 11**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Commercial sector: Alternative 1 (No Action)	(+-) ITQ acts as a form of AM. Current TAC of 2 million lbs has not been exceeded. New ABC of 250,000 lbs would add more benefits.	(+-) No indirect economic effects.
Recreational sector: Alternative 2: Specify the AM trigger. **Subalternative 2a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action).**	(+-) No indirect economic effects.
Subalternative 2b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest positive indirect long-term economic effects of all subalternatives under **Alternative 2**.
Subalternative 2c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive indirect long-term economic effects in-between **Subalternative 2b (Preferred)** and **Subalternative 2d**.
Subalternative 2d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, would have more benefits due to two additional years of data used to determine overage.	(+-) Positive indirect long-term economic effects lower than **Subalternative 2c,** but higher than **Subalternative 2e.**
Subalternative 2e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest positive indirect long-term economic effects of all subalternatives under **Alternative 2**.
Alternative 3: Specify the post-season AM. **Subalternative 3a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) Smallest negative indirect short-term economic effects of all subalternatives under **Alternative 3**.
Subalternative 3b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) Smaller negative indirect short-term economic effects compared to **Subalternatives 3c-3g**.
Subalternative 3c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Smaller negative indirect short-term economic effects compared to **Subalternatives 3d-3g**.
Subalternative 3d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative indirect short-term economic effects in-between **Subalternatives 3c-3e**.

Table 2-39. Continued. Summary of effects under **Action 11**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 3e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative indirect short-term economic effects higher than **Subalternatives 3a-3d**, but, lower than **Subalternatives 3f** and **3g**.
Subalternative 3f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 3c-3e**.	(+-) Negative indirect short-term economic effects greater than **Subalternatives 3a-3e**, but lower than **Subalternative 3g**.
Subalternative 3g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Greatest negative indirect short-term economic effects of all subalternatives under **Alternative 3**.

2.2.4 Action 12: Establish Management Measures for Wreckfish

Alternative 1 (No Action). Retain the January 15-April 15 spawning season closure. Wreckfish is included in the 20-fish snapper grouper aggregate bag limit. The TAC/ACL for wreckfish is 2 million lbs.

Recreational Sector
Alternative 2. Remove wreckfish from the 20 fish aggregate snapper grouper bag limit.

Alternative 3 (Preferred). Implement a one-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 4. Implement a one-wreckfish per angler per day bag limit for the recreational fishery.

Alternative 5. Implement a 5-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 6 (Preferred). Establish a July-August recreational season.

Alternative 7. Establish a May-June recreational season.

Alternative 8. Exempt the recreational sector from having to have commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish.

Comparison of Alternatives
Alternative 1 (No Action) would retain the January 15-April 15 spawning season closure for wreckfish in the commercial sector. **Alternative 1 (No Action)** would also retain wreckfish in the list of species included in the 20-fish aggregate bag limit, which includes all species in the snapper grouper fishery management unit, with the exception of tomtate and blue runner. However, a commercial snapper grouper permit, a wreckfish permit, and wreckfish shares and allocation are required to harvest wreckfish.

Alternatives 2-8 address the recreational sector for wreckfish. **Alternative 2** would remove wreckfish from the 20-fish aggregate bag limit and would be consistent with an alternative in **Action 9**, which would allocate 100% of the allowable catch to the commercial sector. **Alternatives 3 (Preferred)-5** explore various recreational bag and vessel limits for wreckfish, with **Alternative 3 (Preferred)** being the most conservative alternative limiting one wreckfish per vessel per day. **Alternative 4** would allow one wreckfish per angler per day to be retained, and **Alternative 5** would allow a five wreckfish per vessel per day bag limit. With landings data being confidential for the commercial fishery for most of the last decade, and an absence of recreational landings, the magnitude of harvest reductions from the alternatives cannot be quantified. Generally speaking, a reduction in harvest usually translates into positive biological benefits. Therefore, the biological effects of **Alternative 3 (Preferred)** would be expected to be more positive compared to **Alternatives 4** and **5**.

Alternatives 6 (Preferred) and **7** establish a two-month fishing season for the recreational sector. Since the preferred allocation alternative provides a small recreational ACL of 12,500 lbs whole weight, an abbreviated recreational fishing season may be appropriate. The negative aspects of having an established recreational fishing season for wreckfish is that incidentally captured wreckfish could not be retained and would have to be discarded outside the recreational season. Wreckfish do not survive the trauma of being brought to the surface due to the extreme water depths in which they occur.

Currently, there is a spawning season closure in place from January15-April 15 of each year. Biologically, the benefits from both these alternatives may not vary by much, but **Alternative 7** would allow for the recreational effort to start only two weeks after the spawning season closure ends. Alternatively, **Alternative 6 (Preferred)** would provide a longer time interval after the spawning season before the recreational fishing season began, which could provide a greater biological benefit to the fishery. **Alternative 6 (Preferred)** also provides an opportunity for recreational fishermen to fish for wreckfish in the summer time, when weather conditions are more favorable offshore with more fishermen on the water who might encounter wreckfish.

The preferred alternative under **Action 9** would allocate 95% of the allowable catch to the commercial sector and 5% to the recreational sector. Under **Action 10**, the preferred alternative (ACL=OY=ABC) would result in the ACL for the commercial sector of 237,500 lbs whole weight and the ACL for the recreational sector of 12,500 lbs whole weight. **Alternative 8** exempts the recreational sector from the constraints currently in place to retain wreckfish under the bag limit. The South Atlantic Council determined at their March 2011 meeting, that an alternative to exempt the recreational sector from requirements for the commercial sector is not needed, but should be discussed and explained within this action.

Since a recreational sector for wreckfish does not currently exist under the snapper grouper FMP, neither do the necessary data to conduct analysis of the expected economic effects of the various alternatives. In general, the direct and indirect economic effects of the alternatives considered under this action are expected to be minimal given the recreational ACL of 12,500 lbs whole weight under **Alternative 3 (Preferred)** for **Action 10**. However, the indirect economic benefits under **Alternative 6 (Preferred)** might be greater relative to **Alternative 7** as it may be safer to fish in July and August than May and June.

Alternative 1 (No Action) would continue the spawning closure and could have few social effects on the commercial fishery. **Alternative 2** would not allow any recreational catch. **Alternatives 3 (Preferred)-5** would allow the recreational sector a bag limit with the larger bag limit having positive social effects for the recreational fishery in the short term. The benefits of **Alternative 6** (**Preferred)** are that recreational fishing during that time may be safer since weather conditions are calmer during those late Spring months than the earlier months with **Alternative 7**. **Alternative 8** would reduce the administrative requirements and likely have positive social effects.

Alternative 1 (No Action) would not increase the administrative burden on the agency. **Alternatives 2-7** would require administrative support in the form of rule making, outreach, and enforcement, but the impacts would not differ much between the action alternatives and the status quo. **Alternative 8** would likely reduce administrative burden as it would eliminate the need for commercial permits, shares and coupons.

Table 2-40. Summary of effects under **Action 12**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Commercial sector: **Alternative 1 (No Action)**	(+-) Retains the spawning season closure of January 15-April 15, reduced ABC of 250,000 lbs whole weight could lead to positive effects	(+-) No net benefits.
Recreational sector: **Alternative 2.** Removed from 20 fish aggregate snapper grouper bag limit	(+-) Same as **Alternative 1 (No Action)**.	(+-) Same as **Alternative 1 (No Action)**.
Alternative 3 (Preferred). 1-fish/vessel/day bag limit	(+-) More conservative than **Alternatives 4** and **5**, hence more positive effects.	(+-) Minimal direct and indirect economic benefits.

Table 2-40. Continued. Summary of effects under **Action 12**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4. 1-fish/angler/day bag limit	(+-) Benefits in between **Alternatives 3 (Preferred)** and **5**.	(+-) Minimal direct and indirect economic benefits.
Alternative 5. 5-fish/vessel/day bag limit	(+-) Least conservative of **Alternatives 3 (Preferred), 4,** and **5**, hence smaller benefits.	(+-) Minimal direct and indirect economic benefits.
Alternative 6 (Preferred). July-August recreational season	(+-) More beneficial than **Alternative 7**, provides additional time after spawning season closure ends.	(+-) Indirect economic benefits greater than **Alternative 7**.
Alternative 7. May-June recreational season	(+-) Less beneficial than **Alternative 6 (Preferred)**.	(+-) Indirect economic benefits smaller than **Alternative 7**.
Alternative 8. Exempt recreational fishermen from commercial regulations.	(+-) Administrative in nature, unknown biological effects.	(+-) Reduced administrative burden, possible positive social effects.

2.3 Snapper Grouper Fishery Management Plan (black grouper, yellowtail snapper & mutton snapper)

2.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper

Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper acceptable biological catch (ABC) based on one of the following methods:

Subalternative 2a. South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).

Subalternative 2b (Preferred). South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).

Subalternative 2c. South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).

Subalternative 2d. South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

Table 2-41. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ABC of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	240,370	282,173
Alternative 2b	**245,595**	**276,948**
Alternative 2a	250,821	271,722
Alternative 2b	261,272	261,272

Table 2-42. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**.

Year	ABC	South Atlantic	Gulf of Mexico
2011	523,000	245,810	277,190
2012	522,543	245,595	276,948
2013	545,595	256,430	289,165
2014	558,711	262,594	296,117
2015	564,737	265,426	299,311

Comparison of Alternatives
Alternative 1 (No Action) would not establish jurisdictional allocation of the black grouper ABC between the Gulf of Mexico and South Atlantic Councils. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between them. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Subalternatives 2a-2d** would be similar. The recent stock assessment (SEDAR 19 2008) indicates that management measures in both areas are sufficient to prevent overfishing. The South Atlantic Council has recently implemented a four-month spawning season closure for black grouper and the Gulf of Mexico Council has implemented an individual fishing quota system for grouper species. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure black grouper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest increase in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic black grouper fishery would accrue under **Subalternative 2d**, followed by **Subalternative 2c** and **Subalternative 2b (Preferred)**, while **Subalternative 2a** would provide the lowest total economic benefits.

In establishing jurisdictional allocations for black grouper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Under **Subalternative 2b (Preferred)**, ABC would be almost evenly divided between the two Councils.

Table 2-43. Summary of effects under **Action 13**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Current recreational landings in S. Florida may not accurately correspond to existing ABC levels between S. Atl. and Gulf of Mexico, and hence benefits may not be optimal.	(+-) No net economic benefits due to distributional nature of allocation.
Alternative 2: Percentage of ABC between S. Atl. and Gulf of Mexico; different time series for landings. **Subalternative 2a.** S. Atl.=46%; Gulf of Mexico=54%.	(+-) Slightly higher proportion of the ABC to the Gulf of Mexico, time series for landings takes into account better recreational effort from 1991 onwards. Benefits unclear.	(+-) Smallest net economic benefits of all subalternatives under **Alternative 2**.
Subalternative 2b (Preferred). S. Atl.=47%; Gulf of Mexico=53%.	(+-) Slightly higher proportion of the ABC to the Gulf of Mexico compared with **Subalternative 2a**. Time series for landings takes into account better fishing effort for all sectors. Benefits may be higher.	(+-) Net economic benefits between **Subalternatives 2a** and **2c**.
Subalternative 2c. S. Atl.=48%; Gulf of Mexico=52%.	(+-) Similar to **Subalternative 2b (Preferred)**. Benefits may be higher due to time series for landings taking into account better recreational effort from 1991 onwards.	(+-) Net economic benefits higher than **Subalternatives 2a** and **2b (Preferred)**, but lower than **Subalternative 2d**.
Subalternative 2d. S. Atl.=50%; Gulf of Mexico=50%.	(+-) Even distribution of ABC, benefits unclear between the two jurisdictional areas.	(+-) Greatest net economic benefits of all subalternatives under **Alternative 2**.

2.3.2 Action 14: Specify Sector Allocations for Black Grouper

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Note: Average landings used as "catch history" in computations. Data use the same post-stratification approach (MRFSS landings from Monroe County, Florida, re-assigned from Gulf of Mexico to South Atlantic), that was used in **Action 13** (jurisdictional allocations for black grouper).

Alternative 1 (No Action). Do not establish sector allocations for black grouper.

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

> **Subalternative 2a**. Commercial = 48.14% and recreational = 51.86% using average landings from 1986-2008.
>
> **Subalternative 2b**. Commercial = 50.13% and recreational = 49.87% using average landings from 1986-1998.
>
> **Subalternative 2c**. Commercial = 43.74% and recreational = 56.26% using average landings from 1999-2008.
>
> **Subalternative 2d**. Commercial = 33.02% and recreational = 66.98% using average landings from 2006-2008.
>
> **Subalternative 2e (Preferred)**. Commercial = 36.88% and recreational = 63.12% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Alternative 3. Establish commercial, recreational, and for-hire sector allocations based on criteria outlined in subalternatives below.

> **Subalternative 3a**. Commercial = 48.14% , for-hire = 11.11%, and recreational = 40.75% using average landings from 1986-2008.
>
> **Subalternative 3b**. Commercial = 48.14% , for-hire = 8.45%, and recreational = 41.42% using average landings from 1986-1998.
>
> **Subalternative 3c**. Commercial = 43.74% , for-hire = 16.99%, and recreational = 39.27% using average landings from 1999-2008.
>
> **Subalternative 3d**. Commercial = 33.02% , for-hire = 15.06%, and recreational = 51.92% using average landings from 2006-2008.
>
> **Subalternative 3e**. Commercial = 36.88% , for-hire = 15.29%, and recreational = 47.83% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Table 2-44. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**.

Alternative 2	Comm	Rec	
Sub Alt 2a	118,237	127,358	
Sub Alt 2b	123,120	122,475	
Sub Alt 2c	107,434	138,161	
Sub Alt 2d	81,104	164,491	
Sub Alt 2e (Preferred)	**90,575**	**155,020**	
Alternative 3	**Comm**	**For-Hire**	**Rec**
Sub Alt 3a	118,237	27,278	100,079
Sub Alt 3b	123,120	20,748	101,727
Sub Alt 3c	107,434	41,728	96,433
Sub Alt 3d	81,104	36,990	127,501
Sub Alt 3e	90,575	37,547	117,473

Table 2-45. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in **Subalternative 2e (Preferred)**.

Year	South Atlantic	Comm	Rec
2012	245,595	90,575	155,020
2013	256,430	94,571	161,859
2014 (and onwards until modified)	262,594	96,844	165,750

Comparison of Alternatives

As the allocations in the various subalternatives are fairly similar, it would be expected that there would be similar biological effects among the subalternatives contained within **Alternatives 2** and **3**. The biological effects of the different allocation alternatives would be expected to be similar if landings in various sectors could be closely monitored. The biological effects of **Alternative 3** would be expected to be less than **Alternative 2** since recreational data can be less certain when they are divided into sectors. Further, the biological effects of subalternatives that allocate more to the commercial sector could have a positive biological effect because there is less of a chance that a commercial ACL would be exceeded than a recreational ACL. Commercial data can often be more closely monitored as they are based on dealer reports; whereas, much of the recreational data (except headboat data) are based on survey information.

With respect to economic impacts, **Subalternatives 2c-2e (Preferred)** and **3c-3e** will likely generate less economic disruptions in the short term relative to **Subalternatives 2a-2b** and **3a-3b** because they more closely align with the distribution of landings between the two sectors under the status quo (i.e., **Alternative 1, No Action)**.

Ideally, when examining the economic effects of alternative allocations, estimates of marginal commercial and recreational net economic benefits under the various allocation alternatives should be considered so that scarce fish resources can be reallocated to those sectors that generate the highest net benefits to society. Economic benefits are maximized at the allocation level where the marginal net economic benefits to the commercial and recreational sectors are equal. However, marginal net economic benefits for the various alternatives are not available at this time and so the analysis relies on comparisons of gross revenue estimates in the commercial sector and consumer surplus estimates in the recreational sector.

Alternative 3 proposes five different allocations of the black grouper harvest that further separate the recreational allocation between the for-hire and private recreational sectors. As such, the potential changes in producer surplus or NOR to the for-hire sector should be measured separately in theory. However, as indicated in **Section 3.8.2**, there were no charter trips targeting black grouper and only an average of 642 charter trips per year harvesting black grouper in the South Atlantic between 2005 and 2009. Thus, it is difficult to analyze the expected economic effects of the proposed subalternatives under **Alternative 3**. However, if accurate, the data suggest the economic effects on the for-hire sector associated under the various subalternatives for **Alternative 3** will differ little.

In terms of social impacts, as mentioned previously, there can be many different effects that result as allocations are divided and perceptions are formed. It is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. However, with regard to **Alternative 3** and its subset of alternatives, there has been significant resistance from the private recreational component of the overall recreational sector to separate allocations. Some within the charter sector see some benefits from having a separate allocation as there may be more stability in having some accountability within each sector.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Under **Subalternative 2e (Preferred)**, ABC would be more evenly divided among the commercial and recreational sectors, but require more of an administrative burden than **Alternative 1 (No Action)**. Subalternatives under **Alternative 3** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

Table 2-46. Summary of effects under **Action 14**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) A single ABC, and therefore single ACL would be established for both sectors, no ABC for the recreational sector, could lead to overfishing.	(+-) Maintains an overall ABC, and consequent ACL, few socio-economic benefits.
Alternative 2: ABC divided into two sectors; different time series for landings. **Subalternative 2a.** Commercial=48.14%; Recreational=51.86%.	(+-)Would establish sector-specific ABCs, benefits are higher since ACLs and AMs would be required for both sectors. Landings data represent commercial sector better than more recent recreational effort.	(+-) No net benefits due to allocation.
Subalternative 2b. Commercial=50.13%; Recreational=49.87%.	(+-) Similar to **Subalternative 2a**, benefits may be lower since landings data represent commercial sector much better than more recent recreational effort.	(+-) No net economic benefits due to allocation.
Subalternative 2c. Commercial=43.74%; Recreational=56.26%.	(+-) Benefits in-between **Subalternatives 2a** and **2b**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 2d. Commercial=33.02%; Recreational=66.98%.	(+-) Benefits similar to **Subalternative 2c**, except recreational effort is captured better in this time series.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 2e (Preferred). Commercial=36.88%; Recreational=63.12%.	(+-) Highest benefit of all subalternatives under **Alternatives 2** and **3**. Landings data for both sectors are from time periods with the best reporting.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Alternative 3: ABC divided into three sectors; different time series for landings. **Subalternative 3a.** Commercial=48.14%; Recreational=40.75%; For-hire=11.11%.	(+-) Lower benefit than **Subalternative 2a**. Uncertainty in recreational landings increased by adding another recreational sector.	(+-) No net economic benefits due to allocation.
Subalternative 3b. Commercial=48.14%; Recreational=41.42%; For-hire=8.45%.	(+-) Lower benefit than **Subalternatives 2b** and **3a**. Earlier time series has better commercial reporting, recreational landings and associated uncertainty may lead to overfishing.	(+-) No net economic benefits due to allocation.
Subalternative 3c. Commercial=43.74%; Recreational=39.27%; For-hire=16.99%.	(+-) Benefits in-between **Subalternatives 3a** and **3b**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.

Table 2-46. Continued. Summary of effects under **Action 14**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Subalternative 3d. Commercial=33.02%; Recreational=51.92%; For-hire=15.06%.	(+-) Benefits lower than **Subalternative 2d**, and similar to **Subalternative 3c**, except recreational effort is captured better in this time series.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 3e. Commercial=36.88%; Recreational=47.83%; For-hire=15.29%.	(+-) Highest benefit of all subalternatives under **Alternative 3**, but, lower than **Subalternative 2e (Preferred)**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.

2.3.3 Action 15: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper

Alternative 1 (No Action). Retain aggregate recreational and commercial ACLs and OY for black grouper, red grouper, and gag.

Alternative 2 (Preferred). ACL = OY = ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 3. ACL = OY = 90% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 4. ACL = OY = 80% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Table 2-47. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**.

Alternative	ACL Formula	Years	Total ACL (South Atl.)	Comm ACL	Rec ACL
1 (No Action)	The group ACL for gag, black grouper, and red grouper is 662,403 gw (781,636 ww) for the commercial sector and 648,663 gw (765,422 ww) for the recreational sector. The total group ACL is 1,311,066 gw (1,547,058 ww). *				
2 (Preferred)	**ACL=ABC**	**2012**	**245,595**	**90,575**	**155,020**
		2013	**256,430**	**94,571**	**161,859**
		2014+	**262,594**	**96,844**	**165,750**
3	ACL=90% ABC	2012	221,036	81,518	139,518
		2013	230,787	85,114	145,673
		2014+	236,335	87,160	149,175
4	ACL=80% ABC	2012	196,476	72,460	124,016
		2013	205,144	75,657	129,487
		2014+	210,075	77,475	132,600

*Note: An individual ACL is currently not in place for black grouper. These values are equivalent to the expected catch resulting from the implementation of management measures for black grouper in Amendment 16 and specified in Amendment 17B. The black grouper portion of the combined gag, black, and red grouper ACL would translate to a total ACL of 140,124 lbs ww (118,749 lbs gw); 102,526 lbs ww (86,866 lbs gw) for the commercial ACL; and 37,598 lbs ww (31,868 lbs gw) for the recreational ACL.

Comparison of Alternatives

Alternative 1 (No Action) would retain the commercial and recreational aggregate ACL specified for gag, black grouper, and red grouper in Amendment 17B (SAFMC 2010b). The aggregate commercial ACL for gag, black grouper, and red grouper is 662,403 lbs gutted weight, and the aggregate recreational ACL is 648,663 lbs gutted weight. The aggregate ACL is based on expected landings from actions taken in Amendment 16 (SAFMC 2009a) and therefore does not take into consideration recent information from the black grouper stock assessment.

Alternatives 2 (Preferred)-4 would specify an individual ACL and OY for black grouper based on the ABC from the recent SEDAR stock assessment. Under **Alternatives 2 (Preferred)-4,** ACLs for the commercial and recreational sectors would increase through 2014 and then remain at 2014 levels until otherwise specified by the South Atlantic Council. The ACLs would not increase in a subsequent years if present year projected catch has exceeded the total ACL. The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 is 522,543 lbs whole weight (without dead discards). The South Atlantic Council's preferred jurisdictional allocation of ABC specified in **Action 13** is 47% for the South Atlantic, resulting in South Atlantic black grouper ABC equal to 245,595 lbs whole weight. Based on the preferred allocation alternatives in **Action 14**, 63.12% of the ACL would be allocated to the recreational sector and 36.88% of the ACL would be allocated to the commercial sector. The commercial and recreational ACLs based on alternatives in this action as well as the preferred allocation alternative in **Action 14** are shown in **Table 2-47**.

In terms of economic impacts, in general, the short-run benefits tend be higher when there is no or little buffer between the ACL and the ABC, as is the case under **Alternative 2 (Preferred**). As the ACL becomes more conservative under **Alternatives 3** and **4**, the anticipated short-term losses in economic benefits tend to increase. **Alternative 3** is preferable to **Alternative 4** in the short term, at least, since it results in a higher ACL for the commercial and recreational fisheries. Long-term economic benefits may be maximized under **Alternative 2 (Preferred**) as long as there is very little uncertainty regarding whether the ACL will be exceeded or not. If there is uncertainty, then long-term economic benefits are greatest under scenarios where a buffer is in place (**Alternatives 3** and **4**). Long-term economic benefits will depend on the ability of the ACL to increase stock abundance and reduce harvesting costs.

Establishing an ACL for black grouper will have social effects similar to the discussions under other actions establishing ACLs. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status as black grouper would have no specific ACL, just an ACL as part of the grouper aggregate. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2** (**Preferred)** would be less restrictive than **Alternatives 3** and **4** and have fewer negative social effects. Although black grouper has never had an ACL, it has been part of the larger grouper aggregate catch limit. By establishing a specific ACL for this species there could be changes in fishing behavior that may induce other social effects if target switching causes closures for black grouper or other species.

The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much among the three action alternatives.

Table 2-48. Summary of effects under **Action 15**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Least conservative of the alternatives, since there is no buffer between ACL and ABC.	(+-) Smaller long-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Provides a buffer between ABC and ACL. Benefits could fall in-between **Alternatives 2 (Preferred)** and **4**.	(+-) Benefits in-between **Alternatives 2 (Preferred)** and **4**.
Alternative 4. ACL=OY=80% ABC	(+) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Smallest short-term, and largest long-term benefits.

2.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper

Alternative 1 (No Action). Retain the existing commercial AMs for black grouper (**Table 2-49**).

Table 2-49. Current commercial regulations for black grouper.

Current Commercial Regulations	
Aggregate ACL and in-season closures	Group commercial ACL for gag, black grouper and red grouper of 662,403 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: gag, black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.

Alternative 2. Specify Annual Catch Targets (ACT) for the commercial sector.

- **Subalternative 2a (Preferred).** Do not establish a commercial sector ACT.
- **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
- **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if overfished.

Comparison of Alternatives

Alternative 1 (No Action) would maintain the current AMs for black grouper established through Amendment 17B, and would not result in any additional cost or benefit to the biological environment over the status quo. **Subalternative 2a (Preferred)** would not set an ACT for the commercial sector. **Alternative 3 (Preferred)** would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus would provide a disincentive to target black grouper once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** since it would correct for an ACL overage post-season if one were to occur during the fishing season, but only if the species is determined to be overfished. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit if effort were to increase enough to trigger the AM.

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run than **Alternative 2. Alternative 4 (Preferred)** will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue), but potentially long-run positive economic effects relative to **Alternative 1 (No Action),** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Alternative 1 (No Action) would have few negative social impacts. A buffer could be imposed through **Alternative 2** which might reduce the harvest threshold further from the ACL. **Subalternative 2a (Preferred)** would be less restrictive than **Subalternative 2b or 2c** and therefore have fewer negative social effects. Once the ACL is met in **Alternative 3 (Preferred)** there should be beneficial social effects in keeping the fishery sustainable. The payback provision in **Alternative 4 (Preferred)** should provide added protection for the stock and beneficial social effects.

Alternative 1 (No Action) would not produce near-term administrative impacts. Administrative impacts of **Alternatives 2-4 (Preferred)** would be greatest relative to the commercial AMs proposed. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

Table 2-50. Summary of effects under **Action 16**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Greater short-term and smaller long-term benefits.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term and long-term benefits.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4 (Preferred)**, but less than **Alternative 1 (No Action)**.
Alternative 4 (Preferred). Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greatest long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper

Alternative 1 (No Action). Do not specify new recreational AMs for black grouper (**Table 2-51**).

Table 2-51. Existing recreational regulations for black grouper.

Current Recreational Regulations	
Bag limit	Included in three grouper aggregate bag limit per person per day (1 may be black or gag). Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.
ACL/AM	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.
Subalternative 3b (Preferred). If the _annual landings_ exceed the ACL in a given year.
Subalternative 3c. If the _mean landings_ for the past three years exceed the ACL.[1, 2]
Subalternative 3d. If the _modified mean landings_ exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage if the species is overfished.

Table 2-52. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 2-33**). Values are in lbs whole weight.

		Recreational Sector ACT		
Year	**Preferred Recreational Sector ACL**	**ACT Subalt. 5a; ACT=85%(ACL)**	**ACT Subalt. 5b; ACT=75%(ACL)**	**ACT Subalt. 5c (Preferred); ACT equals sector ACL [(1-PSE) or 0.5, whichever is greater]**
2012	155,020	131,767	116,265	94,562
2013	161,859	137,580	121,394	98,734
2014+	165,750	140,888	124,313	101,108

Table 2-53. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper.

	Commercial (lbs)	**Recreational (lbs gw)**	**Total (lbs gw)**
Gag ACL *(Amend 16)*	352,940 (gw) 416,469 (ww)	340,060 (gw) 401,271 (ww)	693,000 (gw) 817,740 (ww)
Black grouper landings (2010)	37,258 (gw) 43,964 (ww)	35,222 (gw) 41,562 (ww)	72,480 (gw) 85,526 (ww)
Red grouper landings (2010)	277,337(gw) 327,258(ww)	91,508(gw) 107,979 (ww)	368,845(gw) 435,237 (ww)
Gag, black, red aggregate ACL	662,403 (gw) 781,635 (ww)	648,663 (gw) 765,422 (ww)	1,311,006 (gw) 1,546,987 (ww)

Comparison of Alternatives

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 15**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish an ACT as an actual harvest level that presumably once exceeded, would trigger an AM . **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d**

(Preferred) would have the greatest biological benefit of the three subalternatives by reducing the ACL by 50% or by one minus the percent standard error (PSE) from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts.

One of the benefits of employing the approaches in **Subalternatives 3c**-**3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if regulations have been implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), and scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag in when recreational data become available. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological effects may not be adverse by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If the ACL is exceeded, **Subalternatives 5c – 5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**.

Alternative 1 (No Action) would have the most potential to cause the greatest economic dislocation in the long run. **Subalternative 2c** generates higher short-term losses in consumer surplus relative to **Subalternative 2b** and **Subalternative 2d (Preferred)** generates higher short-term losses in consumer surplus relative to **Subalternative 2c**. These estimates assume the recreational sector can harvest the ACT and the short-run losses are expected to be offset in the long run when stock abundance is anticipated to increase. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. **Subalternative 4a (Preferred)** would not generate any indirect economic effects. **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. **Subalternatives 5a** and **5b** would not generate greater adverse, indirect economic effects. **Subalternative 5c** may generate the same indirect economic effects in the short-term as **Subalternative 5d (Preferred)** and **Subalternative 5e**. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than those under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternative 5c, Subalternative 5d (Preferred)** and **Subalternative 5e** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**.

Alternative 1 (No Action) may have negative social effects if stocks are not sufficiently protected through other management. **Subalternatives 2a-2d** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. Under **Alternative 3**, the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**,which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. **Subalternative 3e** could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c,** which uses only the next year for monitoring. **Subalternative 5d (Preferred)** may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as does **Subalternative 5d (Preferred)**. In **Subalternative 5g**, payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

The administrative impacts of this action are expected to be similar to those for **Action 8**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. The alternatives and associated subalternatives are not likely to differ much in their administrative impacts.

Table 2-54. Summary of effects under **Action 17**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest long-term negative effects.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.

Table 2-54. Continued. Summary of effects under **Action 17**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred**).	(+-) No indirect economic effects.
Alternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a**.
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5f**.

2.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper

Alternative 1 (No action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

> **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
> **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
> **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established by using highest catch history from 1987-2001).
> **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established by using lowest catch history from 1987-2001).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Table 2-55a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdiction allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	2,840,530	57,970
Alternative 2b	2,840,530	57,970
Alternative 2c	2,898,500	0
Alternative 2d	2,753,575	144,925
Alternative 3	2,115,905	782,595
Alternative 4 (Preferred)	**2,173,875**	**724,625**
Alternative 5	2,231,845	666,655
Alternative 6	2,057,935	840,565

Table 2-55b. Yellowtail snapper values (lbs whole weight) for ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic.

Parameter	Value	Source
ABC	2,173,875	Action 18, Preferred Alternative 4
ACL	2,173,875	Action 6, Preferred Alternative 2
Comm ACL	1,142657	Action 5, Preferred Alternative 2
Rec ACL	1,031,218	Action 5, Preferred Alternative 2
Rec ACT	897,160	Action 8, Preferred Alternative 2d

Comparison of Alternatives

Under **Alternative 1 (No Action)**, the Gulf of Mexico and South Atlantic Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)), and sector allocations. **Alternative 2** would establish a jurisdictional allocation for yellowtail snapper, based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003), which does not consider stratified yellowtail snapper data for Monroe County, Florida. Juvenile yellowtail are likely more abundant in the Gulf of Mexico Council's jurisdiction and adults along the reef tract are more abundant in the South Atlantic Council's jurisdiction. Therefore, alternatives that consider post-stratified data are likely more appropriate for determining jurisdictional allocations than **Alternative 2**.

Under **Alternatives 3-6,** data for yellowtail snapper in the Florida Keys were stratified into the South Atlantic and Gulf of Mexico. **Alternatives 3-6** take into account any management changes that took place for yellowtail snapper in both the Gulf of Mexico and South Atlantic Council's FMPs since all catch history data began in 1993. The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Alternatives 2-6** would be similar. The 2003 stock assessment indicates yellowtail snapper are not experiencing overfishing and are not overfished. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure yellowtail snapper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest change in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic yellowtail snapper fishery would accrue under **Subalternative 2c**, followed by **Subalternative 2a** and **Subalternative 2b** (which are equivalent), **Subalternative 2d**, **Alternative 5**, **Alternative 4 (Preferred)**, **Alternative 3**, and the least, under **Alternative 6**.

The allocation procedure selected may have few social effects depending upon the other restrictions that come from the administration by each Council. At present it is difficult to ascertain any specific social effects other than any reduction in harvest or increased regulatory burden from the allocation scheme may have negative social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. All of the action alternatives and subalternatives would carry a moderate administrative burden. Establishing jurisdictional allocation would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in both the Gulf of Mexico and South Atlantic in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. **Subalternative 2c** would carry the least administrative burden.

Table 2-56. Summary of effects under **Action 18.**

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Both councils would need to agree on ACLs and a common set of regulations. Benefits may not be optimal.	(+-) No net benefits due to distributional nature of allocation.
Alternative 2. Percentage of ABC between South Atlantic and Gulf of Mexico based on SEDAR 3 (2003) stock assessment. **Subalternative 2a.** South Atlantic =98%; Gulf of Mexico=2%.	(+-) Benefits unclear, all landings data for Monroe County, Florida was assigned to the South Atlantic, in SEDAR 3 (2003) stock assessment.	(+-) Higher total economic benefits to the South Atlantic region.
Subalternative 2b. South Atlantic=98%; Gulf of Mexico=2%; 50% from 1987-2001 + 50% from 1999-2001.	(+-) Identical to **Subalternative 2a.**	(+-) Benefits same as **Subalternative 2a.**
Subalternative 2c. South Atlantic =100%; Gulf of Mexico=0%.	(+-) Similar to **Subalternative 2a**.	(+-) Highest total economic benefits to the South Atlantic region.
Subalternative 2d. South Atlantic =95%; Gulf of Mexico=5%.	(+-) Similar to **Subalternative 2a**.	(+-) Lowest total economic benefit to the South Atlantic region of all the subalternatives under **Alternative 2**.

Table 2-56. Continued. Summary of effects under **Action 18**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3. South Atlantic =73%; Gulf of Mexico=27%.	(+-) Benefits unclear, but data incorporates more recent years, and all catch history data since 1993 is post-stratified between the two Councils for Monroe County, Florida	(+-) Higher net economic benefits than **Alternative 6**, but lower than **Alternatives 4** and **5**, to the South Atlantic region.
Alternative 4 (Preferred). South Atlantic =75%; Gulf of Mexico=25%.	(+-) Similar to **Alternative 3**.	(+-) Benefits between **Alternatives 3** and **5**.
Alternative 5. South Atlantic =77%; Gulf of Mexico=23%.	(+-) Similar to **Alternatives 3** and **4**.	(+-) Net economic benefits higher than **Alternatives 3, 4,** and **6**, to the South Atlantic region.
Alternative 6. South Atlantic =71%; Gulf of Mexico=29%.	(+-) Similar to **Alternative 3**, gives the largest jurisdictional allocation to the Gulf of Mexico of all the alternatives.	(+-) Least net economic benefits of all alternatives under this action to the South Atlantic region.

2.3.7. Action 19: Establish Jurisdictional Allocations for Mutton Snapper

Alternative 1. (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper Acceptable Biological Catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

Comparison of Alternatives

Alternative 1 (No Action) would not establish jurisdictional allocations of mutton snapper between the Gulf and South Atlantic Councils. The two Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If the Councils decided not to allocate this species by region they would have to agree on a recreational and commercial allocation.

Alternative 2 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper ABC based on the following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the formula: 50% of the catch history from 1990-2008 + 50% of the catch history from 2006-2008. In **Alternatives 2 (Preferred)** and **3**, data from Monroe County, Florida are stratified using methodology described in **Action 18**. Employing the ABC for the preferred jurisdictional **Alternative 2** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified in **Table 2-57**.

Alternative 3 would establish a jurisdictional allocation based on the following method: South Atlantic = 79% of the ABC and Gulf = 21% of the ABC. These percentages were derived by using catch histories from 2002-2006.

Alternatives 2 (Preferred) and **3** are similar, with only 3% difference in allocation of the ABC between the Gulf and South Atlantic Councils. Based on the stock assessment for mutton snapper (SEDAR 15A 2008), the commercial landings (handline and longline combined) are close to a 50:50 split between the Gulf and South Atlantic Councils. The recreational landings (Marine Recreational Fisheries Statistical Survey (MRFSS) and heaboat) are primarily from the South Atlantic jurisdiction.

Alternative 4 would be dependent upon the Gulf Council relinquishing management of mutton snapper. Under this alternative the South Atlantic Council would manage mutton snapper in the South Atlantic (where most of the landings occur), as well as the Gulf of Mexico. The biological effects of **Alternative 4** could be slightly greater than **Alternatives 2 (Preferred)** and **3** because management measures (a two month spawning season closure) are more restrictive for the commercial sector in the South Atlantic than in the Gulf of Mexico. However, commercial landings of mutton snapper are small relative to recreational landings, and landings from the Gulf of Mexico are much less than those in the South Atlantic.

Regardless of which alternative is selected, SEDAR 15A (2008) indicates management measures in both areas are sufficient to prevent overfishing of mutton snapper. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure mutton snapper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest losses in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic mutton snapper fishery would accrue under **Alternative 2 (Preferred)**.

Losses in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic mutton snapper fishery would also accrue under **Alternative 3.** Thus, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 1 (No Action)** relative to **Alternative 2 (Preferred)** and **Alternative 3**. Conversely, participants in the South Atlantic mutton snapper fishery would experience gains in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits under **Alternative 4**. Therefore, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 4** relative to **Alternative 1 (No Action)**, **Alternative 2 (Preferred)** and **Alternative 3**.

Alternative 1 (No Action) may make management of mutton snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. The allocation based upon **Alternatives 2 (Preferred)** and **3** are very close in their allocation and the social effects would differ minimally between the two. Both alternatives use data from the most recent years with **Alternative 2 (Preferred)** using older data also to account for the historical fishery. The social effects of **Alternatives 2 (Preferred)**, **3**, and **4** would likely be positive in the long term as it would allow for management and accountability based upon regional fishing activities. It becomes problematic in areas like the Florida Keys where fishermen may fish in both jurisdictional areas and management differences could make fishing decisions more complicated. Overall, if management becomes more accountable and fishing thresholds provide stability in harvest the benefits should be positive. It will depend upon the ability to monitor and implement any AMs through each council process over time.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Under **Alternatives 2 (Preferred)** and **3**, 82% and 79% of the ABC, respectively, would be divided between the commercial and recreational sectors in the South Atlantic. This could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored to ensure the commercial and recreational ACLs are not exceeded. **Alternative 4** could increase the administrative burden if changes are needed to the federal Gulf Reef Fish and the federal Snapper Grouper Permits.

Table 2-57. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic.

Parameter	Value	Source
OFL	1,515,300	Action 19
ABC	926,600	Action 19, Preferred Alternative 2
ACL	926,600	Action 6, Preferred Alternative 2
Comm ACL	157,707	Action 5, Preferred Alternative 2
Rec ACL	768,893	Action 5, Preferred Alternative 2
Rec ACT	668,937	Action 8, Preferred Alternative 2d

Table 2-58. Summary of effects under **Action 19**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Both councils would need to agree on ACLs and a common set of regulations. Benefits may not be optimal.	(+-) No net benefits due to distributional nature of allocation.
Alternative 2 (Preferred). Percentage of ABC between South Atlantic and Gulf of Mexico. South Atlantic =82%; Gulf of Mexico=18%.	(+-) Benefits unclear, all landings data for Monroe County, Florida was assigned to the South Atlantic. Identical to the preferred alternative chosen by the Gulf of Mexico.	(+-) Higher total economic benefits to the South Atlantic region.
Subalternative 3. South Atlantic=79%; Gulf of Mexico=21%.	(+-) Benefits unclear.	(+-) Slightly lower economic benefit to the South Atlantic region.
Subalternative 4. No jurisdictional allocation, the South Atlantic Council would manage mutton snapper in both jurisdictional waters.	(+-) Translates to 100% allocation to the South Atlantic. Benefits unclear.	(+-) Highest total economic benefits to the South Atlantic region.

2.4 Dolphin Wahoo Fishery Management Plan

2.4.1 Dolphin

2.4.1.1. Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin

Alternative 1 (No Action). Do not establish an ABC Control Rule for Dolphin.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule.
Note: The Gulf of Mexico Council's Control Rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule described in **Table 2-14**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 2-16** and OFL = unknown (currently ABC = 14,596,216 lbs ww).

Comparison of Alternatives
Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for dolphin. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3 and 4 (Preferred)**. However, as the SSC indicated at their April 2011 meeting, OFL is unknown, therefore no value for ABC would be available under **Alternative 2**. In contrast to **Alternative 2**, **Alternative 3** would be based on the Gulf of Mexico SSC's ABC control, which would account for scientific uncertainty by providing a buffer between ABC and OFL. Again, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in values that are similar to the South Atlantic Council SSC's ABC control rule value **(Alternative 4 Preferred)**. Therefore, the biological effects of **Alternative 3** would be very similar to those under **Alternative 4 (Preferred)**.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from commercial dolphin landings are predicted to total $1,582,000. This alternative is expected to generate the least dislocation in the short-run, but will also likely generate the smallest long-run economic benefits relative to other alternatives. **Alternative 2** would lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**, estimated at $115,000. **Alternative 3** is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e., increasing the ABC) foregone gross revenue is predicted to decrease. The adoption of **Alternative 4 (Preferred)** is expected to result in a loss of $78,000 in gross revenues. **Alternative 4 (Preferred)** is the least restrictive of all the alternatives other than **Alternative 1 (No Action)**.

Alternatives that are the most restrictive have the potential of negative social effects, both short term and long term, even though there may be long-term biological benefits. **Alternative 2** is not as risk averse as other alternatives. Using the Gulf of Mexico Council SSC's ABC control rule in **Alternative 3** would be less restrictive than South Atlantic Council SSC's ABC control rule in **Alternative 4 (Preferred)** and only slightly more restrictive than **Alternative 2**. The combined effect of any of the reductions in harvest levels is likely to have negative social effects, both sort tem and long term.

The establishment of an ABC control rule is a procedural exercise. The rule is developed by a SSC for consideration by a fishery management council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

Table 2-59. Summary of effects under **Action 20**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Would not meet MSA requirements.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 2. ABC=OFL; OFL=13,709,523 lbs.	(+-) Least conservative of the alternatives, since there is no buffer between OFL and ABC, does not account for scientific and management uncertainty like **Alternatives 3** and **4**.	(+-) Negative economic effects less than all alternatives, except **Alternative 4 (Preferred)**.
Alternative 3. Gulf of Mexico Council SSC's ABC Control Rule; ABC=1.5 S.D. above mean landings 1999 to 2008.	(+-) Benefits similar to **Alternative 4 (Preferred)**.	(+-) Negative economic effects least of all alternatives, except **Alternative 4 (Preferred)**.
Alternative 4 (Preferred). South Atlantic Council SSC's ABC Control Rule; ABC=third highest landings during 1999 to 2008.	(+-) Benefits similar to **Alternative 3**.	(+-) Negative economic effects least of all alternatives.

2.4.1.2 Action 21: Specify Allocations for Dolphin

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the accumulative landings system (ALS), MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

Comparison of Alternatives

Alternative 1 (No Action) was implemented through the Dolphin Wahoo FMP, which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic EEZ (SAFMC 2003a). The Dolphin Wahoo FMP also established this allocation as a "soft cap" on the commercial sector. The biological benefits of **Alternatives 2** and **4** would be slightly less than **Alternative 3 (Preferred)**. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the estimates.

Under **Alternative 1 (No Action)**, assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,582,000. The remaining alternatives would reduce the commercial allocation from 13% to 7% under **Alternative 2** and 7.3% under **Alternative 3 (Preferred)** and

Alternative 4. The predicted loss in gross revenue due to a 43.8% reduction (i.e., 13% to 7.3%) in allocation as defined by **Alternative 3 (Preferred)** is $78,000 (as well as **Alternative 4**). Note that this is the same loss associated with establishing the preferred ABC Control Rule in **Action 20**. The predicted loss in gross revenue due to a 46.2% reduction (i.e., 13% to 7%) in allocation as defined by **Alternative 2** is $105,000.

Alternative 1 (No Action) would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue if a closure were to occur. **Alternative 2** could have some negative social effects, especially if other actions further decreased the harvest thresholds. **Alternative 3** (**Preferred)** would also decrease the commercial allocation from the present level. **Alternative 4** may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed.

The administrative impacts associated with the proposed alternatives are expected to be similar to the administrative impacts under **Alternative 1 (No Action).** None of the action alternatives are expected to increase the administrative impacts relative to the others.

Table 2-60. Summary of effects under **Action 21**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Highest benefits compared to **Alternatives 1-3 (Preferred)**.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2. Commercial=7%; Recreational=93% Landings (1999-2008).	(+-) Benefits lower than **Alternatives 1 (No Action)** and **3 (Preferred)**, higher than **Alternative 4**.	(+-) No net benefits to the due to allocation, losses slightly higher than **Alternatives 3** and **4**.
Alternative 3 (Preferred). Commercial=7.3%; Recreational=92.7% Landings 50% * average catch 1999-2008 + 50% * average catch 2006-2008.	(+-) Benefits higher than **Alternatives 2** and **4**, less than **Alternative 1 (No Action)**. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector).	(+-) No net benefits to the due to allocation, losses similar to **Alternative 4**.
Alternative 4. Commercial=7.3%; Recreational=54.4%; For-hire=38.4%. Landings 50% * average catch 1999-2008 + 50% * average catch 2006-2008.	(+-) Benefits would be less than **Alternatives 1-3 (Preferred)**, uncertainty in recreational landings higher due to addition of another recreational sector.	(+-) No net benefits to the due to allocation, losses similar to **Alternative 3 (Preferred)**.

2.4.1.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the maximum sustainable yield (MSY) (between 14.1 and 34.9 million lbs).

Alternative 2 (Preferred). ACL = OY =ABC (currently estimated to be 14,596,216 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 lbs ww).

Discussion

The Dolphin Wahoo FMP (SAFMC 2003a) established what is called a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The wording is as follows:

> **ACTION 12**. Establish a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.

The Dolphin Wahoo AP initially discussed adding an alternative that would set ACL equal to 65%, 75%, or 85% of 46.5 million lbs (the top end of the current MSY range). The Dolphin Wahoo AP did not provide an ACL recommendation at that time given the problems with the landings data. The Dolphin Wahoo AP did recommend the South Atlantic Council examine a regional approach to allocating the quotas.

Table 2-61. ACL formula, ACL/OY values (lbs whole weight) for dolphin under **Alternatives 2 (Preferred)-5**. Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	ACL/OY	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**14,596,216**	**1,065,524**	**13,530,692**
Alternative 3	85% ABC	12,406,784	905,695	11,501,089
Alternative 4	75% ABC	10,947,162	799,143	10,148,019
Alternative 5	65% ABC	9,487,540	692,590	8,794,950

Comparison of Alternatives

Alternative 1 (No Action) would not establish an ACL for dolphin, and would not meet the requirements of the Magnuson-Stevens Act. **Alternative 2 (Preferred)** would set the ACL equal to the OY equal to the ABC. The SSC has recommended an ABC = 14,596,216 lbs whole weight. **Alternative 3** would set ACL = OY = 85% of ABC. Based on the preferred allocation alternatives in **Action 21**, 7.3% (1,065,524 lbs whole) of the ACL would be allocated to the commercial sector and 92.7% (13,530,692 lbs whole weight) of the ACL would be allocated to the recreational sector. **Alternative 3** would have a greater positive biological effect than **Alternative 2 (Preferred)** because it would create a buffer between the ACL and ABC. The biological effects of **Alternatives 4** and **5** would be greater than **Alternative 3**, with **Alternative 5** setting the most conservative ACL at 65% of the ABC.

Under **Alternative 1 (No Action)**, gross revenues derived from dolphin landings are predicted to total $1,582,000. This alternative is expected to generate the least dislocation in the short-run, but will also likely generate the smallest long-run economic benefits relative to other alternatives. **Alternative 2 (Preferred)** would lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**, estimated at $78,000. The greater the buffer, the greater the short-term forgone gross revenue. The adoption of **Alternative 3** is expected to result in a loss of $191,000 in gross revenue; whereas, the adoption of **Alternative 4** and **Alternative 5** are anticipated to result in $281,000 and $385,000 in forgone gross revenue, respectively.

A more restrictive ACL like that proposed under **Alternative 5** would likely have more negative social effects in the short term than would **Alternatives 1 (No Action), 2 (Preferred), 3,** or **4**. **Alternative 3** would be less restrictive than **Alternatives 4** and **5**, thereby having fewer negative social effects, if any, and more restrictive than **Alternative 1 (No Action)** or **2 (Preferred)**.

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase.

Table 2-62. Summary of effects under **Action 22**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+-) Smallest short-term economic losses of all alternatives.
Alternative 3. ACL=OY=85% ABC	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Short-term economic losses greater than **Alternative 2 (Preferred)**, but smaller than **Alternatives 4** and **5**.
Alternative 4. ACL=OY=75% ABC	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Short-term economic losses in-between **Alternatives 3** and **5**.
Alternative 5. ACL=OY=65% ABC	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Greatest short-term economic losses of all alternatives.

2.4.1.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin

Alternative 1 (No Action). Do not specify commercial sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Alternative 2. Specify commercial sector ACTs for dolphin.

- **Subalternative 2a (Preferred).** Do not specify a commercial sector ACT.
- **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
- **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Table 2-63. The commercial sector ACT for dolphin for each of the alternatives. Values are in lbs gutted weight.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Subalt. 2a (Preferred); No ACT	ACT Subalt. 2b; ACT=90%(ACL)	ACT Subalt. 2c; ACT=80%(ACL)
Dolphin	1,065,524	N/A	958,972	852,419

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the RA shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not establish an AM for dolphin, and would not meet the requirements of the Magnuson-Stevens Act. The most biologically beneficial ACT alternative would be **Subalternative 2c** since it would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL. **Alternative 3 (Preferred)** would remove the incentive to target dolphin on commercial trips since all purchase and sale would be prohibited once the ACL is met. This alternative would also still allow some level of harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of dolphin.

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenues derived from commercial landings of dolphin are predicted to total $1,504,000. If the South Atlantic Council would have specified a commercial sector ACT, then the commercial sector would have forgone gross revenue in the future, if management measures enforcing the ACT are implemented, ranging from $83,000 for **Subalternative 2b** to $161,000 for **Subalternative 2c** due to specification of the ACT. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run. **Alternative 4** calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative would likely generate adverse short-run economic effects (i.e., lower short-run gross revenue), but potentially long-run positive economic effects relative to **Alternative 1 (No Action),** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

There would likely be few negative social effects from **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because dolphin are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. The administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternatives 3 (Preferred)** and **4** would be expected to have similar administrative impacts.

Table 2-64. Summary of effects under **Action 23**.

Alternatives	Biological Effects	Socioeconomic/Admin Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Same as **Alternative 1 (No Action)**.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a (Preferred)** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term benefits compared with **Subalternative 2b**.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4**, but less than **Alternative 1 (No Action)**.

Table 2-64. Continued. Summary of effects under **Action 23**.

Alternatives	Biological Effects	Socioeconomic/Admin Effects
Alternative 4. Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.4.1.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin

Alternative 1 (No Action). Do not specify new recreational AMs for dolphin.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 3-year average (7.0).

Table 2-65. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Dolphin	8.5	7.6	26.6	16.4	17.5	15.6	9.9	14.3	17.2

Note: The South Atlantic Council decided to use the 3-year average PSE because this better represented recent catches than the 5-year average.

Table 2-66. The recreational ACT for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Dolphin	13,530,692	11,501,088	10,148,019	11,595,803

Average recreational landings for 2005-2009 from **Table 4-71** = 9,056,933 lbs ww.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed. [1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in

increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.
Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.
Subalternative 5g. *Reduce bag limit.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.
Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives
Alternative 1 (No Action) would not specify recreational AMs for dolphin and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. **Subalternatives 5d (Preferred)** and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus for recreational dolphin trips is $211,755,000 using willingness-to-pay estimates from the nested logit (NL) model and $76,313,000 using willingness-to-pay estimates from the mixed logit (ML) model.[1] Since the South Atlantic Council specified a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to a potential marginal decrease in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)** and **Subalternative 2a**.

[1] See **Appendix P** for a description of these models.

The potential annual short-term loss to the recreational sector was estimated at $31,763,000 for the NL model and $11,447,000 for the ML model. **Subalternative 2d (Preferred)** leads to the greatest loss in consumer surplus resulting in potential annual short-term loss to the recreational sector of $57,502,000 for the NL model and $20,723,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Subalternative 3a would not specify an AM trigger and thus would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4b would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**.

Subalternatives 5a and **5b** would not generate any indirect economic effects. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be less than under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred),** and **5e** in the short-term. The adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternatives 5f** or **5g**.

Alternative 1 (No Action) may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** is the less restrictive than **Subalternatives 2b** and **2c**.

Alternative 3 in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e,** which could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure as when the ACL is projected to be met in **Subalternative 4b**.

Subalternative 5a could have negative social effects if stocks status is affected by the lack of any AMs through post-season measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives, like **Alternative 5** (and associated subalternatives) will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated sub-alternatives are not likely to differ much in their impacts.

Table 2-67. Summary of effects under **Action 24**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.

Table 2-67. Continued. Summary of effects under **Action 24**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT **(Subalternative 2d, Preferred)**.	(+-) No indirect economic effects.
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a (Preferred)**.

Table 2-67. Continued. Summary of effects under **Action 24**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f . Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Reduce the bag limit following season.	(+-) Biologically beneficial due to reduced number of fish that can be taken the following season.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5f**.
Subalternative 5h. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5f and 5g**.

2.4.1.6 Action 25: Establish Management Measures for Dolphin

Note: The South Atlantic Council's preferred recreational ACT does not require a reduction in harvest based on 2005-2009 average recreational catch; in fact, the average catch (9,056,933 lbs whole weight; 2005-09) is 22% below the recreational ACT (11,595,803 lbs whole weight; **Table 2-66**). The commercial sector will be closed when the commercial ACL is met or projected to be met. The South Atlantic Council's preferred alternative for a commercial ACL is greater than the average landings during 2005-2009.

Alternative 1 (No Action). Retain current management regulations.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught dolphin in or from the Atlantic EEZ is prohibited. For-hire vessels possessing the necessary state and federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
- Commercial soft cap of 1.5 million lbs or 13% of total landings, whichever is greater.
- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches fork length off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches fork length; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.
- Allowable gear is specified.
- For a commercial permitted vessel fishing north of 39^{o}N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels.
Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.

Alternative 4. Establish a minimum size limit of 20 inches fork length from Florida through New England.

Alternative 5. Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.
Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 lbs with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.
Subalternative 7b. Establish a 5,000 pound trip limit.
Subalternative 7c. Establish a 4,000 pound trip limit.
Subalternative 7d. Establish a 3,000 pound trip limit.
Subalternative 7e. Establish a 2,000 pound trip limit.
Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person.

Table 2-68. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

						Formula	%Recreational Reduction from various time periods		
Dolphin	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL(7.3%)**	**Rec ACL(92.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**
SSC ABC Control Rule	Unknown	14,596,216	14,596,216	1,065,524	13,530,692	11,595,803	-22%	-23%	-23%
GMFMC Tier 3a*	16,743,471	15,415,524	15,415,524	1,125,333	14,290,191	12,246,693	-26%	-27%	-27%
Mean + 1.0 Std.Dev.		14,087,576	14,087,576	1,028,393	13,059,183	11,191,720	-19%	-20%	-20%
Mean + 0.5 Std.Dev.		12,759,629	12,759,629	931,453	11,828,176	10,136,747	-11%	-12%	-12%
Mean		11,431,682	11,431,682	834,513	10,597,169	9,081,774	0%	-2%	-2%
Average landings for time period from **Table 4-71**.							9,056,933	8,927,993	8,919,457

*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.

Comparison of Alternatives
Alternative 1 (No Action) would retain current management measures. **Alternatives 2-8** would all be expected to have positive biological effects. **Alternative 2 (Preferred)** would ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Establishing a 20-inch FL minimum size limit for dolphin landed from Florida through South Carolina under **Alternative 3 (Preferred)** would be expected to reduce total harvest of dolphin by 1.4%. The overall reduction in total kill would be less when release mortality is considered.

Establishing a 20-inch FL size limit for dolphin in South Carolina and North Carolina under **Alternative 4** would be expected to reduce harvest of dolphin by about 5%. A minimum size limit of 21 inches FL would provide about a 14% reduction in harvest. No reduction in recreational harvest is needed to ensure the recreational ACT is not exceeded. It is noted that obtaining length measurements from dolphin can be difficult since it is hard to restrain them when they are brought out of the water.

Increasing the minimum size limit to 24 inches FL under **Alternative 5** would be expected to provide a 35% reduction in harvest among all sectors off of Florida and Georgia, and therefore would have a greater biological effect than increasing the size limit to 22 inches FL.

Proposed reductions in the vessel limit under **Alternative 6** and its subalternatives would reduce harvest of dolphin by 6% to 18%, which would be biologically beneficial.

Subalternative 7a would be expected to reduce harvest north of 31° N. latitude by about 3.6%, and a 1,000 pound gutted weight trip limit would reduce harvest of dolphin by about 31% for areas south of 31° N. Latitude. **Subalternatives 7b-7f** would establish a trip limit for dolphin throughout the South Atlantic ranging from 5,000 lbs gutted weight to 1,000 lbs. The trip limit of 5,000 lbs gutted weight proposed in **Subalternative 7b** would do little to reduce harvest of dolphin. The greatest biological effect among the trip limit subalternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in dolphin harvest for all areas.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. Based on data from the South Atlantic during 2007-2009, a 9-fish bag limit would reduce catches by 2%. A higher bag limit would achieve a higher reduction if combined with a modification in the minimum size limit in **Alternatives 3** and **4.**

Under **Alternative 1 (No Action),** regarding minimum size limits, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,517,000. **Alternative 3 (Preferred)** would result in predicted gross revenue of $1,504,000 (i.e., $13,000 in foregone revenue due to the minimum size limit only). This figure corresponds to the amount of gross revenue predicted under the preferred alternatives in **Actions 20-23**. The percentage of commercially landed dolphin less than 20 inches FL for South Carolina is 1.07%. It is assumed this means the reduction in harvest off South Carolina provided by establishing the commercial minimum size limit proposed in **Alternative 3 (Preferred)** would also be 1.07%. This is an important assumption as this alternative is used as a fixed parameter when analyzing the other actions relating to dolphin in the Comprehensive ACL Amendment.

Under **Alternative 2 (Preferred)**, for-hire vessels will not be able to sell dolphin fish harvested under the bag limit, even with the appropriate permits. This will result in a loss of producer surplus relative to the no action alternative. Information is not available on the relevant costs of selling fish for for-hire vessels that is necessary to measure the loss in producer surplus associated with this alternative. Therefore, the loss in terms of foregone revenue from the sale of fish is estimated. The use of revenue will overstate the loss relative to the same loss measured in terms of producer surplus. It is assumed the average annual revenue associated with selling dolphin fish on for-hire trips is given by the amount sold by charter vessels with for-hire dolphin/wahoo permits from 2005 to 2009. The results and data sources are reported in **Table 4-92**.

Alternative 4 proposes increasing the minimum size limit from Florida to New England. Since the minimum size length in Florida and Georgia is already 20 inches FL, landings of dolphin in these states would be unaffected. However, updated data suggest that harvest of dolphin in South Carolina and North Carolina would be reduced by 11.23%. In light of this information the simulation model predicts that the commercial sector would lose $107,000 in gross revenue due to the implementation of **Alternative 4**.

Alternative 5 contains two minimum size subalternatives: **5a** (22 inches FL) and **5b** (24 inches FL). These subalternatives would result in foregone ex-vessel gross revenue of $116,000 and $309,000, respectively.

Alternative 6 would reduce the recreational boat limit. This alternative applies only to charterboats and private recreational vessels, not headboats. **Subalternative 6a** would reduce the boat limit by 25%, **Subalternative 6b** would reduce the boat limit by 33%, and **Subalternative 6c** would reduce the boat limit by 50%. The reduction in consumer surplus to the recreational sector predicted under this alternative is documented in **Tables 4-97** through **4-99**.

Alternative 7 presents several subalternative trip limits ranging from 1,000 lbs to 5,000 lbs throughout the Atlantic EEZ (South Atlantic through New England), with one subalternative proposing regional trip limits (**Subalternative 7a**). The least restrictive of the trip limits is 5,000 lbs (**Subalternative 7b**) and would result in foregone commercial gross revenue of $318,000. The most restrictive of the trip limits is 1,000 lbs (**Subalternative 7f**) and would result in foregone gross revenue in the order of $799,000. The regional trip limit (**Subalternative 7a**) would result in foregone gross revenue of $581,000. The majority of the financial burden of trip limits for the dolphin fishery would fall on participants that employ pelagic longline gear especially in North Carolina.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person, but not as a preferred alternative. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-100**.

A summary of the reduction in economic value for all alternatives under **Action 25** is presented in **Table 4-101**.

Alternative 1 (No Action) would likely induce few social effects. **Alternative 2 (Preferred)** would likely have negative social effects on for-hire crew, at least in the short term. However, the lack of prohibiting sale could also have negative social effects as fish caught recreationally could be counted toward the commercial quota. Requiring a minimum size limit in South Carolina in **Alternative 3 (Preferred)** may have some social effects north of Georgia as there is no size limit and fishermen will have new regulatory regimes to follow. **Alternative 4** may have similar social effects as it establishes the size limit from Florida through New England. These alternatives may be a viable means of meeting threshold criteria for reductions that may be implemented elsewhere in this amendment. The same is true for **Alternative 5** by establishing a more restrictive size limit. **Alternative 6** and its associated subalternatives would accomplish similar reductions for the charter sector with its decreasing boat limit moving from **Subalternatives 6a** to **6c,** respectively. **Alternative 7** would accomplish similar reductions for the commercial sector with its decreasing trip limit moving from **Subalternatives 7b to 7f,** respectively. **Subalternative 7a** would split the trip limit near Jekyll Island with a smaller 1,000-pound limit to the south and 3,000 lb trip limit to the north. **Alternative 8** would reduce the boat limit to 9 and would likely have short-term negative social effects as fishermen adjust to the reductions.

The current management regime, as described **in Alternative 1 (No Action),** is quite comprehensive as it implements a quota, bag limits, trip limits, size limits and permits. The selection of **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would be expected to increase the administrative burden slightly due to increase monitoring and enforcement requirements. All of the action alternatives are expected to maintain the same level of administrative burden relative to each other. Administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-69. Summary of effects under **Action 25**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(+-) The commercial sector would be closed when the commercial ACL is projected to be met.	(+-) Negative long-term effects.
Alternative 2 (Preferred). Prohibit bag limit sales from for-hire vessels.	(+-) Beneficial to the fishery as effort may be reduced. Ensures regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.	(+-) Negative short-term effects.

Table 2-69. Continued. Summary of effects under **Action 25**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3 (Preferred). Establish a 20" FL minimum size limit off South Carolina.	(+-) Smallest benefit (would reduce the total harvest by 1.4%) among all alternatives.	(+-) Negative short-term economic effects for South Carolina.
Alternative 4. Establish a 20" FL minimum size limit from Florida through New England.	(+-) Smaller benefit (would reduce the harvest in South Carolina and North Carolina by about 5%). A minimum size limit of 21" FL would provide about a 14% reduction in harvest.	(+-) Negative effects for North Carolina and South Carolina.
Alternative 5. Increase the minimum size limit to 22" or 24" FL.	(+-) Higher benefit with the 24" FL size limit increase (35% reduction in harvest) compared with the 22" FL size limit increase (17% reduction in harvest), among all sectors off Florida and Georgia.	(+-) Most conservative and would therefore likely yield the largest positive long-term economic benefits in excess of the benefits expected under **Alternatives 3** and **4**. Largest short-term negative economic effects for Florida.
Alternative 6: Reduce the boat limit; only applies to charterboats and recreational vessels, not headboats. **Subalternative 6a.** Reduce the boat limit by 25%.	(+-) Lowest benefits of all subalternatives under **Alternative 6**. Would result in a maximum of 45 fish/vessel and provide a 6% reduction in harvest.	(+-) Smallest negative economic effects of all subalternatives under **Alternative 6**.
Subalternative 6b. Reduce the boat limit by 33%.	(+-) Slightly higher benefits than **Subalternative 6a** (would result in a maximum of 40 fish/vessel), lower benefits than **Subalternative 6c**.	(+-) Negative economic effects in-between **Subalternatives 6a** and **6c**.
Subalternative 6c. Reduce the boat limit by 50%.	(+-) Highest benefit (would result in a maximum of 30 fish/vessel) of the subalternatives under **Alternative 6**. Would provide an 18% reduction in harvest.	(+-) Greatest negative economic effects of all subalternatives under **Alternative 6**.
Alternative 7: Trip limits for commercial fishery **Subalternative 7a.** 3,000 lb trip limit N. of 31^{O}N Latitude; 1,000 lb trip limit S. of 31^{O}N Latitude.	(+-) Higher benefits than **Subalternatives 7b** and **7c**, similar to **Subalternatives 7d, 7e,** and **7f**.	(+-) Negative economic effects but less than **Subalternatives 7b, 7c,** and **7d**.
Subalternative 7b. **5,000 lb trip limit.**	(+-) Lowest benefits of all subalternatives under **Alternative 7**.	(+-) Least restrictive of the trip limit alternatives but would result in highest ex-vessel revenue loss.

Table 2-69. Continued. Summary of effects under **Action 25**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Subalternative 7c. **4,000 lb trip limit.**	(+-) Lower benefits than **Subalternatives 7d, 7e,** and **7f**.	(+-) Negative economic effects less than **Subalternative 7b**, but more than **Subalternatives 7d-7f**.
Subalternative 7d. 3,000 lb trip limit.	(+-) Benefits higher than **Subalternatives 7b** and **7c**, lower than **Subalternatives 7e** and **7f**.	(+-) Negative economic effects in-between **Subalternatives 7c** and **7e**.
Subalternative 7e. 2,000 lb trip limit.	(+-) Benefits higher than **Subalternatives 7b-7d**, lower than **Subalternative 7f**.	(+-) Ex-vessel revenue losses higher than **Subalternative 7f**, but likely lower than **Subalternatives 7b-7d**.
Subalternative 7f. 1,000 lb trip limit.	(+-) Benefits highest (26% reduction in harvest) among subalternatives under **Alternative 7**. This reduction in harvest would be for all fishing areas.	(+-) Most restrictive of the trip limit alternatives but least amount of ex-vessel revenue loss among the trip limit subalternatives.
Alternative 8. Reduce recreational bag limit to 9 fish/person.	(+-) Similar benefit to **Alternative 3** (would reduce harvest by 2%).	(+-) Negative short-term effects.

2.4.2 Wahoo

2.4.2.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

The South Atlantic Council requested the SSC consider the Gulf of Mexico SSC's ABC control rule. During their March 2011 meeting, the South Atlantic Council approved the following motion: *For dolphin and wahoo, provide guidance to the SSC that is based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.*

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended the Gulf of Mexico Council's ABC control rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stocks. At their April 2011 meeting, the South Atlantic Council's SSC stated that OFL for wahoo is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to landings. An ABC = 1,491,785 lbs whole weight was recommended based on the South Atlantic Council SSC's ABC control rule for unassessed species.

Alternative 1 (No Action). Do not establish an ABC control rule for wahoo.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule. Note: The Gulf of Mexico Control Rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for wahoo based on the South Atlantic Council SSC's ABC control rule described in **Table 2-14**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 2-16** and OFL = unknown (currently ABC is estimated to be 1,491,785 lbs ww).

Comparison of Alternatives

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for wahoo. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternative 3**. However, as the SSC indicated OFL is unknown at their April 2011, no value for ABC would be available under **Alternative 2**. In contrast to **Alternative 2**, the Gulf of Mexico Council SSC's ABC control identified in **Alternatives 3** would account for scientific uncertainty by providing a buffer between ABC and OFL. The South Atlantic Council's ABC control rule identified in **Alternative 4 (Preferred)** also accounts for scientific uncertainty in specification of the ABC; however, the South Atlantic Council's SSC has indicated OFL is unknown for wahoo.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in values that are similar to the South Atlantic Council SSC's ABC control rule value **(Alternative 4 Preferred)**. Therefore, the biological effects of **Alternative 3** would be very similar to **Alternative 4 (Preferred)**.

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. **Alternative 2** sets the ABC equal to the OFL, which may lead to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated to be as much as $283,000 for the CL model and $573,000 for the NL model.

Alternative 3 is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e., increasing the ABC), potential economic gain to the recreational sector is expected to increase. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of $894,000 in consumer surplus for the CL model and a potential gain of $1,812,000 in consumer surplus for the NL model.

Alternatives that are the most restrictive have the potential of negative social effects, both short term and long term, even though there may be long-term biological benefits. **Alternative 2** is not as risk averse as other alternatives. Using the Gulf of Mexico Council's Control rule in **Alternative 3** would be only slightly more restrictive than **Alternative 2**. However, the combined effect of any of the reductions in harvest levels is difficult to assess with other actions.

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by the South Atlantic Council's SSC for consideration by the South Atlantic Council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much among the proposed alternatives.

Table 2-70. Summary of effects under **Action 26**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Would not meet MSA requirements.	(+-) No negative short-term effects on commercial fleet.
Alternative 2. ABC=OFL; OFL=1,202,939 lbs.	(+-) Least conservative of the alternatives, since there is no buffer between OFL and ABC, does not account for scientific and management uncertainty, like **Alternative** and **4**.	(+-) Negative short-term loss of $5,000.00 to commercial fleet.
Alternative 3. Gulf of Mexico Council SSC's ABC Control Rule; ABC=1.5 S.D. above mean landings 1999 to 2008.	(+-) Benefits similar to **Alternative 4 (Preferred)**.	(+-) No negative short-term effects on commercial fleet.

Table 2-70. Continued. Summary of effects under Action 26.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4 (Preferred). South Atlantic Council SSC's ABC Control Rule; ABC=third highest landings during 1999 to 2008.	(+-) Benefits similar to **Alternative 3**.	(+-) No negative short-term effects on commercial fleet.

2.4.2.2 Action 27: Specify Allocations for Wahoo

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:

> Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational.

Alternative 4. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

Comparison of Alternatives

Alternative 1 (No Action) would not establish allocations for wahoo, and it would not be possible to identify the ACL in the recreational sector. Alternatives that shift a greater proportion of landings from the commercial to the recreational sector would be expected to have a negative biological effect because there would be greater certainty of exceeding the recreational ACL. There is a slight difference in the allocations under **Alternatives 2-4** and very little difference in biological effects. The biological benefit of **Alternative 4** would be less than under **Alternatives 2** and **3 (Preferred)** since allocating landings in the recreational sector could increase the uncertainty associated with the estimates, especially since such a small amount of the ABC would be allocated to the for-hire sector. The biological effects of **Alternatives 2** and **3 (Preferred)** would be almost identical.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue is predicted to total $118,000, which is the largest amount that the industry can earn based on historical data. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. **Alternative 2** would result in a predicted loss in gross revenue from landings of wahoo to the commercial sector of $1,000. **Alternative 3 (Preferred)** and **Alternative 4** would provide for an allocation of 4.3% to the commercial sector, which would not change the commercial gross revenue in the short-term if historical fishing patterns continue into the near future.

Under **Alternative 1 (No Action)**, in which no sector allocation is specified, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. The remaining alternatives would establish a recreational allocation of 96% (**Alternative 2**) and 95.7% (**Alternatives 3 (Preferred)** and **4**). **Alternative 4** allocates 30.4% of the recreational allowance to the for-hire sector and 69.6% to the private recreational sector.

The potential gain in aggregate economic value to the recreational sector due to **Alternative 3 (Preferred)** is $894,000 for the CL model and $1,812,000 for the NL model. Using the same willingness-to-pay estimates the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $959,000 and $2,196,000, respectively, for the CL model and $1,945,000 and $4,451,000, respectively, for the NL model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g., wahoo) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $2,922,000 under the allocation rule in **Alternative 4**. The potential gain in aggregate economic value to the recreational sector due to **Alternative 2** is $904,000 for the CL model and $1,832,000 for the NL model. The relatively large potential gains in consumer surplus are due mainly to the relatively large value of the proposed ACL in **Alternative 2** of **Action 28** with respect to average recreational landings of wahoo for 2005-2009.

Alternative 1 (No Action) would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue for the recreational sector. With **Alternatives 2-4** there would be a similar commercial allocation between 4% or 4.3%. In **Alternative 4**, the recreational sector allocation is further divided into the private and for hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. **Alternative 3 (Preferred)** does not split the recreational sector. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2-4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. However, **Alternative 3 (Preferred)** would not increase administrative impacts more than the other action alternatives.

Table 2-71. Summary of effects under **Action 27**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Would not establish allocations for wahoo, would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an accountability measure (AM) would be limited. Smallest benefits compared to **Alternatives 2-4**.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2. Commercial=4%; Recreational=96% Landings 2006-2008.	(+-) Benefits lower than **Alternative 3 (Preferred)**, possibly higher than **Alternative 4**.	(+-) Positive overall economic benefits.
Alternative 3 (Preferred). Commercial=4.3%; Recreational=95.7% Landings (50% 1999-2008 +50% 2006-2008).	(+-) Benefits higher than **Alternatives 1 (No Action) , 2, and 4**. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector).	(+-) Positive overall economic benefits.
Alternative 4. Commercial=4.3%; For-hire=29.1%; Private recreational=66.6% Landings (50% 1999-2008 + 50% 2006-2008).	(+-) Benefits would be less than **Alternatives 2 and 3 (Preferred)**, uncertainty in recreational landings higher due to addition of another recreational sector.	(+-) Positive overall economic benefits.

2.4.2.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million lbs).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 1,491,785 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1,268,017 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1,118,839 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 969,660 lbs ww).

ACL values are shown in **Table 2-72**.

Table 2-72. ACL formula, ACL/OY values (lbs whole weight) for wahoo under **Alternatives 2-5**. Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in **Action 26**.

Alternative	ACL Formula	ACL/OY	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**1,491,785**	**64,147**	**1,427,638**
Alternative 3	85% ABC	1,268,017	54,525	1,213,492
Alternative 4	75% ABC	1,118,839	48,110	1,070,729
Alternative 5	65% ABC	969,660	41,695	927,965

Comparison of Alternatives

Alternative 1 (No Action) would not specify an ACL for wahoo, and therefore, not meet the requirements of Magnuson-Stevens Act. **Alternatives 2 (Preferred)-5** are based on an ABC control that sets ABC below OFL and, therefore, take into consideration scientific uncertainty in the specification of OFL.

Alternative 2 (Preferred) would set the ACL = OY = ABC. The preferred alternative in **Action 26** is based on the South Atlantic Council SSC's ABC control where ABC = 1,491,785 lbs whole weight. Based on the preferred allocation alternatives in **Action 27**, 4.3% (64,147 lbs whole weight) of the ACL would be allocated to the recreational sector and 95.7% (1,427,638 lbs whole weight) of the ACL would be allocated to the recreational sector. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. **Alternative 2 (Preferred)** results in no short-term losses in gross revenues to commercial fishers landing wahoo. **Alternative 3** would result in foregone revenue of $4,000. **Alternatives 4** and **5** result in foregone commercial gross revenue of $9,000 and $15,000, respectively.

Establishing an ACL for wahoo will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3** or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the **Alternatives 3** and **4** and likely have the fewest negative social effects in the short term.

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an OY and ACL through **Alternatives 2- 5** are minimal and would not differ much among the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures, will increase.

Table 2-73. Summary of effects under **Action 28**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+-) No short-term economic losses to commercial sector.
Alternative 3. ACL=OY=85% ABC	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Short-term economic losses greater than **Alternative 2 (Preferred)**, but smaller than **Alternatives 4** and **5**. Gains in recreational sector.
Alternative 4. ACL=OY=75% ABC	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Short-term economic losses in-between **Alternatives 3** and **5**. Gains in recreational sector.
Alternative 5. ACL=OY=65% ABC	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Greatest short-term economic losses of all alternatives. Gains in recreational sector.

2.4.2.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Alternative 2. Establish commercial sector ACT for wahoo.

> **Subalternative 2a (Preferred).** Do not specify a commercial sector ACT.
> **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
> **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Table 2-74. Commercial sector ACTs for wahoo for each of the alternatives.
Values are in lbs whole weight.

Species	Preferred Commercial ACL	Commercial Sector ACT Subalternatives		
		2a - No ACL	2b -90%(ACL)	2c -80%(ACL)
Wahoo	64,147	N/A	57,732	51,318

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not establish commercial AMs for wahoo, and would not meet the requirements of the Magnuson-Stevens Act. The most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages.

Alternative 3 (Preferred) would remove the incentive to target wahoo on commercial trips since all purchase and sale would be prohibited once the ACL is projected to be met. **Alternative 4** would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred.

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in **Actions 27** and **28**. If the Council had specified a commercial sector ACT, and management measures enforcing the ACT were implemented, then the commercial sector would forgo gross revenue ranging from $2,000 for **Subalternative 2b** to $5,000 for **Subalternative 2c**. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run. **Alternative 4** calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL will be exceeded is unknown.

There would likely be few negative social effects from **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** could both impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because wahoo are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternatives 3** and **4** would be expected to have similar administrative impacts.

Table 2-75. Summary of effects under **Action 29**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Same as **Alternative 1 (No Action)**.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term benefits compared with **Subalternative 2b**.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4**, but less than **Alternative 1 (No Action)**.
Alternative 4. Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.4.2.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo

Alternative 1 (No Action). Do not specify new recreational AMs for wahoo.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.
Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 5-year (2005-2009) average (18.4).

Table 2-76. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Wahoo	21.1	23.1	19.8	13.7	20.8	18.1	19.8	19.6	18.4

Note: The Council decided to use the 5-year average PSE because this better represented recent catches than the 3 year average.

Table 2-77. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT Subalternatives		
		5a - 85%(ACL)	5b - 75%(ACL)	5c - ACL(1-PSE) or ACL*0.5, whichever is greater
Wahoo	1,427,638	1,213,492	1,070,729	1,164,953

Average recreational landings from 2005, 2006, 2008, and 2009 from **Table 4-106** = 768,686 lbs ww. Note: 2007 landings were excluded based on them being so high.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.
Subalternative 3a. Do not specify an AM trigger.
Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.
Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]
Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit and shorten season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit to 1 fish and reduce the season as necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not specify recreational AMs for wahoo and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 28**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the percent standard error from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. **Subalternatives 5d (Preferred)** and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Under **Alternative 1 (No Action)** and **Subalternative 2a**, the baseline estimate of consumer surplus value for recreational wahoo trips is $3,155,000 using willingness-to-pay estimates from the conditional logit (CL) model and $6,396,000 using willingness-to-pay estimates from the nested logit (NL) model. If the South Atlantic Council specifies a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to the least loss in consumer surplus to the recreational sector relative to **Alternative 1 (No Action)**, estimated at $473,000 for the CL model and $959,000 for the NL model. The potential annual short-term loss to the recreational sector for **Subalternative 2c** was estimated at $789,000 for the CL model and $1,599,000 for the NL model. **Subalternative 2d (Preferred)** results in potential annual short-term loss of consumer surplus to the recreational sector of $439,000 for the CL model and $889,000 for the NL model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Subalternative 3a would not specify an AM trigger and thus would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4b would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**.

Subalternatives 5a and **5b** would not generate any indirect economic effects. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred),** and **5e** in the short-term. The adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternatives 5f** or **5g**.

Alternative 1 (No Action) may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** is the least restrictive of the alternatives.

Alternative 3 in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e,** which could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**.

Subalternative 5a could have negative social effects if stocks status is affected by the lack of any AMs through post-season measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives, like **Alternative 5** (and associated subalternatives) will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated sub-alternatives are not likely to differ much in their impacts.

Table 2-78. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL (1-PSE) or ACL*0.5, whichever is greater	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.

Table 2-78. Continued. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c and 3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred**).	(+-) No indirect economic effects.
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a (Preferred)**.
Alternative 5. Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.

Table 2-78. Continued. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f . Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Reduce the bag limit following season.	(+-) Biologically beneficial due to reduced number of fish that can be taken the following season.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5f**.
Subalternative 5h. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5f** and **5g**.

2.4.2.6 Action 31: Establish Management Measures for Wahoo

The South Atlantic Council's preferred recreational ACT (1,164,953 lb whole weight) does not require a reduction based on average recreational landings (2005-2009, excluding 2007); in fact, the average catch (768,686 lbs whole weight) is 34% below the ACT (**Table 2-77**). The commercial sector will be closed when the commercial ACL is met or projected to be met. Average commercial landings (42,004 lbs whole weight) during 2005-2009 (excluding 2007) are well below the South Atlantic Council's preferred alternative for a commercial ACL (64,147 lbs whole weight).

Alternative 1 (No Action) (Preferred). Retain current management measures for wahoo.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.
- 500-pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.
- Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.
- For a commercial permitted vessel fishing north of 39^{o}N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/**v**essel per day in the recreational fishery.

Subalternative 2a. Establish a boat limit of 12 wahoo per boat/vessel per day.
Subalternative 2b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Subalternative 2c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Subalternative 2d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Subalternative 2e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Subalternative 2f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Subalternative 2g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Subalternative 2h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Subalternative 2i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Subalternative 2j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Subalternative 2k. Establish a boat limit of 2 wahoo per boat/vessel per day.

Table 2-79. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

							%Recreational Reduction from various time periods			
Wahoo	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL (4.3%)**	**Rec ACL (95.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**	**05, 06, 08, 09**
SSC ABC Control Rule	Unknown	1,491,785	1,491,785	64,147	1,427,638	1,164,953	-12%	-8.5%	-11%	-34%
GMFMC Tier 3a*	1,994,417	1,788,691	1,788,691	76,914	1,711,777	1,473,840	-31%	-28%	-30%	-48%
Mean + 1.0 Std.Dev.		1,582,965	1,582,965	68,067	1,514,898	1,304,327	-22%	-18%	-21%	-41%
Mean + 0.5 Std.Dev.		1,377,239	1,377,239	59,221	1,318,018	1,134,814	-10%	-6%	-9%	-32%
Mean		1,171,513	1,171,513	50,375	1,121,138	965,300	6%	10%	7%	-20%
							1,023,180	1,065,807	1,036,106	768,686

Note: The South Atlantic Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

Comparison of Alternatives

Alternative 1 (Preferred) (No Action) would retain the management measures currently in place. The South Atlantic Council's preferred recreational ACT (1,164,953 lbs) does not require a reduction based on average recreational landings (2005-2009, excluding 2007 (**Table 2-79**)). Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented in 2004, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

Alternative 2 would establish a boat limit for private, charter, and headboat fishermen ranging from 2 to 12. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit. Restricting the vessel limit to 2-fish per vessel (**Subalternative 2k**) would have the greatest biological effect and would provide the greatest assurance the ACL would not be exceeded. However, based on 2005-2009 landings data (excluding 2007) no reduction in recreational landings is needed to prevent the ACT from being exceeded. **Alternative 2** and its subalternatives would establish a boat limit between 2 and 12 wahoo per boat/vessel per day in the recreational sector. The reduction in consumer surplus to the recreational sector predicted with this alternative are documented in **Tables 4-119** through **4-129**. A summary of the changes in economic value to the recreational sector across all alternatives under **Action 31** is presented in **Table 4-130**.

The social effects from **Alternative 1, Preferred, No Action)** would be minimal, as it would require no changes in regulation. **Alternative 2** and its subalternatives would impose varying degrees of reduction in catch depending upon which boat limit was chosen with the most restrictive being **Subalternative 2k** (identical to **Alternative 1, Preferred, No Action)** with a 2 fish limit which would impose a 26% reduction and may impose substantial negative social effects.

Table 2-80. Summary of effects under **Action 31**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (Preferred) (No Action)	(+-) No additional management measures are needed to prevent ACT from being exceeded. The commercial sector would be closed when the commercial ACL is projected to be met. Most conservative of the recreational bag limits considered, would reduce harvest of wahoo in the private and recreational sectors by 26%.	(+-) No economic impacts in the short-term, negative impacts in the long-term.

Table 2-80. Continued. Summary of effects under **Action 31**.

Alternatives	**Biological Effects**	**Socioeconomic/Administrative Effects**
Alternative 2. Recreational boat limit of 2-12 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors from 26% (2 fish per vessel) to 0.75% (12 fish per vessel.	(+-) Negative short-term and positive long-term impacts.
Subalternative 2a. Recreational boat limit of 12 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 0.75%.	(+-) Greatest short-term positive economic effects of all subalternatives under **Alternative 2**.
Subalternative 2b. Recreational boat limit of 11 wahoo/vessel/day	(+-) Benefits between **Subalternatives 2a** and **2c**.	(+-) Positive short-term economic effects.
Subalternative 2c. Recreational boat limit of 10 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 1.09%.	(+-) Positive short-term economic effects.
Subalternative 2d. Recreational boat limit of 9 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 1.42%.	(+-) Positive short-term economic effects.
Subalternative 2e. Recreational boat limit of 8 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 2.10%.	(+-) Positive short-term economic effects.
Subalternative 2f. Recreational boat limit of 7 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 3.27%.	(+-) Positive short-term economic effects.
Subalternative 2g. Recreational boat limit of 6 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 5.20%.	(+-) Positive short-term economic effects.
Subalternative 2h. Recreational boat limit of 5 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 7.71%.	(+-) Positive short-term economic effects.
Subalternative 2i. Recreational boat limit of 4 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 10.98%.	(+-) Positive short-term economic effects.
Subalternative 2j. Recreational boat limit of 3 wahoo/vessel/day	(+-)Would reduce harvest of wahoo in the private and recreational sectors by 15.84%.	(+-) Positive short-term economic effects.
Subalternative 2k. Recreational boat limit of 2 wahoo/vessel/day	(+-) Would reduce recreational harvest by 26%.	(+-) Smallest short-term positive economic effects of all subalternatives under **Alternative 2**.

2.5 Sargassum Fishery Management Plan

2.5.1 Acceptable Biological Catch Control Rule and ABC for Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. It is a critical component of the ecosystem providing essential habitat to numerous fish species and protected resources. Because of its ecological importance, the Council's SSC believes *Sargassum* should be labeled and treated as an "ecosystem component species."

Since *Sargassum* has a fishery management plan (FMP), an ABC is required. The Sargassum FMP includes an estimate of the MSY that could be used in determination of an ABC, but the Council's SSC stated that the MSY was not developed through a traditional stock assessment method but was instead based on informal methods involving aerial photography and estimates of doubling time. As a result, the SSC considered the MSY value to be extremely uncertain and unreliable. Based upon the recommendation of its stock assessment experts, the SSC chose not to use the MSY value previously reported for ABC calculations.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes one category that labels a catch as "nil," where the stock is not caught in any significant amounts and can be treated as ecosystem component stocks. The framework also includes a category that categorizes a catch as "small," where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, the framework allows for setting the ABC greater than or equal to the historical average catch.

Historically the *Sargassum* fishery can be classified as "small," where overfishing has not been a concern. The average catch from 1976 to 2009 equaled 12,800 lbs wet weight. The SSC therefore recommended an ABC for *Sargassum* of 12,800 lbs wet weight. Furthermore, the previous OY set by the Council in the FMP was 5,000 lbs. The SSC understood that the OY was set at that level out of concern for the ecosystem services provided by *Sargassum*. For this reason, the SSC recommended that the Council establish an ACL/ACT equal to the previous OY value of 5,000 lbs.

However, given that there have been no landings over the past twelve years, the *Sargassum* fishery would be placed in the "nil" category using Methot's framework adopted by the SSC. Under this framework, *Sargassum* would be labeled an "ecosystem component species" and would not require an ABC. As stated at the beginning of this section, the SSC recommended that the Council take the actions necessary to reclassify *Sargassum* as such.

The following restrictions are in place for *Sargassum* in the South Atlantic: (1) harvest and possession of Sargassum is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude), (2) all harvest is prohibited within 100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border, (3) harvest is limited to the months of November through June, (4) official observers are required on any harvesting trip, (5) an annual quota of 5,000 lbs landed wet weight, and (6) nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to overfishing limit (OFL), ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Therefore, an ACL is in place for *Sargassum* in the form of a 5,000 pound commercial quota, which is also considered equivalent to the OY for the species. In addition to the current restrictions, the commercial AM for *Sargassum* restricts all harvest of the species after the quota is met or is projected to be met.

2.6 Golden Crab Fishery Management Plan

2.6.1 Acceptable Biological Catch Control Rule and ABC for Golden Crab

It is widely argued that the golden crab is an underutilized resource and that the fishery exploits only a portion of the species' range. The SSC recommended an ABC for golden crab in April 2010 based on the control rule derived at that meeting. At their June 2010 meeting the Council rejected that control rule and removed the ABC recommendations based on that control rule. The South Atlantic Council agreed with the SSC comments from April 2010 that there was likely additional information that could be compiled for golden crab that could better support fishing level recommendations. One of the concerns was that there was a wide range of prior estimates of productivity and acceptable yield. At their August 2010 meeting, the SSC considered additional information on golden crab. These data included additional landings, catch per unit effort, mean sizes, and history and background of past MSY values.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based the status of the stock relative to its fishery. The "small" category applies to situations where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, Methot suggests setting the ABC greater than or equal to the historical average catch. Therefore, the SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into Methot's range of unassessed stock categories. The SSC concluded that the golden crab fishery is small; the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.

The SSC recommended that ABC be set at 2 million lbs with a precautionary note that more data are needed. Issues such as an updated, possibly a benchmark assessment, with other models including the surplus production model were suggested, along with improvements in data collection.

2.6.2 Action 32: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Golden Crab

Alternative 1 (No Action). Do not specify an ACL for Golden Crab.

Alternative 2 (Preferred). ACL= OY=ABC (currently estimated to be 2 million lbs).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1.7 million lbs).

Alternative 4. ACL = OY =75% of the ABC (currently estimated to be 1.5 million lbs).

Alternative 5. ACL = OY =65% of the ABC (currently estimated to be 1.3 million lbs).

Comparison of Alternatives

Alternative 1 (No Action) is the least biologically beneficial ACL alternative for golden crab, and is not legally sufficient since no ACL would be established for the species as required under the Magnuson-Stevens Act. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing.

Alternatives 2 (Preferred) to **5** would yield greater long-run economic benefits than **Alternative 1 (No Action)**. **Alternative 2 (Preferred)** provides the greatest long-term economic benefits while **Alternative 5** provides the smallest long-term economic benefits when making a comparison between **Alternatives 2 (Preferred)-5**, with **Alternatives 3** and **4** falling in between. **Alternative 2 (Preferred)** seems economically optimal given the relatively small amount of landings (and low risk of overfishing) compared to the recommended ABC of 2 million pounds and allows for the golden crab fishery to expand.

Alternative 1 (No Action) would likely have few direct social effects depending upon how other actions would affect the biological thresholds and the implications for stock status. Choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 2 (Preferred), 3, or 4**.

The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of action alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-81. Summary of effects under **Action 32**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) No net economic benefits.
Alternative 2 (Preferred). AC=OY=ABC.	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+) Greatest long-term benefits when compared with **Alternatives 3, 4,** and **5**.
Alternative 3. ACL=OY=85% ABC.	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Long-term benefits in-between **Alternatives 2 (Preferred), 4**, and **5**.

Table 2-81. Continued. Summary of effects under **Action 32**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4. ACL=OY=75% ABC.	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Benefits in-between **Alternatives 3** and **5**.
Alternative 5. ACL=OY=65% ABC.	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(-) Smallest long-term benefits.

2.6.3 Action 33: Establish Accountability Measures for Golden Crab

Alternative 1 (No Action). Do not establish accountability measures for Golden Crab.

Alternative 2 (Preferred). After the ACL is met or projected to be met, all harvest, purchase, and sale of golden crab is prohibited.

Alternative 3 (Preferred). If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

Comparison of Alternatives

Alternative 1 (No Action) is the least biologically beneficial AM alternative for golden crab, and is not legally sufficient since no AM would be established for the species as required under the Magnuson-Stevens Act. The most biologically beneficial of the alternatives would be **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** combined. These alternatives together would close the entire golden crab fishery when the ACL is projected to be met, and also correct for any overages through a post-season AM. **Alternative 2 (Preferred)** would require in-season monitoring. In the case of golden crab all landings are reported through dealer reports; therefore, in-season monitoring would likely project, with a reasonable level of accuracy, when the ACL would be met. The more accurate this projection is the lower the risk of closing the fishery too soon or too early would be.

Alternative 3 (Preferred) would provide protection to the golden crab fishery if it is declared overfished in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL would be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. If the ACL is repeatedly exceeded and subsequent year's seasons are repeatedly shortened, a derby fishery for golden crab could develop. Currently, the South Atlantic Council is developing a catch share program for golden crab that would address the potential development of a derby fishery.

Alternative 2 (Preferred) and **Alternative 3 (Preferred)** would likely generate greater adverse economic effects in the short-term but greater long-term economic benefits relative to **Alternative 1 (No Action)** since they provide a hedge against overfishing. Since **Action 33** is administrative in nature, and thus does not directly affect participants in the golden crab fishery, the effects under **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** are indirect.

While **Alternative 2 (Preferred)** would have fewer negative short term social effects, **Alternative 3 (Preferred)** may have more long term positive social effects, but could have very negative short term effects that affect market viability.

Table 2-82. Summary of effects under **Action 33**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits (indirect).
Alternative 2 (Preferred). Fishery closed after ACL is projected to be met.	(+-) Requires in-season monitoring of the fishery, benefits higher when combined with **Alternative 3 (Preferred)**.	(+-) Smaller short-term indirect benefits when compared with **Alternative 3 (Preferred)**.
Alternative 3 (Preferred). ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term indirect benefits when compared with **Alternative 2 (Preferred)**.

3.0 Affected Environment

3.1 Habitat

3.1.1 Habitat for Snapper Grouper Species

Information on the habitat utilized by species in the Snapper Grouper Complex is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at:
http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.1.1 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally-managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: Live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 feet (but to at least 2,000 feet for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and near shore snapper grouper species, EFH includes areas inshore of the 30-meter (100-foot) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

3.1.1.2 Habitat Areas of Particular Concern

Areas which meet the criteria for Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for species in the snapper grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the *Oculina* Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs).

Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

In addition to protecting habitat from fishing related degradation though FMP regulations, the Council, in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact essential fish habitat. The Council adopted a habitat policy and procedure document that established a four-state Habitat Advisory Panel and adopted a comment and policy development process. With guidance from the Advisory Panel, the Council has developed and approved habitat policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; and alterations to riverine, estuarine and near shore flows, offshore aquaculture, invasive estuarine species, and invasive marine species (available at www.safmc.net).

3.1.2 Habitat for Dolphin and Wahoo

Information on the habitat utilized by dolphin and wahoo is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.2.1 Essential Fish Habitat

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum.*

Note: This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999, as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998c) (dolphin was included within the Coastal Migratory Pelagics FMP). This definition does not apply to extra-jurisdictional areas.

3.1.2.2 Habitat Areas of Particular Concern

EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic Sargassum.

Note: This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

3.1.3 Habitat for Golden Crab

Information on the habitat utilized by golden crab is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.3.1 Essential Fish Habitat

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided above and in Wenner et al. (1987).

Refer to Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

3.1.3.2 Habitat Areas of Particular Concern

There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate.

3.1.4 Habitat for Sargassum

The Council, through the Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; under review), is proposing to designate the top 10 meters of the water column in the South Atlantic EEZ bounded by the Gulf Stream, as EFH for pelagic *Sargassum*. **Appendix C** contains more detail.

No EFH-HAPCs are proposed at this time.

3.2 Biological and Ecological Environment

3.2.1 Species Most Impacted by this FMP Amendment

Species most likely to be impacted by actions in the Comprehensive ACL Amendment include species in the Snapper Grouper Complex, dolphin (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), *Sargassum* (*Sargassum fluitans* and *Sargassum natans*), and golden crab (*Chaeceon fenneri*) (**Table 1-1)**. A complete description of the life history characteristics of these species can be found in Volume II of the Fishery Ecosystem Plan, (SAFMC, 2009b) available at http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.3 Science Underlying the Management of Species Most Impacted by this FMP Amendment

Table 1-1 in **Section 1** outlines the species most impacted by this amendment. The species are covered by the FMPs for Snapper Grouper, Dolphin Wahoo, and Golden crab. Many of the species in the South Atlantic region are assessed through the Southeast Data, Assessment, and Review (SEDAR) process.

The SEDAR process consists of a series of workshops aimed at ensuring that each assessment is based on the best available scientific information. First, representatives from NOAA Fisheries Service, state agencies, and the South Atlantic Council, as well as fishermen and experts from non-governmental organizations and academia, participate in a data workshop. The purpose of a data workshop is to assemble and review available fishery-dependent and fishery-independent data and information on a stock, and to develop consensus about what constitutes the best available scientific information on the stock, how that information should be used in an assessment, and what type of stock assessment model should be employed.

Second, assessment biologists from these agencies and organizations participate in a stock assessment workshop, where data from the data workshop are input into one or more stock assessment models (e.g., production, age-structured, length-structured, etc.) to generate estimates of stock status and fishery status. Generally, multiple runs of each model are conducted: base runs and a number of additional runs to examine sensitivity of results to various assumptions (e.g., different natural mortality rates, different data sets/catch periods, etc.).

Finally, a stock assessment review workshop is convened to provide representatives from the Center for Independent Experts (CIE) the opportunity to peer review the results of the stock assessment workshop. Representatives from NOAA Fisheries Service, the South Atlantic Council, and constituent groups may attend and observe the review but the actual review is conducted by the CIE. The Council's SSC then reviews the report of the stock assessment review workshop.

The review portion of the SEDAR process has helped improve the acceptance of stock assessments. However, continued lack of basic fishery data has resulted in uncertainty in the assessment results.

Detailed information on species assessed by the SEDAR process (red snapper, golden tilefish, snowy grouper, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, vermilion snapper, red porgy, goliath grouper, black sea bass, and hogfish) can be found at: http://www.sefsc.noaa.gov/sedar/, and is hereby incorporated by reference.

Many of the species do not have stock assessments, scientific data for these can be found in the literature and Stock Assessment and Fishery Evaluation (SAFE) Reports, which can be found at: http://sero.nmfs.noaa.gov/sf/safereports/safe.htm, and are hereby incorporated by reference.

3.4 Other Affected Council-Managed Species

Descriptions of other Council-managed species may be found in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) or at the following web address:
http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.5 Protected Species

There are 31 different species of marine mammals that may occur in the exclusive economic zone (EEZ) of the South Atlantic region. All 31 species are protected under the Marine Mammal Protection Act of 1972 (MMPA) and six are also listed as endangered under the ESA (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). Other species protected under the ESA occurring in the South Atlantic include five species of sea turtle (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]). Designated critical habitat for the *Acropora* corals also occurs within the South Atlantic region. The species potentially affected by the fishery are discussed below.

3.5.1 ESA-Listed Marine Mammals

In the southeast U.S. Atlantic region, sperm, fin, sei, and blue whales are predominantly found seaward of the continental shelf. Sightings of sperm whales are almost exclusively in the continental shelf edge and continental slope areas (Scott and Sadove 1997). Fin whales are generally found along the 100 m isobath with sightings also spread over deeper water including canyons along the shelf break (NMFS 1998). Sei and blue whales also typically occur in deeper waters but neither are commonly observed in the east coast U.S. waters (CeTAP 1982; Wenzel et al. 1988; NMFS 1998; NMFS 1998a).

Conversely, northern right, and humpback whales are coastal animals and are regularly sighted in the near shore area along the southeast U.S. Atlantic, November through March. North Atlantic right whales generally occur west of the Gulf Stream; from the southeast U.S. to Canada (Waring et al. 2004). Calving occurs during the winter months in the coastal waters off Georgia and Florida (Knowlton et al. 1994; Kraus et al. 2001). Mid-Atlantic waters are believed to serve primarily as a migratory pathway between the spring and summer feeding/nursery areas and the winter calving grounds. Sightings from aerial surveys throughout the southeast Atlantic region have reported right whales off the Carolinas from December through March including mother calf pairs.

3.5.2 ESA-Listed Sea Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the South Atlantic. The following sections are a brief overview of the general life history characteristics of the sea turtles found in the South Atlantic region. Several volumes exist that cover the biology and ecology of these species more thoroughly (i.e., Lutz and Musick (eds.) 1997, Lutz et al. (eds.) 2002).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The **hawksbill's** pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp

(Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985, Byles 1988). Their maximum diving range is unknown. Depending on the life stage a Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985, Mendonca and Pritchard 1986, Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985, Byles 1988).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984, Eckert et al. 1986, Eckert et al. 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerhead hatchlings forage in the open ocean and are often associated with Sargassum rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the South Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads range from 211 m to 233 m (692-764ft.) (Thayer et al. 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyan et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyan et al. 1989).

3.5.3 ESA-Listed Marine Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 [the first was captured off North Carolina in 1963 and the other off Georgia in 2002 (National Smalltooth Sawfish Database, Florida Museum of Natural History)]. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 meters (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

3.5.4 ESA-Listed Marine Invertebrates

Elkhorn (*Acropora palmata)* and staghorn (*A. cervicornis*) coral were listed as threatened under the ESA on May 9, 2006. The Atlantic *Acropora* Status Review (*Acropora* Biological Review Team 2005) presents a summary of published literature and other currently available scientific information regarding the biology and status of both these species.

Elkhorn and **staghorn** corals are two of the major reef-building corals in the wider Caribbean. In the South Atlantic region, they are found most commonly in the Florida Keys; staghorn coral occurs the furthest north with colonies documented off Palm Beach, Florida (26º3'N). The depth range for these species ranges from <1 meter (3.2 feet) to 60 meters (197 feet). The optimal depth range for elkhorn is considered to be 1 to 5 meters (3.2-16 feet) depth (Goreau and Wells 1967), while staghorn corals are found slightly deeper, 5 to 15 meters (16-49 feet) (Goreau and Goreau 1973).

All Atlantic *Acropora* species (including elkhorn and staghorn coral) are considered to be environmentally sensitive, requiring relatively clear, well-circulated water (Jaap et al. 1989). Optimal water temperatures for elkhorn and staghorn coral range from 25° to 29°C (77 to 84° F) (Ghiold and Smith 1990, Williams and Bunkley-Williams 1990). Both species are almost entirely dependent upon sunlight for nourishment, contrasting the massive, boulder-shaped species in the region (Porter 1976, Lewis 1977) that are more dependent on zooplankton. Thus, Atlantic *Acropora* species are much more susceptible to increases in water turbidity than some other coral species.

Fertilization and development of elkhorn and staghorn corals is exclusively external. Embryonic development culminates with the development of planktonic larvae called planulae (Bak et al. 1977, Sammarco 1980, Rylaarsdam 1983). Unlike most other coral larvae, elkhorn and staghorn planulae appear to prefer to settle on upper, exposed surfaces, rather than in dark or cryptic ones (Szmant and Miller 2006), at least in a laboratory setting. Studies of elkhorn and staghorn corals indicated that larger colonies of both species had higher fertility rates than smaller colonies (Soong and Lang 1992).

3.5.5 South Atlantic Fisheries Interactions with ESA-Listed Species

Sea turtles and smalltooth sawfish are the ESA-listed species most vulnerable to capture in the gear types (i.e., handline, rod and reel, longline, trawl, and golden crab traps) used in the snapper grouper, dolphin/wahoo, *Sargassum*, and golden crab fisheries in the South Atlantic. The frequency and severity of interactions between these species and fishing gear varies greatly from fishery to fishery. The impacts of all these fisheries on ESA-listed species have been evaluated in previous ESA section 7 consultations (NMFS 2003a & b, NMFS 2006) and no fishery is expected to jeopardize the continued existence of any listed species. **Table 3-1** illustrates the number of interactions estimated for each fishery and the type of interaction anticipated (i.e., lethal or non-lethal). The snapper grouper fishery by far has the greatest number of interactions with protected species. Entanglement in the hook-and-line gear is the primary route of effect to sea turtles and smalltooth sawfish from this fishery. Entanglement in hook-and-line gear is also the primary route of effect between the dolphin/wahoo fishery and sea turtles and smalltooth sawfish. The capture of sea turtle hatchlings in trawl gear used to collect *Sargassum* was the anticipated route of effect between this fishery and sea turtles. However, since the fishery is not in operation the potential impacts to sea turtles are unlikely to be occurring. The golden crab fishery operates in deep water (800 ft or more) and does not use buoys or trap lines. These characteristics mean sea turtles and marine mammals are the only ESA-listed species that may be affected by the fishery. A trap could theoretically, hit these species as it is deployed. However, because these species are highly mobile the likelihood of injury occurring is extremely low. To date, no interactions between this fishery and ESA-listed sea turtles or marine mammals have ever been documented.

Table 3-1. Annual anticipated takes of ESA-listed species for Comprehensive ACL Amendment fisheries.

Fishery	**Sea Turtle Species**				
	Loggerhead	**Leatherback**	**Kemp's Ridley**	**Green**	**Hawksbill**
South Atlantic Snapper Grouper	68-No more than 23 lethal	9-No more than 5 lethal	7-No more than 3 lethal	13-No more than 5 lethal	2-No more than 1 lethal
Dolphin Wahoo	12-No more than 2 lethal	12-No more than 1 lethal	3 for all species in combination-no more than 1 lethal take		
Golden Crab	No takes anticipated				
Sargassum	3 Hatchlings-All Lethal	1 Hatchling (all species in combination) - Lethal			
Fishery	**Smalltooth Sawfish**				
South Atlantic Snapper Grouper	3-All non-lethal				
Dolphin Wahoo	No takes anticipated				
Sargassum	No takes anticipated				
Golden Crab	No takes anticipated				

3.5.6. Designated Critical Habitat for ESA-Listed Species in the South Atlantic

In the South Atlantic, critical habitat has been designated for elkhorn and staghorn corals, and the North Atlantic right whale.

Four areas of critical habitat were designated in for **elkhorn and staghorn coral** in Florida, Puerto Rico, St. Thomas/St. John, U.S.V.I, and St. Croix, U.S.V.I. Only the Florida area overlaps with the SAFMC's jurisdiction. The Florida unit contains three sub-areas: (1) The shoreward boundary for Florida sub-area A begins at the 6-ft (1.8 m) contour at the south side of Boynton Inlet, Palm Beach County at 26°32'42.5"N; then runs due east to the point of intersection with the 98-ft (30 m) contour; then follows the 98-ft (30 m) contour to the point of intersection with latitude 25°45'55"N, Government Cut, Miami-Dade County; then runs due west to the point of intersection with the 6-ft (1.8 m) contour, then follows the 6-ft (1.8 m) contour to the beginning point; (2) The shoreward boundary of Florida sub-area B begins at the MLW line at 25°45'55"N, Government Cut, Miami-Dade County; then runs due east to the point of intersection with the 98-ft (30 m) contour; then follows the 98-ft (30 m) contour to the point of intersection with longitude 82°W; then runs due north to the point of intersection with the South Atlantic Fishery Management Council (SAFMC) boundary at 24°31'35.75" N; then follows the SAFMC boundary to a point of intersection with the MLW line at Key West, Monroe County; then follows the MLW line, the SAFMC boundary (see 50 CFR 600.105(c)), and the COLREGS line (see 33 CFR 80.727. 730, 735, and 740) to the beginning point; and (3) The seaward boundary of Florida sub-area C (the Dry Tortugas) begins at the northern intersection of the 98-ft (30 m) contour and longitude 82°45'W; then follows the 98-ft (30 m) contour west around the Dry Tortugas, to the southern point of intersection with longitude 82°45'W; then runs due north to the beginning point.

The physical or biological feature of elkhorn and staghorn coral critical habitat essential to their conservation is substrate of suitable quality and availability to support larval settlement and recruitment, and reattachment and recruitment of asexual fragments. Substrate of suitable quality and availability is defined as consolidated hardbottom or dead coral skeleton that is free from fleshy macroalgae cover and sediment cover, occurring in water depths from the mean high water (MHW) line to 30 meters (98 feet).

Critical habitat for the **North Atlantic right whale** has been designated off coastal Florida and Georgia; a small portion of which occurs overlaps SAFMC's jurisdiction. The unit is defined from the mouth of the Altamaha River, Georgia, to Jacksonville, Florida, out 15 nautical miles and from Jacksonville, Florida, to Sebastian Inlet, Florida, out five nautical miles. The area was designated because of its importance as a calving area. The physical or biological feature of the critical habitat essential to the conservation of North Atlantic right whales are related to water depth, water temperature, and bathymetry.

3.6 Administrative Environment

3.6.1 The Federal Fishery Management and Applicable Laws

3.6.1.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the U.S. EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary of Commerce (Secretary) is responsible for collecting and providing the data necessary for the councils to prepare FMPs and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in **Appendix I.** In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The South Atlantic Fishery Management Council (South Atlantic Council) is responsible for conservation and management of fishery resources in Federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 miles offshore from the seaward boundary of the States of North Carolina, South Carolina, Georgia, and east Florida to Key West. The South Atlantic Council has thirteen voting members: one from NOAA Fisheries Service; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the South Atlantic Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the South Atlantic Council Committees have full voting rights at the Committee level but not at the full Council level. South Atlantic Council members serve three-year terms and are recommended by State Governors and appointed by the Secretary from lists of nominees submitted by State governors. Appointed members may serve a maximum of three consecutive terms.

The Gulf of Mexico Fishery Management Council (Gulf Council) is responsible for fishery resources in federal waters of the Gulf of Mexico. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the states of Florida and Texas, and the three-mile seaward boundary of the states of Alabama, Mississippi, and Louisiana. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline of 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and

Mississippi (44 miles). The Gulf Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NOAA Fisheries Service.

The Mid-Atlantic Fishery Management Council (Mid-Atlantic Council) is responsible for management of fisheries in federal waters off the mid-Atlantic coast. Member states include New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. The Mid-Atlantic Council consists of 25 members (21 voting, 4 non-voting), representing state and federal agencies and the public. The voting members are the Regional Administrator of NOAA Fisheries Service, a fisheries official from each state, and 13 public members nominated by the State Governors and selected by the Secretary of Commerce.

The New England Fishery Management Council (New England Council) manages fishery resources within the federal 200-mile limit off the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. The New England Council consists of 22 members (18 voting, 4 non-voting), representing state and federal agencies and the public. The voting members are the Regional Administrator of NOAA Fisheries Service, a fisheries official from each state, and 12 public members nominated by the State Governors and selected by the Secretary of Commerce.

Public interests also are involved in the fishery management process for all four Councils through participation on advisory panels and through Council meetings, which, with few exceptions for discussing personnel matters, are open to the public. The Councils use a Scientific and Statistical Committee to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking.

3.6.1.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environment and Natural Resources. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the Council level is to ensure state participation in Federal fishery management decision-making and to promote the development of compatible regulations in state and Federal waters.

The South Atlantic States are also involved through the ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of consistent state regulations to conserve coastal species. The ASFMC also is represented at the Council level, but does not have voting authority at the Council level.

NOAA Fisheries Service' State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.7 Enforcement

Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries Office for Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce South Atlantic Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the States in the Southeast Region (North Carolina), which granted authority to State officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the States has increased through Joint Enforcement Agreements, whereby States conduct patrols that focus on federal priorities and, in some circumstances, prosecute resultant violators through the State when a state violation has occurred.

NOAA General Counsel issued a revised Southeast Region Magnuson-Stevens Act Penalty Schedule in June 2003, which addresses all Magnuson-Stevens Act violations in the Southeast Region. In general, this Penalty Schedule increases the amount of civil administrative penalties that a violator may be subject to up to the current statutory maximum of $120,000 per violation. NOAA General Counsel requested public comment through December 20 2010, on a new draft policy.

3.8 Human Environment

3.8.1 Economic Description of the Commercial Fishery

The major sources of data summarized in this description include the Federal Logbook System (FLS) and Accumulated Landings System (ALS) for the commercial fishery, with price indices taken from the Bureau of Labor Statistics. Inflation adjusted revenues and prices are reported in 2009 constant dollars. Average prices are calculated from ALS data. The average price for a species/complex for a given year was calculated as the average of all the daily prices on which that species/complex was landed that year. Golden crab prices are an exception; golden crab prices are based on direct communication from crab harvesters. The prices were not weighted by landings. In the prices presented for a particular state/region, only the prices from that state/region were used to calculate averages. Consequently, landings totals in this section will be underestimated because official landings statistics are derived from the ALS.

Confidentiality issues were a concern for several species, particularly when data were broken down by state and gear group. When a confidentiality issue arose, that data was combined with other state or gear data or data were averaged across years. In all cases, landings made to states outside Florida, Georgia, North Carolina, and South Carolina, were eliminated due to confidentiality issues.

Snapper Grouper and Wreckfish

Additional information on the commercial snapper grouper fishery is contained in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Amendment 17A (SAFMC 2010a), and Amendment 17B (SAFMC 2010b)] and is incorporated herein by reference. Additional information on the commercial wreckfish fishery is contained in Amendment 5 (1992) and is incorporated herein by reference.

Dolphin Wahoo

Additional information on the commercial dolphin-wahoo fishery is contained in the Dolphin Wahoo Fishery Management Plan (SAFMC 2003a) and is incorporated herein by reference.

Golden Crab

Additional information on the commercial golden crab fishery is contained in previous amendments [Comprehensive Ecosystem-Based Amendment 1 (SAFMC 2010c)] and is incorporated herein by reference.

Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. In the past there was one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Today, it is likely that there are no vessels harvesting *Sargassum*. Additional information on the commercial *Sargassum* fishery is contained in Fishery Management Plan for Pelagic *Sargassum* Habitat of the South Atlantic (SAFMC 2002) and is incorporated herein by reference.

3.8.1.1 Permits

The count of limited access permits (Golden Crab and Snapper Grouper) that were valid or renewable/transferable for at least one day per year for each year 2005-2010 is shown in **Table 3-2**. For open access permits (Atlantic Dolphin Wahoo), the data represents the count of permits per year that were valid for at least one day. The wreckfish fishery requires a Snapper Grouper unlimited permit to participate in fishing activities. Purchase of snapper grouper unlimited permits requires an individual to buy two permits and retire one. This is referred to as the “2 for 1” program and was implemented in late 1998 to decrease capacity in the fishery. The golden crab permits are zone specific.

Table 3-2. Unique Numbers of Permits by Fishery, 2005-2010.

Fishery	2005	2006	2007	2008	2009	2010
Atlantic Dolphin Wahoo	1,815	2,218	2,597	2,764	2,863	2,144
Golden Crab	11	12	12	11	11	11
Snapper Grouper (unlimited, transferable)	748	722	695	665	640	598
Snapper Grouper (limited, non-transferable)	198	183	165	151	144	136

3.8.1.2 Gear and Fishing Behavior

Snapper Grouper

The commercial snapper grouper fishery utilizes vertical lines, longlines, black sea bass pots/traps, spears, and powerheads (i.e., spears with spring-loaded firearms). Vertical lines are used from the North Carolina/Virginia border to the Atlantic side of Key West, Florida. The majority of hook-and-line fishermen use either electric or hydraulic reels (bandit gear) and generally have 2-4 bandit reels per boat. Historically, the majority of the bandit fleet fished year round for snapper grouper with the only seasonal differences in catch associated with the regulatory spawning season closures in March and April for gag. Recently, Snapper Grouper FMP Amendment 16 (SAFMC 2009a) implemented a closed season from January through April for shallow water grouper and a commercial quota for vermilion snapper that could result in closures if the spring and/or fall sub-quotas are filled. Snapper Grouper FMP Amendment 17B SAFMC 2010b) implemented a ban on possession of several deep-water species in depths of 240 feet and greater. Most fluctuations in fishing effort during the open seasons in this fishery are a result of the weather. Trips can be limited during hurricane season and during the winter months from December through March. Some fishermen stop bandit fishing to target king mackerel when they are running.

The Council allows the use of bottom longlines north of St. Lucie Inlet, Florida, in depths greater than 50 fathoms. Bottom longline gear is used to target golden tilefish primarily. Longline boats are typically bigger than bandit boats, their trips are longer, and they cost more to operate because they operate farther offshore. A longline spool generally holds about 15 miles of cable. Longlines are fished from daylight to dark because sea lice eat the flesh of hooked fish at night. Historically, the fishery is operated year long with little or no seasonal fluctuation barring hurricane disruption. However, recent increases in participation have resulted in shorter seasons that close the fishery before summer.

Spears or powerheads are most commonly used off Florida and are illegal for killing snapper grouper species off South Carolina and in Special Management Zones.

Black sea bass pots are used exclusively to target black sea bass, though bycatch of other snapper grouper species is allowed. The pots have mesh size, material, and construction restrictions to facilitate bycatch reduction. All sea bass pots must have a valid identification tag attached and more than 87% of tags in April 2003 were for vessels with homeports in North Carolina. Fishing practices vary by buoy practices, setting/pulling strategies, number of pots set, and length of set, with seasonal variations. The South Carolina pot fishery is mainly a winter fishery with short soak times (in some cases about an hour) and relatively few pots per boat. Most trips are day trips with pots being retrieved before heading to port. The North Carolina pot fishery also is primarily a winter fishery with some fishermen continuing to pot through the summer. North Carolina fishermen tend to use more pots than those in South Carolina. Although most North Carolina trips with sea bass pots last one day, more pots are left to soak for several days than in South Carolina. Many participants in the black sea bass fishery are active in other fisheries, including the recreational charter fishery during the summer months. Many snapper grouper permit holders maintain pot endorsements but are not active in the pot fishery.

Wreckfish

The wreckfish fishery is prosecuted primarily off of South Carolina and Georgia on the Blake Plateau. However, some fishing occurs in the Florida Keys. The Wreckfish Individual Transferable Quota (ITQ) System was implemented in 1991 and Snapper Grouper Amendment 5 (SAFMC 1992a) provides a complete description of the management program. The small number of fishermen participating in the wreckfish fishery fish with rod-and-reel and harvest only a small portion of the 2 million pound total allowable catch (TAC). The number of shareholders has decreased from a high of 49 entities in 1991 to 25 entities in 2009. The Wreckfish ITQ Program Review (SAFMC unpublished report) contains additional information regarding participation in the wreckfish fishery over time.

Dolphin Wahoo

In the Atlantic, commercial fisheries for dolphin use primarily longline and hook and line (which includes hand line, troll, rod and reel and electric reel). The hook and line portion of the commercial fishery is conducted similarly to the recreational hook and line segment, which is described under the recreational fisheries section. The longline component of the fishery consists of longliners that primarily target highly migratory species but may also catch dolphin and longliners that target dolphin directly.

The Dolphin Wahoo FMP (SAFMC 2003a) states that the directed commercial longline fishery for dolphin in the Atlantic consists of approximately 3 or 4 longline vessels that direct effort on dolphin on a regular basis off the coasts of North and South Carolina and longliners who catch dolphin and wahoo but primarily target highly migratory species, mainly swordfish and shark.

The directed fishery begins the last part of April and continues for about 3 weeks initially off the coast of South Carolina then north to Morehead City, North Carolina, where dolphin become more scattered and difficult to catch near the middle of July. Most fishing occurs on either side of the Gulf Stream where eddies spin-off with early concentrations on the western side.

Vessels in the directed longline fishery make sets during the daytime using gear that is from 2 to 6 miles in length. The mainline is often 700 pound monofilament with leaders of 400 pound monofilament. There are ordinarily a total of 75 to 80 hooks per mile with a maximum of 480 hooks total. The standard No. 5 circle hooks that are used for dolphin are smaller than those normally used for conventional longline fishing. Leaders of around 18 inches are also shorter than normal with one hook per leader. No drop lines are used in this fishery and haul back is immediate. Fish are located using hook-and-line gear along weed lines or temperature breaks. Gear may be set in a circular pattern to facilitate haulback and as many as six sets may be made daily. Trips may average 2 days in length (SAFMC 2003a).

The commercial fishery for wahoo is incidental to fishing for dolphin or other pelagic species.

Golden Crab

Participation in the golden crab fishery takes place exclusively off Florida in the Golden Crab Allowable Fishing Area defined in the Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1; SAFMC 2010c). This small fishery consists of 11 permit holders that hold permits in one of three fishing zones. Harvest takes place primarily in the Middle Zone. However, harvest has increased in recent years in the Northern Zone. The fishery is prosecuted exclusively with traps ranging from a maximum of 48-64 cubic feet depending on the fishing zone. Twenty to one hundred traps are strung together on lines, called trawls. Fishermen may fish 4 trawls in one week pulling 100 traps one day and 100 on a separate day. In 2008, the average vessel length was about 57 feet. Fishermen typically fish for about a week at a time, although, at least one vessel conducts shorter trips.

Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. Only one company, Aqua-10 Laboratories, has harvested pelagic *Sargassum* offshore of North Carolina from 1976 to 1997. Pelagic *Sargassum* was originally collected with unweighted shrimp trawls or 3' x 4' and 4' x 8' beam trawls constructed of iron pipe with 1.5 inch and 2 inch mesh bags that were 6'- 8' deep. The average capacity of the beam trawl is 200 pounds of Sargassum. Initially, harvest was conducted during the months of June and September by Aqua-10 contracting with a shrimp, snapper grouper, or longline vessel to harvest pelagic *Sargassum* in conjunction with their regular fishing trip. Current regulations require that nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

3.8.1.3 Landings, Revenue, and Economic Activity

For the tables in this section, the following notes apply: (1) Data Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System database as of September 17, 2008. NOAA Fisheries Service, Southeast Regional Office permits database. (2) CPI Data Source: The BLS Consumer Price Index (CPI) for urban dwellers was used to adjust for the effects of overall price inflation in the U.S. economy at the consumer level. Dollar values were adjusted to 2009 year-equivalent dollars. (3) Within all tables, "---" within a cell indicates zero landings, effort, etc., for that cell. (4) In order to maintain individual vessel and dealer confidentiality, in some cases, state specific data has been combined with other states. In all cases, landings from other states outside of North Carolina, South Carolina, Georgia, and Florida have been removed for confidentiality reasons.

3.8.1.4 Economic Activity

Estimates of the average annual economic activity (impacts) associated with the commercial harvest of the species or species groups addressed in this proposed amendment were derived using the model developed for and applied in NMFS (2009c) and are provided in **Table 3-3**. Business activity for the commercial sector is characterized in the form of full-time equivalent jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors). Estimates are provided for the economic activity associated with the commercial ex-vessel (dockside) revenues for individual species or species groups that generated an annual average of approximately $300,000 (2008 dollars) or more per year in ex-vessel revenues during 2005-2009. All dollar values are in 2008 dollars in order to be consistent with the economic impact model. As a result, the estimates of average annual ex-vessel revenues may be slightly different than those provided in previous tables depicting commercial revenues, which are in 2009 dollars. Row values should not be added, with the exception of "All Snapper Grouper" and "Dolphin" because the group totals include the values of the appropriate individual snapper grouper species and "All Snapper Grouper" includes the smaller snapper grouper species groups.

Table 3-3. Average annual economic activity associated with the harvest of the respective species. All dollar values are in 2008 dollars.

Species	Average Ex-vessel Value (millions)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (millions)[1]	Income Impacts (millions)[1]
All Snapper Grouper	$13.44	2,526	336	$176.91	$75.39
Shallow Water Groupers	$4.49	845	112	$59.15	$25.21
Snappers	$0.45	85	11	$5.95	$2.53
Deepwater Grouper & Tilefish	$0.40	75	10	$5.23	$2.23
Snowy Grouper	$0.32	61	8	$4.26	$1.82
Gag	$2.13	400	53	$28.01	$11.94
Red Grouper	$1.18	221	29	$15.51	$6.61
Scamp	$1.13	212	28	$14.87	$6.34
Black Sea Bass	$1.64	309	41	$21.64	$9.22
Yellowtail Snapper	$0.30	56	7	$3.91	$1.66
Red Snapper	$0.67	125	17	$8.78	$3.74
Vermilion Snapper	$2.90	546	73	$38.21	$16.28
Dolphin	$0.60	115	16	$7.91	$3.37

[1]2008 dollars.
NOTE: Information based on species in original FMU and does not reflect species being removed in **Action 1**.

3.8.1.5 Landings, Vessels, Dealers, Effort (Trips), Ex-vessel Price, and Ex-vessel Revenue, 2005-2009

Snapper Grouper
The number of boats fell from a high of 1,301 in 1998 to a low of 856 in 2006, but increased again to 929 by 2009. From 2005 to 2009 (**Table 3-4**), the average inflation-adjusted (2009 dollars) dockside (ex-vessel) price received per gutted pound of snapper grouper landings increased from $2.60 in 2005 to $2.84 in 2007 before returning to $2.61 by 2009, averaging $2.70 over the five year period. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for snapper grouper landings increased from $12.1 million in 2005 to $15 million in 2007 before declining a bit to $14.8 million by 2009, averaging $13.8 million per year. Over the 2005-2009 period, vermilion snapper was the largest volume species in the fishery, followed by yellowtail snapper and greater amberjack. The recession of 2007-2008 does not appear to have stopped steady growth in snapper grouper landings or participating vessels, although it may have moderately reduced effort/trips for one year (2008) and likely contributed to lower ex-vessel prices and revenues in 2008 and 2009.

Table 3-4. Snapper grouper landings (not including wreckfish), vessels, dealers, effort (trips by species), price, and revenue, 2005-2009.

	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Lbs (Gutted)	5,453,614	5,217,993	5,636,077	6,101,203	6,472,263	5,776,230
Vessels[1]	865	856	897	912	929	892
Dealers	263	306	323	304	309	301
Effort (Trips)[2]	12,809	12,317	13,937	13,881	14,702	13,529
Hook & Line (Trips)[3]	12,207	11,749	13,226	13,390	14,116	12,938
Longline (Trips)[3]	117	143	248	199	257	193
Trap (Trips)[3]	601	755	612	555	747	654
Other (Trips)[3]	1,668	1,570	1,658	1,557	1,747	1,640
Ex-Vessel Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
Ex-Vessel Revenue (2009 $)	12,125,282	12,581,212	15,008,354	14,567,472	14,803,406	13,817,145

[1] May include double-counting of vessels that land snapper grouper in more than one state in a given year.
[2] A single trip using multiple gears is counted only once.
[3] A single trip using multiple gears counted in multiple categories, once for each gear.

Wreckfish

The wreckfish fishery occurs primarily off the east coast of Florida and the coast of South Carolina. Average landings totaled almost 165,000 lbs and this was valued at almost $440,000 (2009 dollars). The number of participating vessels averaged a little more than five. Confidentiality concerns limit the amount of data that can be shown here (**Tables 3-5 to 3-8**).

Table 3-5. Numbers of wreckfish dealers and vessels landing wreckfish, 2005-2009.

Year	Dealers	Vessels
2005-09	2.6	5.2

Note: Less than three dealers or harvesters trigger confidentiality issues whereby landings, revenue, and other data cannot be shown.

Table 3-6. Number of trips landing wreckfish, 2005-2009.

	Average 2005-2009
Total	36

Table 3-7. Wreckfish landings (gutted weight), 2005-2009.

	Average 2005-2009
Landings (gutted weight)	164,991

Table 3-8. Ex-vessel prices and revenues for wreckfish, 2005-2009.

		Average 2005-2009
All States Combined	**Ex-Vessel Price (2009 $) per Pound Gutted**	2.65
	Ex-Vessel Revenue (2009 $)	439,837

Dolphin Wahoo

Dolphin landings increased more than four-fold from 98,000 lbs (gutted) in 2005 to over 430,000 lbs in 2009, averaging 237,000 lbs per year. The recession of 2008 could have slowed the rapid growth of landings and trips for one year, but rapid growth resumed in 2009. Effort increased by 57% from 1,825 trips in 2005 to 2,883 trips in 2009, averaging 2,321 trips per year. The number of vessels landing dolphinfish also increased over this period; for example, the number of vessels in the east coast Florida and Georgia region increased from 255 to 342. From 2005 to 2009, the average inflation-adjusted (2009 $s) dockside (ex-vessel) price received per gutted pound of dolphin landings fluctuated around $2.35 until 2009 when it decreased to $2.01, possibly due to relatively large landings in 2009. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for dolphin increased from $979,294 in 2005 to $1,904,708 in 2009, averaging $1,468,737 per year (**Tables 3-9 and 3-10**).

Table 3-9. Number of vessels, dealers, and trips landing dolphin, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	255	249	281	284	342	282
FL(west)	96	136	106	114	107	112
NC	103	133	176	184	204	160
SC	41	50	47	48	50	48
Other States	1	-	-	1	3	1
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	92	95	103	100	104	99
FL(west)	42	54	57	46	47	50
NC	48	61	79	87	93	73
SC	13	20	17	16	21	18
Other States	1	-	-	1	3	1
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	904	996	966	988	1250	1021
FL(west)	331	468	383	417	436	407
NC	433	498	713	710	941	659
SC	156	265	271	223	247	233
Other States	1	-	-	-	9	2
Total All States	1825	2227	2333	2339	2883	2322

Table 3-10. Annual landings (lbs whole weight) and value (dollars) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Value
1999	1,046,580	1,623,266
2000	987,623	1,369,594
2001	764,823	937,395
2002	670,415	894,039
2003	722,921	1,138,558
2004	856,517	1,432,820
2005	576,671	979,294
2006	650,004	1,161,832
2007	967,151	1,843,936
2008	780,818	1,453,914
2009	1,135,531	1,904,708

Source: SERO ACL landings database from data provided by SEFSC.

Annual wahoo landings increased from 15,765 lbs (gutted) per year in 2005 to 30,842 lbs in 2007, fell sharply to 18,756 lbs in 2008, likely due to the recession, only to recover to 24,770 lbs in 2009, with an average of 22,873 lbs per year. Numbers of trips and numbers of vessels landing wahoo followed similar patterns. Trips increased steadily from 2005 to 2007, fell sharply in 2008, and recovered in 2009. The number of vessels landing wahoo in North Carolina, for example, increased from 39 to 74 from 2005 to 2007, fell to 43 in 2008, and then recovered to 60 in 2009. From 2005 to 2009, the average inflation-adjusted (2009 dollars) dockside (ex-vessel) price received per gutted pound of wahoo landings fluctuated from a low of $2.50 in 2006 to a high of $2.71 in 2009, with an average of $2.59. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for wahoo increased from $40,000 in 2005 to $79,000 in 2007, fell to $48,000 in 2008, and recovered to $67,000 in 2009 (**Tables 3-11 and 3-12**).

Table 3-11. Number of vessels, dealers, and trips landing wahoo, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	96	92	121	93	130	107
FL(west)	36	37	49	28	39	38
NC	39	59	74	43	60	55
SC	21	31	27	21	20	24
Other States	1	-	-	-	1	0
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	48	49	65	43	53	51
FL(west)	22	28	31	18	23	24
NC	27	38	45	36	38	37
SC	10	14	10	12	15	12
Other States	1	-	-	-	1	0
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	150	155	217	154	216	178
FL(west)	50	69	83	66	71	68
NC	53	96	130	71	103	91
SC	51	84	98	60	73	74
Other States	1	-	-	-	2	1
Total All States	305	404	528	351	463	411

Table 3-12. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for wahoo, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	7,807	11,034	15,480	6,504	11,672	10,499
	Deflated Price (2009 $) per Gutted Pound	2.86	2.82	2.83	2.94	3.10	2.91
	Deflated Ex-Vessel Revenue (2009 $)	21,765	30,716	43,150	18,906	35,666	30,041
FL (west coast)	**Lbs Gutted Weight**	2,903	3,564	4,287	3,436	2,867	3,411
	Deflated Price (2009 $) per Gutted Pound	2.12	1.96	1.90	2.01	1.97	1.99
	Deflated Ex-Vessel Revenue (2009 $)	6,140	7,003	8,151	6,914	5,652	6,772
NC	**Lbs Gutted Weight**	2,289	6,148	7,109	6,142	6,990	5,736
	Deflated Price (2009 $) per Gutted Pound	2.50	2.55	2.46	2.41	2.47	2.48
	Deflated Ex-Vessel Revenue (2009 $)	5,724	15,684	17,516	14,784	17,290	14,200
SC	**Lbs Gutted Weight**	2,766	3,484	3,966	2,674	3,241	3,226
	Deflated Price (2009 $) per Gutted Pound	2.37	2.31	2.59	2.75	2.61	2.53
	Deflated Ex-Vessel Revenue (2009 $)	6,568	8,053	10,285	7,359	8,450	8,143
All States Combined	**Lbs Gutted Weight**	15,765	24,230	30,842	18,756	24,770	22,873
	Deflated Price (2009 $) per Gutted Pound	2.59	2.50	2.55	2.62	2.71	2.59
	Deflated Ex-Vessel Revenue (2009 $)	40,197	61,455	79,102	47,963	67,058	59,155

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System database as of September 17, 2008. NOAA Fisheries Service, Southeast Regional Office permits database.

Golden Crab

Golden crab landings averaged 572,000 lbs from 2005-09 with a dockside value of almost $1.1 million (2009 dollars). Almost 5 vessels participated in the fishery on average over the same time period. The average number of trips was about 400. Confidentiality concerns limit the amount of data that can be shown here (**Tables 3-13 to 3-16**).

Table 3-13. Number of vessels harvesting golden crab, 2005-2009.

	Average 2005-2009
Total	4.2

Table 3-14. Number of trips landing golden crab, 2005-2009.

	Average 2005-2009
Total	394

Table 3-15. Landings (lbs) of golden crab, 2005-2009.

	Average 2005-2009
Total	554,981

Table 3-16. Golden crab ex-vessel prices and revenue, 2005-2009.

	Average 2005-2009
Total Landings (lbs)	554,981
Nominal Prices ($) per Pound Whole	Range: $1.45-$3.00
Nominal Ex-Vessel Revenue ($)	1,054,400
Deflated Ex-Vessel Revenue (2009 $)	1,086,600

Sargassum

There has not been a fishery for *Sargassum* since 1998. In the past there was one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Only one company, Aqua-10 Laboratories, has harvested pelagic *Sargassum* offshore of North Carolina from 1976 to 1997 when a total of approximately 448,000 pounds wet weight of pelagic Sargassum had been harvested to date (SAFMC 2002). Pelagic *Sargassum* was originally collected with unweighted shrimp trawls or 3' x 4' and 4' x 8' beam trawls constructed of iron pipe with 1.5 inch and 2 inch mesh bags that were 6'- 8' deep. The average capacity of the beam trawl is 200 pounds of *Sargassum*. Initially, harvest was conducted during the months of June and September by Aqua-10 contracting with a shrimp, snapper grouper, or longline vessel to harvest pelagic Sargassum in conjunction with their regular fishing trip. No harvest occurred from 1991 through 1994 (SAFMC 2002).

3.8.1.6 Fisheries by State

A summarized description of the snapper grouper fishery spanning the period from 2005 to 2009 is provided below. Refer to **Tables 3-9 to 3-12** in **Section 3.8.1.5** for information on average landings by state for dolphin (South Atlantic only) and wahoo. The golden crab fishery takes place exclusively off the east coast of Florida (**Tables 3-13** to **3-16**).

Snapper Grouper

An average of 5.7 million lbs (gutted weight) of snapper grouper species worth $13.8 million (in 2009 dollars) was landed between 2005 and 2009 in the South Atlantic region, including the west coast of Florida, with the majority of the landings (1.7 million lbs) occurring in North Carolina (**Table 3-17**). The number of trips between 2005 and 2009 averaged approximately 13,500, with the majority taken off the east coast of Florida (**Table 3-18**). Vermilion snapper, yellowtail snapper, greater amberjack, gag, and black sea bass made up almost 57% of the landings (**Table 3-19**).

Table 3-17. Landings (gutted weight) of snapper grouper species (not including wreckfish) by state and year, 2005-2009.

	Year Landed					Average 2005-2009
State Landed:	**2005**	**2006**	**2007**	**2008**	**2009**	
FL (east coast) and GA	1,282,145	1,133,110	1,491,152	1,606,513	1,998,482	1,502,280
FL (west coast)	1,402,262	1,117,701	1,000,608	1,148,555	1,424,174	1,218,660
NC	1,444,859	1,595,626	1,709,500	2,118,081	1,941,698	1,761,953
SC	1,324,348	1,371,556	1,434,817	1,228,053	1,107,909	1,293,337
Total All States	5,453,614	5,217,993	5,636,077	6,101,203	6,472,263	5,776,230

Table 3-18. Number of trips landing snapper grouper species (not including) by state, 2005-2009.

State Landed:	Year Landed					Average 2005-2009
	2005	**2006**	**2007**	**2008**	**2009**	
FL (east coast) and GA	4,309	4,066	5,347	5,195	5,957	4,975
NC	2,288	2,550	2,749	2,886	2,938	2,682
SC	814	886	1,011	914	922	909
Total All States	12,809	12,317	13,937	13,881	14,702	13,529

Table 3-19. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish, warsaw grouper, or speckled hind) by state and species, 2005-2009.

Species:	State Landed:				All States Combined
	FL (east coast) and GA	FL (west coast)	NC	SC	
Atlantic Spadefish	CONF	CONF	CONF	CONF	307
Black Grouper	17,370	37,687	34,099	37,407	126,564
Blue Runner	80,643	14,329	3,398		98,369
Black Sea Bass	15,529		284,685	116,540	416,753
Deepwater Grouper & Tilefish	9,058	14,536	197,772	19,745	241,170
Greater Amberjack	222,095	335,458	58,312	---	690,725
Gag	134,846	1,297	131,125	165,265	432,533
Gray Triggerfish	56,511	1,694	137,854	82,892	278,951
Golden Tilefish	254,257	1,497	2,310	45,892	303,956
Hogfish	5,893	5,116	5,514	16,123	32,646
Jacks	73,284	18,657	56,097	67,523	215,562
Mutton Snapper	15,640	27,314	1,436	4,060	48,449
Grunts & Hinds	7,950	7,703	59,284	63,993	138,929
Red Grouper	13,618	12,407	227,725	92,044	345,794
Red Porgy	18,687		45,682	31,944	96,313
Red Snapper	128,819	1,989	6,546	23,131	160,486
Scamp	32,712	752	67,736	166,559	267,759
Snowy Grouper	15,625	33,968	45,854	37,234	132,781
Snappers	3,722	2,457	237	1,614	8,030
Vermilion Snapper	305,899	3,868	393,127	242,823	945,717
Yellowtail Snapper	89,883	697,747	2,913	1,481	792,024

Note: "---" indicates zero landings.

Table 3-20. Average annual price and ex-vessel revenues of snapper grouper species (not including wreckfish) by state, 2005-2009.

State Landed:		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
FL (east coast) and GA	Deflated Price (2009 $) per Pound Gutted	2.39	2.40	2.50	2.32	2.32	2.39
	Deflated Ex-Vessel Revenue (2009 $)	2,362,648	2,383,784	3,751,787	3,406,498	4,189,472	3,218,838
FL (west coast)	Deflated Price (2009 $) per Pound Gutted	2.49	2.65	2.78	2.56	2.43	2.58
	Deflated Ex-Vessel Revenue (2009 $)	2,988,509	2,704,610	2,422,232	2,627,941	3,208,701	2,790,399
NC	Deflated Price (2009 $) per Pound Gutted	2.66	2.75	2.95	2.87	2.83	2.81
	Deflated Ex-Vessel Revenue (2009 $)	3,320,179	3,786,195	4,559,345	4,988,849	4,324,496	4,195,813
SC	Deflated Price (2009 $) per Pound Gutted	3.08	3.29	3.23	3.13	2.98	3.14
	Deflated Ex-Vessel Revenue (2009 $)	3,453,946	3,706,623	4,274,990	3,544,184	3,080,737	3,612,096
Total All States	Deflated Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	12,125,282	12,581,211	15,008,354	14,567,472	14,803,406	13,817,145

3.8.1.7 Fisheries by Gear

The following discussion provides annual averages from 2005 to 2009. To maintain the confidentiality of individual reporting units, summaries are provided for vertical lines, hook and line, longlines, black sea bass pots (traps), and all other gears combined. The all-other-gear category includes trolling lines, nets, and other gears. Most of the snapper grouper harvest, including vermilion snapper and gag, is taken by hook-and-line gear (**Tables 3-21** and **3-22**). Black sea bass are harvested primarily with black sea bass pots, while golden tilefish are harvested primarily with bottom longlines. The majority of the ex-vessel revenue generated between 2005 and 2009 was attributed to hook-and-line gear (**Table 3-23**).

Table 3-21. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish) by major gear type, 2005-2009.

Gear Type:	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Hook & Line	4,795,175	4,405,848	5,003,711	5,429,731	5,638,439	5,054,581
Longline	233,020	331,461	245,624	279,312	290,667	276,017
Trap	338,057	398,380	311,153	332,159	475,943	371,138
Other[1]	87,362	82,305	75,590	60,002	67,214	74,495
Total All Gears	5,453,614	5,217,994	5,636,078	6,101,204	6,472,263	5,776,230

[1]Powerheads are included in “Other” gear category

Table 3-22. Number of trips landing snapper grouper species (not including wreckfish) by gear, 2005-2009.

Gear Type:	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Hook & Line[1]	12,207	11,749	13,226	13,390	14,116	12,938
Longline[1]	117	143	248	199	257	193
Trap[1]	601	755	612	555	747	654
Other[1]	1,668	1,570	1,658	1,557	1,747	1,640
All Gears[2]	12,809	12,317	13,937	13,881	14,702	13,529

[1] A single trip using multiple gears is counted in multiple categories, once for each gear. As a result, adding trips across the individual gears gives a value larger than the "All Gears" value for the year. Powerheads are included in “Other” gear category

[2] A single trip using multiple gears is counted only once in the "All Gears" results.

Table 3-23. Average annual price and ex-vessel revenue of snapper grouper species (not including wreckfish) by gear and year, 2005-2009.

Gear Type:		Year Landed 2005	2006	2007	2008	2009	Average 2005-2009
Hook & Line	Deflated Price (2009 $) per Pound Gutted	2.61	2.75	2.84	2.71	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	10,631,128	10,691,781	13,274,715	12,877,740	12,731,912	12,041,455
Longline	Deflated Price (2009 $) per Pound Gutted	2.72	2.69	2.83	2.58	2.49	2.66
	Deflated Ex-Vessel Revenue (2009 $)	477,042	607,076	626,441	675,840	666,470	610,574
Trap	Deflated Price (2009 $) per Pound Gutted	2.41	2.72	2.92	2.63	2.61	2.66
	Deflated Ex-Vessel Revenue (2009 $)	805,346	1,080,289	898,018	868,121	1,235,720	977,499
Other	Deflated Price (2009 $) per Pound Gutted	2.39	2.64	2.82	2.55	2.55	2.59
	Deflated Ex-Vessel Revenue (2009 $)	211,766	202,065	209,180	145,771	169,304	187,617
Total All Gears	Deflated Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	12,125,282	12,581,211	15,008,354	14,567,472	14,803,406	13,817,145

3.8.1.8 Commercial Fishery by Species

Updated descriptions of commercial fisheries for snapper grouper species covered under previous amendments can be found in **Appendix N**.

Atlantic Spadefish

Atlantic spadefish are landed sporadically in very small numbers in South Atlantic federal waters, averaging 308 pounds gutted weight landed annually from 2005 to 2009 (**Table 3-25**). On average from 2005 to 2009, five vessels landed Atlantic spadefish on 10 trips per year (**Table 3-24**). Ex-vessel price per gutted pound averaged $0.48 and ex-vessel revenues averaged $164 annually from 2005 to 2009 (**Table 3-25**). Other landings were made from state waters that are not recorded in the South Atlantic federal logbooks and therefore ALS landings are higher than logbook landings.

Table 3-24. Number of vessels, dealers, and trips landing spadefish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	7	4	2	6	9	6
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	7	4	3	5	7	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	10	4	3	9	22	10

Table 3-25. Landings (gutted lbs), average annual ex-vessel prices, and ex-vessel revenues for spadefish, 2005-2009.

			Average 2005-2009
All States Combined	**Lbs Gutted Weight**		308
	Deflated Price (2009 $) per Gutted Pound		0.48
	Deflated Ex-Vessel Revenue (2009 $)		164

Blue Runner

Blue runner fish are landed primarily in Florida and Georgia. Blue runner fish landings increased steadily from 81,000 pounds gutted weight in 2006 to over 131,000 pounds in 2009, averaging 98,000 gutted weight over the five-year period (**Table 3-27**). An average of 312 vessels landed blue runner on an average of 2,661 trips per year (**Table 3-26**). Ex-vessel price per gutted pound averaged $0.92 from 2005 to 2009 with no apparent trend (**Table 3-27**). Ex-vessel revenues increased from $73,000 in 2005 to $123,000 in 2009, reflecting increased landings.

Table 3-26. Number of vessels, dealers, and trips landing blue runner, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	194	211	206	224	243	216
FL(west)	83	71	55	66	75	70
NC & SC	21	24	26	34	22	26
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	45	48	50	40	39	44
FL(west)	19	27	20	24	25	23
NC & SC	10	11	9	17	13	12
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	1,604	1,951	2,364	2,506	2,576	2,200
FL(west)	470	479	249	312	536	409
NC & SC	52	54	38	65	47	51
Total All States	2,126	2,484	2,651	2,883	3,159	2,661

Table 3-27. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for blue runner, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	60,191	70,195	80,537	85,178	107,112	80,643
	Deflated Price (2009 $) per Gutted Pound	0.97	0.94	1.07	0.89	0.89	0.95
	Deflated Ex-Vessel Revenue (2009 $)	58,188	66,063	85,802	75,398	94,995	76,089
FL (west coast)	**Lbs Gutted Weight**	18,818	12,297	7,797	9,951	22,780	14,329
	Deflated Price (2009 $) per Gutted Pound	0.73	0.66	0.63	0.88	1.18	0.82
	Deflated Ex-Vessel Revenue (2009 $)	13,722	8,081	4,895	8,726	26,842	12,453
NC & SC	**Lbs Gutted Weight**	1,674	8,758	762	3,903	1,782	3,376
	Deflated Price (2009 $) per Gutted Pound	0.58	0.59	0.50	0.86	0.69	0.64
	Deflated Ex-Vessel Revenue (2009 $)	958	5,167	351	1,507	1,176	1,832
All States Combined	**Lbs Gutted Weight**	80,683	91,250	89,096	99,042	131,774	98,369
	Deflated Price (2009 $) per Gutted Pound	0.90	0.88	1.02	0.88	0.93	0.92
	Deflated Ex-Vessel Revenue (2009 $)	72,868	79,311	91,048	85,631	123,013	90,374

Yellowedge grouper, Blueline tilefish & Silk Snapper

These species are landed predominantly in North Carolina and South Carolina, but landings occur throughout the South Atlantic region. Landings vary substantially from year to year but increased from 92,000 in 2005 to 462,000 in 2009, averaging 241,000 per year over this five year period (**Table 3-29**). An average of 177 vessels landed these species from 2005 to 2009, landing these fish on an average of 952 trips per year (**Table 3-28**). Ex-vessel price per gutted pounds increased slightly from 2005 to 2009, averaging $2.05. Annual ex-vessel revenues varied substantially with landings from year to year but increased from $162,000 in 2005 to $853,000 in 2009, averaging $448,000 per year (**Table 3-29**).

Table 3-28. Number of vessels, dealers, and trips landing yellowedge grouper blueline tilefish and silk snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	50	49	55	44	48	49
FL(west)	53	50	35	27	31	39
NC	44	51	60	60	71	57
SC	28	30	34	32	34	32
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	27	20	31	30	24	26
FL(west)	28	23	24	20	25	24
NC	26	31	28	33	31	30
SC	9	11	14	9	14	11
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	137	112	123	145	114	126
FL(west)	286	251	257	247	224	253
NC	322	368	423	479	570	432
SC	132	174	121	114	165	141
Total All States	877	905	924	985	1,073	952

Table 3-29. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowedge grouper blueline tilefish and silk snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	**2006**	**2007**	**2008**	**2009**	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	6,562	6,866	8,328	12,949	10,584	9,058
	Deflated Price (2009 $) per Gutted Pound	3.04	2.93	2.55	2.84	2.10	2.69
	Deflated Ex-Vessel Revenue (2009 $)	17,662	15,329	16,807	30,703	28,488	21,798
FL (west coast)	Lbs Gutted Weight	11,929	13,601	11,944	17,072	18,132	14,536
	Deflated Price (2009 $) per Gutted Pound	1.78	1.84	1.63	1.97	2.11	1.87
	Deflated Ex-Vessel Revenue (2009 $)	25,614	31,489	28,253	50,408	54,013	37,955
NC	Lbs Gutted Weight	41,150	119,626	50,869	352,787	424,429	197,772
	Deflated Price (2009 $) per Gutted Pound	1.74	1.88	1.98	2.00	1.99	1.92
	Deflated Ex-Vessel Revenue (2009 $)	67,311	200,874	93,240	649,106	748,606	351,827
SC	Lbs Gutted Weight	32,028	40,736	7,472	9,536	8,955	19,745
	Deflated Price (2009 $) per Gutted Pound	2.37	2.10	1.93	2.34	2.56	2.26
	Deflated Ex-Vessel Revenue (2009 $)	50,934	76,307	15,709	16,795	22,172	36,383
All States Combined	Lbs Gutted Weight	91,669	180,829	78,613	392,344	462,100	241,111
	Deflated Price (2009 $) per Gutted Pound	2.03	2.03	1.94	2.15	2.12	2.05
	Deflated Ex-Vessel Revenue (2009 $)	161,521	323,998	154,009	747,011	853,279	447,963

Greater Amberjack

Greater amberjack are landed throughout the South Atlantic region, with approximately 80% of landings occurring in Florida. Landings varied around an average of 691,000 pounds gutted weight per year from 2005 to 2009 (**Table 3-31**). An average of 333 vessels landed greater amberjack on an average of 2,000 trips per year (**Table 3-30**). The number of vessels landing amberjack increased by about 33% in Florida and almost doubled in North Carolina from 2005 to 2009. Ex-vessel price per gutted pound remained relatively stable around an average of $1.05 from 2005 to 2009 (**Table 3-31**). Annual ex-vessel revenues vary with landings, peaking at $725,000 in 2009 and averaging $628,000 over the five year period.

Table 3-30. Number of vessels, dealers, and trips landing greater amberjack, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	111	102	125	133	155	125
FL(west)	76	60	55	54	69	63
NC	69	78	105	118	124	99
SC	41	44	55	45	43	46
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	39	37	49	45	41	42
FL(west)	29	28	26	27	28	28
NC	34	30	37	41	50	38
SC	11	12	22	15	13	15
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	648	475	718	803	1,024	734
FL(west)	650	465	460	498	563	527
NC	310	299	393	541	558	420
SC	316	351	429	351	344	358
Total All States	1,924	1,590	2,000	2,193	2,489	2,039

Table 3-31. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for greater amberjack, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	176,410	121,991	197,301	250,691	364,080	222,095
	Deflated Price (2009 $) per Gutted Pound	0.98	1.05	1.02	1.03	0.98	1.01
	Deflated Ex-Vessel Revenue (2009 $)	148,359	117,521	202,622	238,330	337,055	208,777
FL (west coast)	**Lbs Gutted Weight**	480,243	317,352	292,039	286,850	300,807	335,458
	Deflated Price (2009 $) per Gutted Pound	1.04	1.20	1.18	1.12	1.07	1.12
	Deflated Ex-Vessel Revenue (2009 $)	497,304	382,243	345,067	322,360	322,350	373,865
NC	**Lbs Gutted Weight**	53,492	39,306	42,102	81,654	75,006	58,312
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	**Lbs Gutted Weight**	73,440	70,489	79,702	74,009	76,662	74,860
	Deflated Price (2009 $) per Gutted Pound	---	---	0.98	1.12	0.85	0.98
	Deflated Ex-Vessel Revenue (2009 $)	---	---	77,712	82,806	65,395	75,304
All States Combined	**Lbs Gutted Weight**	783,586	549,138	611,144	693,205	816,554	690,725
	Deflated Price (2009 $) per Gutted Pound	1.01	1.13	1.06	1.08	0.99	1.05
	Deflated Ex-Vessel Revenue (2009 $)	645,663	499,764	625,401	643,495	724,800	627,825

Gray Triggerfish

Gray triggerfish are landed throughout the South Atlantic region. Landings varied around an average of 279,000 gutted pounds per year from 2005 to 2009, trending upward from 246,000 pounds in 2005 to 314,000 pounds in 2009 (**Table 3-33**). An average of 275 vessels landed gray triggerfish from 2005 to 2009, making an average of 2,116 trips per year (**Table 3-32**). Ex-vessel price and revenue data are not available for gray triggerfish (**Table 3-33**).

Table 3-32. Number of vessels, dealers, and trips landing gray triggerfish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	99	81	111	95	117	101
FL(west)	18	17	23	19	24	20
NC	82	86	112	104	114	100
SC	48	55	62	54	52	54
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	36	33	51	36	42	40
FL(west)	12	10	15	11	16	13
NC	41	45	44	50	45	45
SC	13	18	25	23	23	20
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	614	481	615	561	695	593
FL(west)	60	27	33	32	49	40
NC	771	821	911	1,015	1,013	906
SC	522	552	667	598	545	577
Total All States	1,967	1,881	2,226	2,206	2,302	2,116

Table 3-33. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray triggerfish, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	57,215	47,527	73,604	46,169	58,041	56,512
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
FL (west coast)	**Lbs Gutted Weight**	1,392	646	3,576	1,415	1,441	1,694
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
NC	**Lbs Gutted Weight**	121,041	115,477	127,484	162,612	162,656	137,854
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	**Lbs Gutted Weight**	66,485	72,391	110,263	73,688	91,632	82.892
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
All States Combined	**Lbs Gutted Weight**	246,133	236,040	314,927	283,884	313,771	278,951
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---

Hogfish

Hogfish are landed throughout the South Atlantic region, with approximately 50% of landings occurring in South Carolina. Landings trended upward from 25,000 gutted pounds in 2005 to 39,000 pounds in 2009, averaging 33,000 pounds (**Table 3-35**). An average of 165 vessels landed hogfish from 2005 to 2009, making an average of 749 trips per year. Ex-vessel price per gutted pound trended upward from $2.68 in 2005 to $3.08 in 2009, averaging $2.84 over the five year period (**Table 3-34**). Ex-vessel revenues increased from $69,000 in 2005 to $124,000 in 2009, reflecting both increasing landings and increasing ex-vessel prices (**Table 3-35**).

Table 3-34. Number of vessels, dealers, and trips landing hogfish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	33	30	39	33	37	34
FL(west)	65	50	65	52	51	57
NC	42	39	44	42	40	41
SC	28	36	37	34	32	33
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	30	19	26	25	29	26
FL(west)	22	28	34	29	31	29
NC	17	16	17	19	17	17
SC	7	11	12	12	14	11
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	95	73	109	85	111	95
FL(west)	333	224	332	233	188	262
NC	204	171	148	216	150	178
SC	161	219	241	274	179	215
Total All States	793	687	830	808	628	749

Table 3-35. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for hogfish, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	3,762	5,709	6,788	3,549	9,658	5,893
	Deflated Price (2009 $) per Gutted Pound	3.06	2.98	3.07	2.92	3.57	3.12
	Deflated Ex-Vessel Revenue (2009 $)	11,423	17,015	20,793	10,319	34,264	18,763
FL (west coast)	**Lbs Gutted Weight**	7,565	3,583	6,750	4,314	3,367	5,116
	Deflated Price (2009 $) per Gutted Pound	2.56	2.68	2.83	3.05	3.09	2.84
	Deflated Ex-Vessel Revenue (2009 $)	19,395	9,587	19,106	13,166	10,404	14,332
NC	**Lbs Gutted Weight**	5,361	4,207	3,271	8,775	5,958	5,514
	Deflated Price (2009 $) per Gutted Pound	2.52	2.44	2.48	2.65	2.62	2.54
	Deflated Ex-Vessel Revenue (2009 $)	13,526	10,247	8,116	23,270	15,639	14,160
SC	**Lbs Gutted Weight**	8,637	16,501	18,137	16,866	20,473	16,123
	Deflated Price (2009 $) per Gutted Pound	2.88	2.88	2.95	2.91	3.16	2.96
	Deflated Ex-Vessel Revenue (2009 $)	24,911	47,529	53,513	49,082	64,596	47,926
All States Combined	**Lbs Gutted Weight**	25,324	29,999	34,946	33,504	39,456	32,646
	Deflated Price (2009 $) per Gutted Pound	2.68	2.71	2.83	2.88	3.08	2.84
	Deflated Ex-Vessel Revenue (2009 $)	69,255	84,378	101,528	95,837	124,904	95,180

Almaco jack, Banded rudderfish & Lesser amberjack

These species are landed throughout the South Atlantic region. Landings trended upward from 2005 to 2009 around an average of 216,000 gutted pounds per year (**Table 3-37**). An average of 266 vessels landed these species on an average of 1,863 trips per year, with the number of vessels trending upward from 2005 to 2009 (**Table 3-36**). Ex-vessel price per gutted pound was relatively stable at $0.83, while annual ex-vessel revenue trended upward from $127,000 in 2005 to $186,000 in 2009 reflecting increasing landings (**Table 3-37**).

Table 3-36. Number of vessels, dealers, and trips landing almaco jack, banded rudderfish, and lesser amberjack, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	106	88	106	112	137	110
FL(west)	26	29	27	30	27	28
NC	67	69	99	98	95	86
SC	35	40	47	43	45	42
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	29	28	33	29	33	30
FL(west)	13	13	15	19	17	15
NC	32	28	37	36	41	35
SC	10	14	14	16	16	14
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	529	382	505	513	713	528
FL(west)	156	122	119	133	82	122
NC	526	641	846	892	698	721
SC	380	432	568	518	559	491
Total All States	1,591	1,577	2,038	2,056	2,052	1,863

Table 3-37. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for lesser amberjack, banded rudderfish, and almaco jack, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	73,327	38,740	79,481	68,719	106,154	73,284
	Deflated Price (2009 $) per Gutted Pound	0.80	0.94	0.91	0.95	0.98	0.92
	Deflated Ex-Vessel Revenue (2009 $)	41,787	28,724	55,072	56,564	78,416	52,113
FL (west coast)	**Lbs Gutted Weight**	18,908	16,308	22,561	24,501	11,007	18,657
	Deflated Price (2009 $) per Gutted Pound	1.03	1.22	1.14	1.12	1.14	1.13
	Deflated Ex-Vessel Revenue (2009 $)	19,259	19,920	25,649	26,928	12,357	20,823
NC	**Lbs Gutted Weight**	55,186	50,668	66,599	55,868	52,166	56,097
	Deflated Price (2009 $) per Gutted Pound	0.77	0.52	0.77	0.73	0.66	0.69
	Deflated Ex-Vessel Revenue (2009 $)	37,982	23,022	42,032	35,458	30,786	33,856
SC	**Lbs Gutted Weight**	43,188	64,373	74,579	75,451	80,026	67,523
	Deflated Price (2009 $) per Gutted Pound	0.79	0.87	0.90	0.94	0.80	0.86
	Deflated Ex-Vessel Revenue (2009 $)	28,144	51,231	60,589	65,607	64,149	53,944
All States Combined	**Lbs Gutted Weight**	190,609	170,089	243,221	224,540	249,352	215,562
	Deflated Price (2009 $) per Gutted Pound	0.81	0.77	0.86	0.87	0.83	0.83
	Deflated Ex-Vessel Revenue (2009 $)	127,173	122,897	183,342	184,557	185,708	160,735

Mutton Snapper

Mutton snapper landings occur primarily in Florida. From 2005 to 2009, annual landings were relatively stable around 48,000 pounds gutted weight (**Table 3-39**). An average of 347 vessels landed mutton snapper, making an average of 1,608 trips per year (**Table 3-38**). Ex-vessel price (2009 dollars) was relatively stable at an average of $2.70 per gutted pound from 2005 to 2009, and ex-vessel revenues were similarly stable around $125,000 per year (**Table 3-39**).

Table 3-38. Number of vessels, dealers, and trips landing mutton snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	135	114	115	117	133	123
FL(west)	194	173	180	166	147	172
NC	24	20	15	23	18	20
SC	30	35	37	33	26	32
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	57	61	53	49	55	55
FL(west)	42	45	52	50	58	49
NC	12	8	10	12	10	10
SC	8	10	11	7	9	9
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	687	463	523	487	715	575
FL(west)	958	792	858	812	759	836
NC	64	73	33	54	34	52
SC	151	159	205	115	98	146
Total All States	1,860	1,487	1,619	1,468	1,606	1,608

Table 3-39. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for mutton snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	23,948	13,776	14,305	10,926	15,243	15,640
	Deflated Price (2009 $) per Gutted Pound	3.03	3.16	2.88	3.15	3.16	3.08
	Deflated Ex-Vessel Revenue (2009 $)	61,846	38,009	36,377	32,771	46,373	43,075
FL (west coast)	**Lbs Gutted Weight**	27,494	21,822	27,955	29,414	29,883	27,314
	Deflated Price (2009 $) per Gutted Pound	2.31	2.45	2.46	2.44	2.46	2.42
	Deflated Ex-Vessel Revenue (2009 $)	63,484	53,410	68,799	71,821	73,603	66,223
NC	**Lbs Gutted Weight**	1,849	2,174	625	1,883	650	1,436
	Deflated Price (2009 $) per Gutted Pound	2.84	2.71	2.62	2.70	2.55	2.68
	Deflated Ex-Vessel Revenue (2009 $)	5,246	5,887	1,638	5,090	1,654	3,903
SC	**Lbs Gutted Weight**	3,555	6,115	5,379	2,658	2,592	4,060
	Deflated Price (2009 $) per Gutted Pound	2.89	2.78	3.10	2.88	2.89	2.91
	Deflated Ex-Vessel Revenue (2009 $)	10,271	17,003	16,693	7,644	7,489	11,820
All States Combined	**Lbs Gutted Weight**	56,846	43,887	48,264	44,881	48,368	48,449
	Deflated Price (2009 $) per Gutted Pound	2.63	2.70	2.68	2.71	2.80	2.70
	Deflated Ex-Vessel Revenue (2009 $)	140,847	114,309	123,507	117,326	129,120	125,022

Red hind, Rock hind, Tomtate & White grunt
Landings of these species peaked in 2006 at 156,000 gutted pounds and decreased thereafter to 118,000 pounds in 2009 (**Table 3-41**). The number of vessels landing these species averaged 273 from 2005 to 2009, with vessel numbers decreasing in Florida but increasing in North Carolina and South Carolina. Trips landing these species averaged 3,493 annually from 2005 to 2009 (**Table 3-40**). Ex-vessel price per gutted pound (2009 dollars) peaked in 2007 at $2.91 and decreased thereafter to $2.42 in 2009, averaging $2.66 over the five year period (**Table 3-41**). Annual ex-vessel revenues peaked in 2007 at $166,000 and decreased thereafter to $106,000 reflecting decreasing landings and ex-vessel prices.

Table 3-40. Number of vessels, dealers, and trips landing red hind, rock hind, tomtate, and white grunt, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	81	68	62	68	55	67
FL(west)	57	44	47	53	52	51
NC	84	87	106	111	113	100
SC	48	55	62	57	54	55
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	37	35	31	27	27	31
FL(west)	22	20	22	17	23	21
NC	37	38	54	46	49	45
SC	13	20	26	21	22	20
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	644	461	386	327	322	428
FL(west)	408	204	194	292	279	275
NC	1,360	1,524	1,684	1,741	1,505	1,563
SC	909	1,134	1,401	1,379	1,313	1,227
Total All States	3,321	3,323	3,665	3,739	3,419	3,493

Table 3-41. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red hind, rock hind, tomtate, and white grunt, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	11,318	8,152	5,885	7,082	7,312	7,950
	Deflated Price (2009 $) per Gutted Pound	1.91	2.00	2.58	2.19	2.04	2.14
	Deflated Ex-Vessel Revenue (2009 $)	3,543	2,138	2,234	1,224	2,125	2,253
FL (west coast)	**Lbs Gutted Weight**	10,684	5,687	4,839	9,740	7,565	7,703
	Deflated Price (2009 $) per Gutted Pound	1.20	1.44	1.57	1.11	1.34	1.33
	Deflated Ex-Vessel Revenue (2009 $)	3,624	2,620	1,513	2,571	2,435	2,553
NC	**Lbs Gutted Weight**	50,787	67,203	61,555	64,504	52,371	59,284
	Deflated Price (2009 $) per Gutted Pound	2.72	2.70	3.04	3.16	2.95	2.91
	Deflated Ex-Vessel Revenue (2009 $)	18,788	26,985	38,060	24,524	22,275	26,126
SC	**Lbs Gutted Weight**	46,366	75,401	81,993	64,963	51,240	63,993
	Deflated Price (2009 $) per Gutted Pound	3.02	3.07	2.96	2.54	2.36	2.79
	Deflated Ex-Vessel Revenue (2009 $)	67,093	126,310	123,712	102,663	79,602	99,876
All States Combined	**Lbs Gutted Weight**	119,155	156,444	154,272	146,288	118,487	138,929
	Deflated Price (2009 $) per Gutted Pound	2.57	2.80	2.91	2.62	2.42	2.66
	Deflated Ex-Vessel Revenue (2009 $)	93,049	158,053	165,519	130,982	106,436	130,808

Red Porgy

Red porgy are landed throughout the South Atlantic region. Landings increased three-fold from 2005 to 2009, peaking at 134,000 in 2008 (**Table 3-43**). The number of vessels landing red porgy increased by approximately 18% over the five year period, reaching 203 vessels in 2009. The number of trips landing red porgy trended upward, with an annual average of 1,565 trips from 2005 to 2009 (**Table 3-42**). Ex-vessel price per gutted pound was relatively stable at an average of $1.60 from 2005 to 2009. Ex-vessel revenues increased greatly from 2005 to 2009, peaking at $209,000 in 2008, reflecting increasing landings (**Table 3-43**).

Table 3-42. Number of vessels, dealers, and trips landing red porgy, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	45	41	58	53	49	49
NC	82	82	101	102	100	93
SC	42	55	57	49	54	51
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	25	18	24	22	18	22
NC	37	39	42	53	42	43
SC	12	16	20	16	20	17
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	178	191	279	263	230	229
NC	775	801	955	1,020	824	875
SC	365	484	527	463	471	462
Total All States	1,318	1,476	1,761	1,746	1,525	1,565

Table 3-43. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red porgy, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL and GA	**Lbs Gutted Weight**	5,843	11,932	22,803	25,429	27,428	18,687
	Deflated Price (2009 $) per Gutted Pound	1.69	1.53	1.60	1.61	1.55	1.60
	Deflated Ex-Vessel Revenue (2009 $)	9,875	18,256	36,485	40,941	42,513	29,614
NC	**Lbs Gutted Weight**	20,875	27,385	54,958	65,402	59,790	45,682
	Deflated Price (2009 $) per Gutted Pound	1.36	1.41	1.34	1.37	1.32	1.36
	Deflated Ex-Vessel Revenue (2009 $)	28,313	38,722	73,622	89,376	78,838	61,774
SC	**Lbs Gutted Weight**	11,325	24,035	39,410	42,966	41,986	31,944
	Deflated Price (2009 $) per Gutted Pound	2.05	2.22	2.20	2.04	1.83	2.07
	Deflated Ex-Vessel Revenue (2009 $)	23,223	53,293	86,505	87,835	76,697	65,511
All States Combined	**Lbs Gutted Weight**	38,042	63,353	117,171	133,796	129,204	96,313
	Deflated Price (2009 $) per Gutted Pound	1.58	1.70	1.64	1.58	1.51	1.60
	Deflated Ex-Vessel Revenue (2009 $)	57,536	104,690	196,544	208,922	188,106	151,160

Scamp

Scamp are landed from North Carolina to Florida, with over 60% of landings occurring in South Carolina. After peaking in 2007 at 334,000 pounds gutted weight, scamp landings decreased to 241,000 pounds in 2009 (**Table 3-45**). Landings averaged 268,000 from 2005 to 2009. The number of vessels landing scamp averaged 223 with a slight upward trend. The number of trips landing scamp varied around an average of 1,990 (**Table 3-44**). Ex-vessel price per gutted pound (2009 dollars) ranged from $3.82 in 2005 to $4.32 in 2007 with an average of $4.15 from 2005 to 2009 (**Table 3-45**). Annual ex-vessel revenues ranged from $921,000 in 2005 to $1.54 million in 2007, with an average of $1.14 million per year from 2005 to 2009.

Table 3-44. Number of vessels, dealers, and trips landing scamp, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	63	60	68	61	60	62
FL(west)	16	9	6	11	10	10
NC	75	82	110	113	115	99
SC	44	54	59	54	48	52
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	26	31	29	26	22	27
FL(west)	8	5	5	9	8	7
NC	29	36	51	50	44	42
SC	13	17	24	22	19	19
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	344	332	440	401	398	383
FL(west)	25	12	6	16	12	14
NC	738	811	1,086	1,086	851	914
SC	586	676	790	696	646	679
Total All States	1,693	1,831	2,322	2,199	1,907	1,990

Table 3-45. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for scamp, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	32,745	26,521	41,982	29,263	33,050	32,712
	Deflated Price (2009 $) per Gutted Pound	3.71	4.16	4.21	4.19	4.05	4.06
	Deflated Ex-Vessel Revenue (2009 $)	68,565	61,348	176,234	77,897	79,855	92,780
FL (west coast)	**Lbs Gutted Weight**	1,376	555	121	1,417	291	752
	Deflated Price (2009 $) per Gutted Pound	3.41	3.64	3.90	3.84	3.99	3.77
	Deflated Ex-Vessel Revenue (2009 $)	4,694	2,019	471	5,449	1,162	2,759
NC	**Lbs Gutted Weight**	62,361	76,312	84,778	62,355	52,872	67,736
	Deflated Price (2009 $) per Gutted Pound	3.47	3.63	3.89	3.92	3.85	3.75
	Deflated Ex-Vessel Revenue (2009 $)	216,095	277,343	329,401	244,489	203,389	254,143
SC	**Lbs Gutted Weight**	146,106	187,986	206,702	137,435	154,566	166,559
	Deflated Price (2009 $) per Gutted Pound	4.32	4.59	5.00	4.99	4.78	4.74
	Deflated Ex-Vessel Revenue (2009 $)	631,555	862,150	1,033,054	685,986	739,238	790,397
All States Combined	**Lbs Gutted Weight**	242,588	291,374	333,583	230,470	240,779	267,759
	Deflated Price (2009 $) per Gutted Pound	3.82	4.08	4.32	4.31	4.22	4.15
	Deflated Ex-Vessel Revenue (2009 $)	920,910	1,202,861	1,539,160	1,013,821	1,023,644	1,140,079

Gray snapper, Lane snapper & Cubera snapper

Landings of these species occur predominantly from South Carolina southward. Landings have trended downward from 12,126 gutted pounds in 2005 to 5,794 pounds in 2009 (**Table 3-47**). The number of vessels landing gray snapper, lane snapper, and cubera snapper varied around an average of 128 from 2005 to 2009 (**Table 3-46**). The number of trips landing these species has remained relatively stable at around 300 trips per year since 2006. Ex-vessel prices per gutted pound (2009 dollars) remained relatively stable from 2005 to 2009 at an average of $2.61 (**Table 3-47**). Ex-vessel revenues declined from $30,000 in 2005 to $12,000 in 2009 reflecting lower landings.

Table 3-46. Number of vessels, dealers, and trips landing gray snapper, lane snapper, and cubera snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	68	40	53	60	65	57
FL(west)	54	63	49	46	37	50
NC	4	7	8	13	4	7
SC	8	17	11	20	15	14
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	30	25	27	25	33	28
FL(west)	22	22	19	16	15	19
NC	4	8	7	9	4	6
SC	4	4	5	5	5	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	209	133	163	146	178	166
FL(west)	156	129	103	103	84	115
NC	5	8	10	17	4	9
SC	11	23	18	52	32	27
Total All States	381	293	294	318	298	317

Table 3-47. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray snapper, lane snapper, and cubera snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	**2006**	**2007**	**2008**	**2009**	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	6,080	2,537	4,353	2,425	3,216	3,722
	Deflated Price (2009 $) per Gutted Pound	2.85	3.02	2.83	2.72	2.71	2.83
	Deflated Ex-Vessel Revenue (2009 $)	17,003	7,388	11,822	5,307	6,849	9,674
FL (west coast)	**Lbs Gutted Weight**	5,325	2,288	1,606	2,212	856	2,457
	Deflated Price (2009 $) per Gutted Pound	2.27	2.19	2.39	2.42	2.44	2.34
	Deflated Ex-Vessel Revenue (2009 $)	12,124	5,004	3,839	4,628	2,087	5,536
NC	**Lbs Gutted Weight**	128	189	205	544	117	237
	Deflated Price (2009 $) per Gutted Pound	---	2.18	2.78	2.71	2.05	2.43
	Deflated Ex-Vessel Revenue (2009 $)	---	397	431	1,341	209	595
SC	**Lbs Gutted Weight**	593	1,399	1,827	2,648	1,605	1,614
	Deflated Price (2009 $) per Gutted Pound	2.21	2.32	2.81	2.56	2.56	2.49
	Deflated Ex-Vessel Revenue (2009 $)	1,311	3,117	4,793	5,898	3,079	3,640
All States Combined	**Lbs Gutted Weight**	12,126	6,413	7,991	7,829	5,794	8,031
	Deflated Price (2009 $) per Gutted Pound	2.59	2.58	2.67	2.60	2.62	2.61
	Deflated Ex-Vessel Revenue (2009 $)	30,439	15,905	20,886	17,174	12,224	19,326

Yellowtail Snapper

Yellowtail snapper are landed primarily in Florida, with a large proportion of these landings occurring on the west coast of Florida, even though the fish are caught in SAFMC region waters. Yellowtail snapper landings have varied substantially from a low of 609,000 pounds gutted weight in 2007 to a high of 1.11 million pounds in 2009 (**Table 3-49**). The numbers of vessels and trips landing yellowtail snapper have varied around 356 and 4,570, respectively, with a slight downward trend (**Table 3-48**). Ex-vessel price per gutted pound (2009 dollars) peaked in 2007 at $3.01 and declined thereafter to $2.67 in 2009 (**Table 3-49**). Ex-vessel revenue (2009 dollars) has ranged from $1.83 million in 2007 to $2.94 million in 2009 reflecting fluctuations in landings.

Table 3-48. Number of vessels, dealers, and trips landing yellowtail snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	127	111	116	116	118	118
FL(west)	236	223	207	202	198	213
NC	7	8	10	12	11	10
SC	14	10	13	19	20	15
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	68	60	67	59	63	63
FL(west)	52	69	62	63	68	63
NC	6	5	8	9	7	7
SC	5	3	5	5	6	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	924	678	883	626	714	765
FL(west)	3,944	3,751	3,500	3,726	3,810	3,746
NC	8	10	14	14	17	13
SC	48	24	32	58	70	46
Total All States	4,924	4,463	4,429	4,424	4,611	4,570

Table 3-49. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowtail snapper, 2005-2009.

		Year Landed 2005	2006	2007	2008	2009	Average 2005-2009
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	89,599	60,703	88,389	81,875	128,849	89,883
	Deflated Price (2009 $) per Gutted Pound	2.89	3.10	3.05	3.02	2.95	3.00
	Deflated Ex-Vessel Revenue (2009 $)	259,188	187,737	268,682	246,208	371,546	266,672
FL (west coast)	**Lbs Gutted Weight**	672,583	618,305	515,942	701,530	980,374	697,747
	Deflated Price (2009 $) per Gutted Pound	2.79	2.99	2.99	2.75	2.60	2.82
	Deflated Ex-Vessel Revenue (2009 $)	1,876,872	1,848,640	1,544,689	1,925,796	2,549,395	1,949,078
NC	**Lbs Gutted Weight**	986	1,054	3,276	6,260	2,991	2,913
	Deflated Price (2009 $) per Gutted Pound	---	---	3.05	---	3.58	3.32
	Deflated Ex-Vessel Revenue (2009 $)	---	---	9,996	---	10,693	10,345
SC	**Lbs Gutted Weight**	1,078	382	1,390	3,373	1,181	1,481
	Deflated Price (2009 $) per Gutted Pound	3.10	---	3.32	3.43	3.21	3.27
	Deflated Ex-Vessel Revenue (2009 $)	3,338	---	4,608	11,584	3,794	5,831
All States Combined	**Lbs Gutted Weight**	764,246	680,444	608,996	793,038	1,113,396	792,024
	Deflated Price (2009 $) per Gutted Pound	2.81	3.01	3.01	2.79	2.67	2.86
	Deflated Ex-Vessel Revenue (2009 $)	2,139,398	2,036,377	1,827,976	2,183,588	2,935,428	2,224,553

Black Grouper

Black grouper landings are broadly distributed from North Carolina to Florida, including the west coast of Florida. From 2005 to 2009, black grouper landings averaged 127,000 gutted pounds per year but have been declining since 2007 (**Table 3-51**). Approximately 281 vessels landed black grouper, and effort averaged 1,283 trips per year (**Table 3-50**). From 2005 to 2009, the ex-vessel price (2009 dollars) per gutted pound of black grouper has been generally increasing, averaging $3.80 (**Table 3-51**). From 2005 to 2009, the ex-vessel revenues (2009 dollars) received for black grouper varied around an average value of $196,000 with higher prices in some years offset by lower landings.

Table 3-50. Number of vessels, dealers, and trips landing black grouper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	72	68	68	53	55	63
FL(west)	186	163	162	151	115	155
NC	49	50	42	44	51	47
SC	10	12	19	16	21	16
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	39	46	43	40	37	41
FL(west)	39	52	47	48	45	46
NC	28	34	26	25	35	30
SC	3	5	8	7	9	6
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	200	177	198	152	167	179
FL(west)	1,128	762	875	581	446	758
NC	327	282	206	217	195	245
SC	68	107	137	105	85	100
Total All States	1,723	1,328	1,416	1,055	893	1,283

Table 3-51. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for black grouper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	**2006**	**2007**	**2008**	**2009**	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	20,089	14,516	26,301	14,260	11,684	17,370
	Deflated Price (2009 $) per Gutted Pound	3.70	3.87	4.18	4.24	4.30	4.06
	Deflated Ex-Vessel Revenue (2009 $)	37,406	34,797	47,564	42,297	33,339	39,081
FL (west coast)	**Lbs Gutted Weight**	70,163	35,434	45,898	21,374	15,568	37,687
	Deflated Price (2009 $) per Gutted Pound	3.39	3.65	3.89	3.78	3.89	3.72
	Deflated Ex-Vessel Revenue (2009 $)	237,558	129,426	178,499	80,899	60,575	137,391
NC	**Lbs Gutted Weight**	49,479	52,108	25,546	25,325	18,038	34,099
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	**Lbs Gutted Weight**	26,190	41,799	63,278	35,525	20,244	37,407
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	4.78	4.78
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	96,833	96,833
All States Combined	**Lbs Gutted Weight**	165,921	143,857	161,023	96,484	65,533	126,563
	Deflated Price (2009 $) per Gutted Pound	3.43	3.69	3.94	3.86	4.09	3.80
	Deflated Ex-Vessel Revenue (2009 $)	274,964	164,223	226,063	123,197	190,747	195,839

3.8.1.9 Imports

Background

NOAA Fisheries Service purchases fisheries trade data from the Foreign Trade Division of the U.S. Census Bureau. Data are available for download at http://www.st.nmfs.noaa.gov/st1/trade/index.html. The list of product codes relevant to this data request includes fresh and frozen snappers, fresh and frozen groupers, frozen sea basses and frozen dolphin fillets. Wreckfish and golden crab do not appear in the list of product codes in the imports database (see the drop-down menu for products at http://www.st.nmfs.noaa.gov/st1/trade/build_a_database/TradeSelectDateProduct.html). Groupers are substitutes for wreckfish. Golden crab competes in the market for snow crab and Dungeness crab.

Data are summarized from 1991-2009. Imports are tabulated in thousands of lbs, product weight. Import values are tabulated in thousands of current year dollars and constant 2009 dollars.

Snapper Grouper

Imported products relevant to the Snapper Grouper FMP include fresh and frozen snappers, fresh and frozen groupers, and frozen sea basses. Data are available from 1991-present.

Imports of fresh snappers increased from approximately 10.8 million lbs (product weight) worth $16.0 million (current dollars) in 1991 to 21.5 million lbs worth $49.4 million in 2009 (**Figure 3-1**). Imports peaked at 29.0 million lbs worth $60.2 million in 2007 before declining in 2008 and 2009. The recent decline in imports probably is linked to the general slow-down of economic activity in the U.S. Imports of fresh snapper primarily originated in Mexico, Central America, or South America, and entered the U.S. through the port of Miami. On average from 2006-2009, imports were above average during the months of March, April and May, and below average in November, December and January.

Imports of frozen snappers were relatively minor from 1991 through 1999, and ranged from 1.4 million lbs (product weight) worth $1.9 million (current dollars) in 1995 to 2.9 million lbs worth $4.0 million in 1998 (**Figure 3-1**). However, imports doubled from 1999 to 2000 and increased to a peak of 12.7 million lbs worth $19.4 million in 2005. Imports remained relatively steady through 2007 and then declined to 8.1 million lbs worth $15.9 million in 2009. Imports of frozen snappers primarily originated in Brazil and entered the U.S. through the port of Miami, or originated from Indonesia and entered the U.S. through New York or Los Angeles. Imports of frozen snappers tend to be greatest during December and January and lowest in March, April and May.

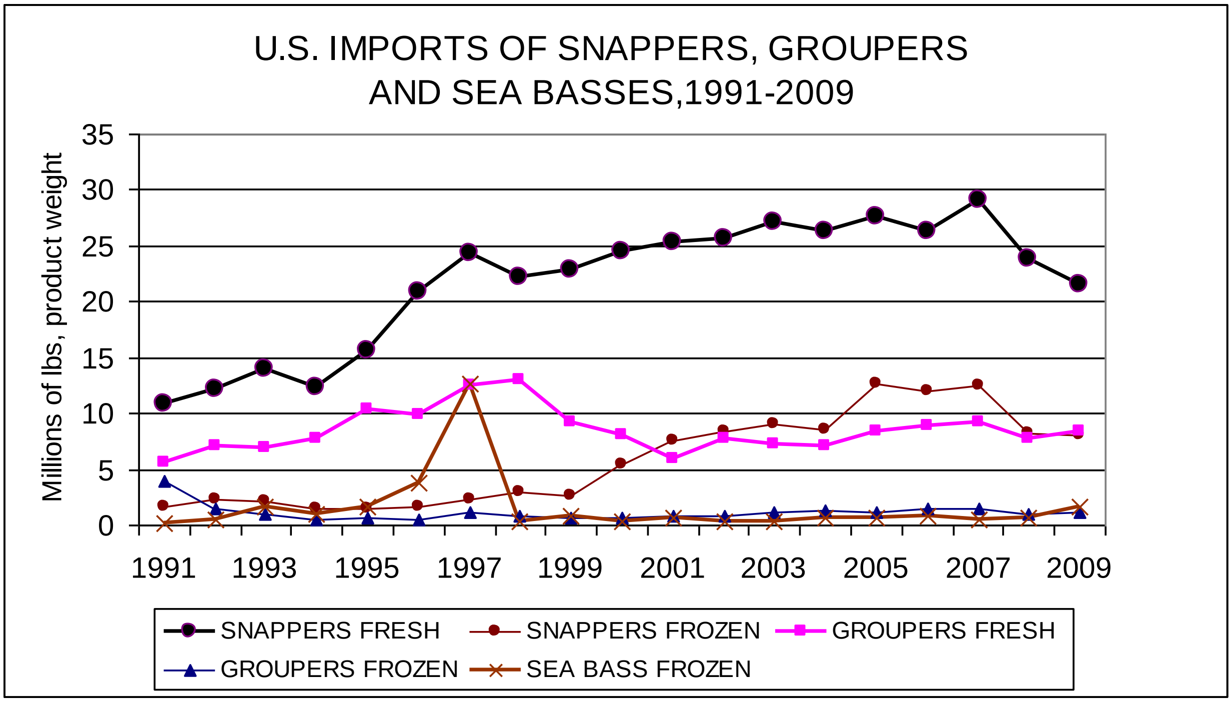


Figure 3-1. Imports relevant to the South Atlantic Snapper Grouper Fishery Management Plan.

Imports of fresh groupers increased from 5.6 million lbs (product weight) worth $6.1 million (current dollars) in 1991 to a peak of 12.9 million lbs worth $18.6 million in 1998 (**Figure 3-1**). Imports have remained relatively steady since 1999, with an annual average of 8.0 million lbs worth $18.1 million. Imports generally originated in Mexico, and in Panama to a much lesser extent, and entered the U.S. in Miami. Prior to 2006, imports of fresh groupers were above average in March and April and below average in October and November. However, imports in March have declined significantly since 2006.

Imports of frozen grouper were relatively minor, and averaged 1.0 million lbs worth $1.6 million since 2006 (**Figure 3-1**). Imports generally originated in Mexico or Asia, and entered the U.S. in Miami, Tampa or San Juan. On average from 2006-2009, imports of frozen groupers were above average from December through April and below average from June through August.

Imports of frozen sea basses were relatively minor except in 1997 with 12.6 million lbs (product weight) worth $28.7 million (current year dollars) (**Figure 3-1**). Imports averaged 0.6 million lbs worth $1.8 million from 1998-2008. However, imports of frozen sea bass increased to 1.7 million lbs worth $4.3 million in 2009, with nearly 0.8 million lbs imported in January 2009. Frozen sea bass most commonly were imported from Taiwan and entered the U.S. in Los Angeles. Since 2006, imports were greatest between January and March and lowest from August through December.

Dolphin Wahoo

Products relevant to the Dolphin Wahoo FMP include frozen dolphin fillets, with data about imports available since 1997. Imports of frozen dolphin fillets increased steadily from 15.7 million lbs (product weight) worth $20.2 million in 1997 to a peak in 2008 of 41.4 million lbs worth $114.0 million, with brief declines in 1999 and 2006 to interrupt the trend (**Figure 3-2**). Imports declined in 2009 to 38.4 million lbs worth $101.7 million. The largest volume of imports originated in Taiwan, Ecuador and Peru, and entered the U.S. in Miami, Los Angeles and, to a lesser extent, Seattle. Imports at east coast ports, including the mid-west and Caribbean, were less than imports at west coast ports in every year except 2009, 2008 and 1997. Between 2006 and 2009, imports were above average from December through March and below average from July through November.

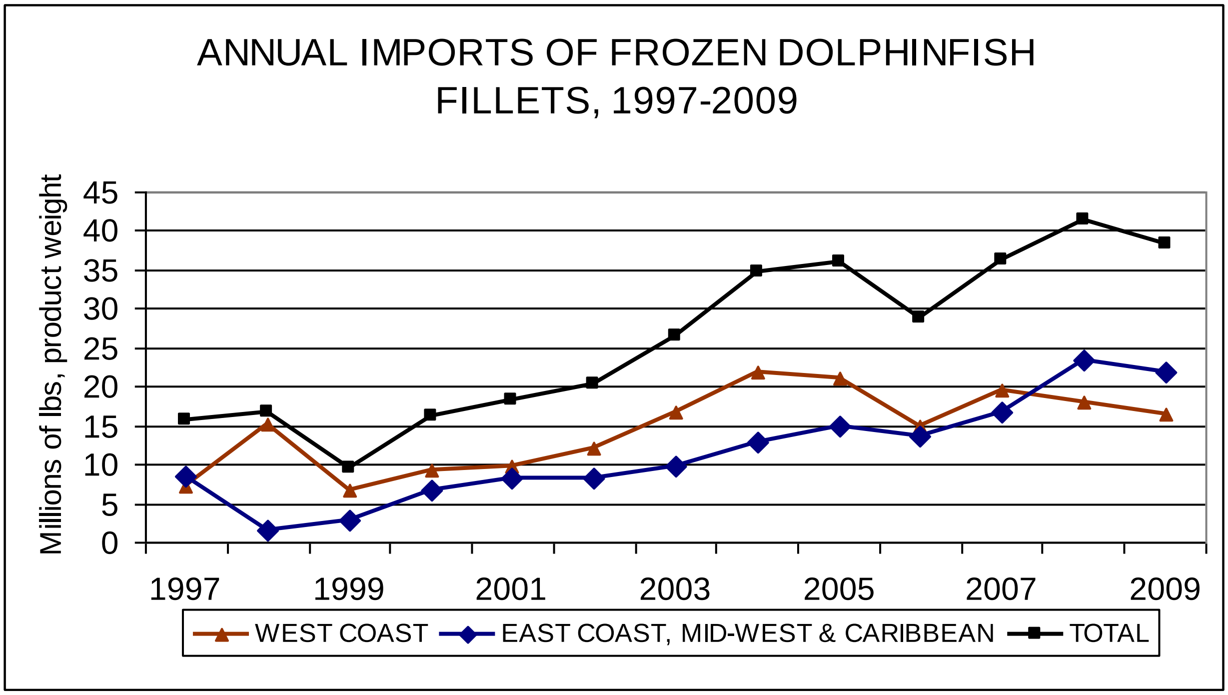


Figure 3-2. Imports relevant to the Dolphin Wahoo Fishery Management Plan.

Golden Crab FMP

Golden crab does not appear in the list of product codes in the imports database. Golden crab competes with snow crab and Dungeness crab when the markets for those products have difficulty meeting regional demand. For example, golden crab has been sold to U.S. west coast buyers when supplies of Dungeness crab were low. Golden crab also competes with snow crab in the buffet restaurant market. Recently a new international market opened for live golden crab where it competes directly with the Australian crystal crab for the high end customer segment.

Imports of frozen snow crab dominate the quantities imported of other crab products (**Figure 3-3**). In 1991, the U.S. imported 1.6 million lbs (product weight) of frozen snow crab worth $5.3 million (current year dollars), and by 2009 imports grew to nearly 113.9 million lbs worth $380.4 million (**Figure 3-3**). Imports doubled from 1993-to-1994, from 1996-to-1997, from 1998-to-1999, and doubled again between 1999 and 2009. The preponderance of imports originated in Canada and entered the U.S. at northeastern ports such as Portland, ME, and St. Albans, VT. From 2001-2009, imports were above average from May through August and below average from September through April.

Imports of snow crab crabmeat increased from 3.7 million lbs (product weight) worth $17.9 million (in current year dollars) in 1991 to a peak of 7.3 million lbs worth $44.8 million in 2001 (**Figure 3-3**). Imports of snow crab crabmeat averaged approximately 4.6 million lbs worth $22.6 million from 2003-2009. Canada is the largest supplier, with China and South Korea also exporting significant quantities of snow crab crabmeat to U.S. markets. Imports from Canada entered the U.S. at ports in the northeast and mid-west, while imports from Asia entered the U.S. at ports on the west coast and at ports in the northeast. Los Angeles was the primary port of entry. July, August and September were the primary months to import snow crab crabmeat.

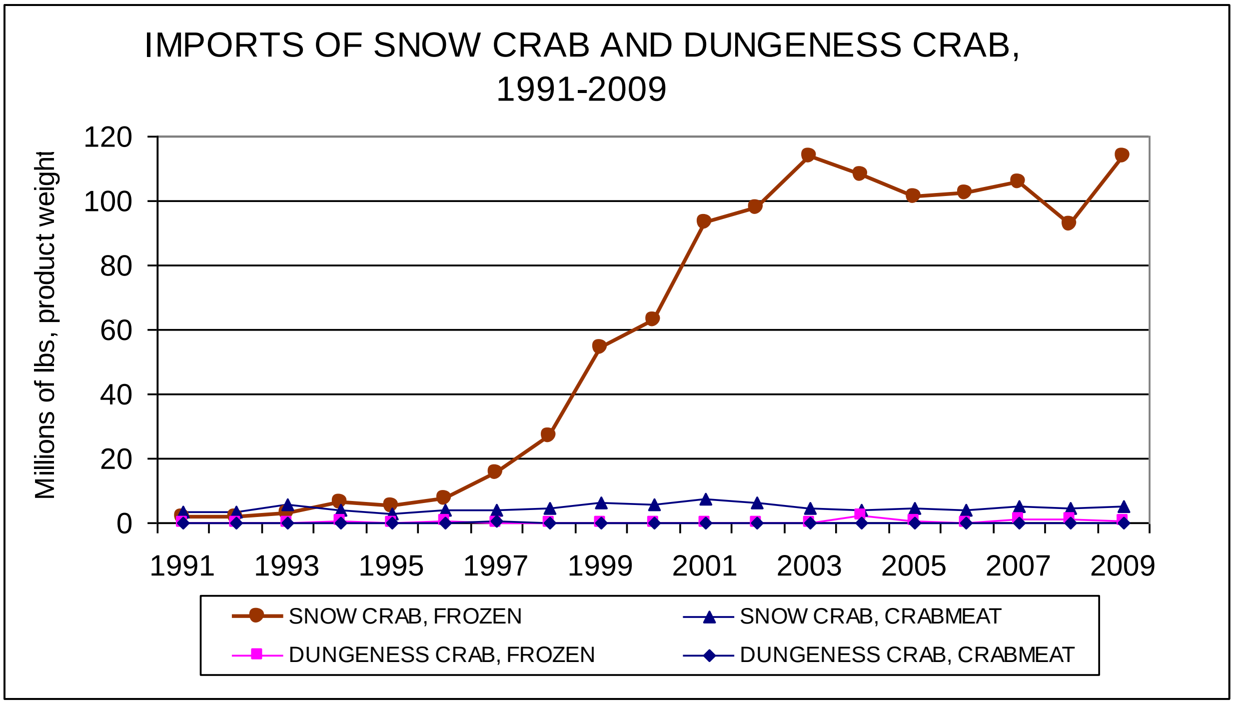


Figure 3-3. Imports relevant to the South Atlantic Golden Crab Fishery Management Plan.

Prior to 2004, imports of frozen Dungeness crab ranged from 0.007 million lbs (product weight) in 2002 to 0.4 million lbs worth $1.1 million in 1997 (**Figure 3-3**). Since then, imports exceeded 2.3 million lbs worth $3.9 million in 2004, and averaged 1.0 million lbs worth nearly $2.5 million from 2004-2009. Frozen Dungeness crab was imported from Canada, primarily into the port of Seattle during the months of July, August and September.

Dungeness crab crabmeat is a low-volume, high-valued product that averaged more than $12 per pound in 2008 and more than $10 per pound in 2009. Imports of Dungeness crab crabmeat peaked at 0.34 million lbs (product weight) worth $1.52 million (current year dollars) in 1997. Product value peaked in 2008 with imports of 0.18 million lbs worth $2.24 million. Imports declined to 0.12 million lbs worth $1.25 million in 2009. Dungeness crab crabmeat was exported to the U.S. from China and entered the U.S. in Los Angeles. Imports are not seasonal.

3.8.2 Economic Description of the Recreational Fishery

The recreational fishery is comprised of the private sector and for-hire sector. The private sector includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire sector is composed of the charterboat and headboat (also called partyboat) sectors. Charterboats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person.

3.8.2.1 Harvest

Recreational harvest information is provided in **Appendix N**.

3.8.2.2 Effort

Recreational effort derived from the MRFSS database can be characterized in terms of the number of trips as follows:

1. Target effort - The number of individual angler trips, regardless of trip duration, where the intercepted angler indicated that the snapper grouper species was targeted as either the first or the second primary target for the trip. The snapper grouper species did not have to be caught.
2. Catch effort - The number of individual angler trips, regardless of trip duration and target intent, where the individual snapper grouper species was caught. The fish caught did not have to be kept.
3. All recreational trips - The total estimated number of recreational trips taken, regardless of target intent or catch success.

Estimates of average annual recreational effort, 2005-2009, for the snapper grouper species addressed in this amendment are provided in **Tables 3-52 to 3-59**. In each table, where appropriate, the "total" refers to the total number of target or catch trips, as appropriate, while "all trips" refers to the total number of trips across all snapper grouper species regardless of target intent or catch success.

As might be expected, Florida dominates the other South Atlantic states in terms of the number of target or catch trips for all of the individual or group snapper grouper species evaluations (**Tables 3-52** and **3-53**). The private mode is the dominant fishing mode for snapper grouper target or catch trips (**Tables 3-54** and **3-55**). For individual snapper grouper species, red snapper has been subject to the greatest amount of target effort, approximately 57,000 trips per year (**Table 3-52**), while black sea bass has been subject to the greatest amount of catch effort, approximately 640,000 trips per year (**Table 3-52**).

Table 3-52. Average annual snapper grouper recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
All Snapper Grouper	733,902	30,527	92,356	109,565	966,350	22,418,779
Red Snapper	52,112	2,433	0	2,787	57,331	
Vermilion Snapper	2,643	27	153	1,608	4,430	

Table 3-52. Continued. Average annual snapper grouper recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Red Porgy	209	0	0	0	209	
Goliath Grouper	1,667	0	0	0	1,667	
Black Sea Bass	10,076	4,744	8,532	24,832	48,184	
Wreckfish	0	0	0	0	0	
Gray Triggerfish	2,555	0	2,921	330	5,806	
Bar Jack	0	0	0	0	0	
Nassau Grouper	0	0	0	0	0	
Hogfish	16,821	0	0	0	16,821	
Yellowedge Grouper	182	0	0	0	182	
Blueline Tilefish	0	0	1,338	0	1,338	
Lesser Amberjack	0	0	0	0	0	
Cubera Snapper	0	0	0	0	0	
Atlantic Spadefish	2,436	1,159	1,934	5,875	11,404	
Blue Runner	23,155	0	0	1,646	24,801	
Warsaw Grouper	0	0	0	0	0	
Scamp	0	0	0	256	256	
Red Grouper	3,355	0	503	0	3,858	
Speckled Hind	0	0	51	0	51	

Source: MRFSS, NOAA Fisheries, NMFS, SERO. *

Table 3-53. Average annual snapper grouper recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
All Snapper Grouper	3,152,035	123,122	461,860	221,684	3,958,701	22,418,779
Red Snapper	87,785	7,117	1,208	3,329	99,439	
Vermilion Snapper	63,920	6,124	12,275	13,235	95,554	
Red Porgy	4,678	1,128	15,888	4,412	26,106	
Goliath Grouper	16,277	0	0	0	16,277	
Black Sea Bass	205,909	48,938	230,900	154,526	640,273	
Wreckfish	0	0	0	0	0	
Gray Triggerfish	140,795	5,715	18,308	5,535	170,353	
Bar Jack	5,669	100	71	0	5,840	
Nassau Grouper	986	0	0	45	1,031	

Table 3-53. Continued. Average annual snapper grouper recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Hogfish	23,898	10	1,590	434	25,932	
Yellowedge Grouper	599	0	30	0	629	
Blueline Tilefish	375	0	14,247	0	14,622	
Lesser Amberjack	391	0	301	0	692	
Cubera Snapper	1,720	27	0	0	1,747	
Atlantic Spadefish	83,165	17,730	31,349	17,638	149,882	
Blue Runner	492,836	407	2,968	892	497,103	
Warsaw Grouper	656	0	0	0	656	
Scamp	4,551	666	7,526	2,753	15,496	
Red Grouper	58,740	5	19,355	1,108	79,207	
Speckled Hind	1,581	0	0	28	1,609	

Source: MRFSS, NOAA Fisheries, NMFS, SERO. *

Table 3-54. Average annual snapper grouper recreational target effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
All Snapper Grouper	269,576	39,122	657,652	966,350	22,418,779
Red Snapper	2,110	2,903	52,318	57,331	
Vermilion Snapper	0	1,186	3,244	4,430	
Red Porgy	0	0	209	209	
Goliath Grouper	645	25	997	1,667	
Black Sea Bass	1,438	3,812	42,934	48,184	
Wreckfish	0	0	0	0	
Gray Triggerfish	2,115	353	3,338	5,806	
Bar Jack	0	0	0	0	
Nassau Grouper	0	0	0	0	
Hogfish	891	0	15,930	16,821	
Yellowedge Grouper	0	0	182	182	
Blueline Tilefish	0	494	844	1,338	
Lesser Amberjack	0	0	0	0	
Cubera Snapper	0	0	0	0	
Atlantic Spadefish	3,330	88	7,986	11,404	
Blue Runner	20,185	0	4,616	24,801	

Table 3-54. Continued. Average annual snapper grouper recreational target effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
Warsaw Grouper	0	0	0	0	
Scamp	0	256	0	256	
Red Grouper	177	503	3,178	3,858	
Speckled Hind	0	0	51	51	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-55. Average annual snapper grouper recreational catch effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
All Snapper Grouper	1,231,647	134,665	2,592,389	3,958,701	22,418,779
Red Snapper	1,150	13,124	85,165	99,439	
Vermilion Snapper	872	28,300	66,382	95,554	
Red Porgy	0	10,314	15,792	26,106	
Goliath Grouper	6,473	287	9,517	16,277	
Black Sea Bass	90,607	36,130	513,537	640,273	
Wreckfish	0	0	0	0	
Gray Triggerfish	10,316	24,395	135,642	170,353	
Bar Jack	1,421	352	4,068	5,840	
Nassau Grouper	0	138	893	1,031	
Hogfish	1,650	122	24,160	25,932	
Yellowedge Grouper	0	94	535	629	
Blueline Tilefish	0	9,573	5,049	14,622	
Lesser Amberjack	0	291	401	692	
Cubera Snapper	311	82	1,354	1,747	
Atlantic Spadefish	120,340	378	29,164	149,882	
Blue Runner	260,006	18,029	219,067	497,103	
Warsaw Grouper	0	121	535	656	
Scamp	0	4,712	10,784	15,496	
Red Grouper	1,175	10,891	67,141	79,207	
Speckled Hind	203	84	1,323	1,609	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Tables 3-56 to **3-59** contain estimates of the average annual (2005-2009) target trips and catch trips, by snapper grouper species, for each state and mode.

Table 3-56. Average annual snapper grouper recreational effort, Florida, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	225,948	1,056,735	32,165	76,089	475,789	2,019,211	733,902	3,152,035
Red Snapper	2,110	1,150	2,334	8,019	47,668	78,617	52,112	87,785
Vermilion Snapper	0	872	234	11,372	2,409	51,676	2,643	63,920
Red Porgy	0	0	0	1,566	209	3,113	209	4,678
Goliath Grouper	645	6,473	25	287	997	9,517	1,667	16,277
Black Sea Bass	818	24,882	99	4,714	9,158	176,313	10,076	205,909
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	7,296	0	14,824	2,555	118,676	2,555	140,795
Bar Jack	0	1,421	0	252	0	3,997	0	5,669
Nassau Grouper	0	0	0	93	0	893	0	986
Hogfish	891	1,340	0	61	15,930	22,497	16,821	23,898
Yellowedge Grouper	0	0	0	64	182	535	182	599
Blueline Tilefish	0	0	0	375	0	0	0	375
Lesser Amberjack	0	0	0	86	0	305	0	391
Cubera Snapper	0	311	0	55	0	1,354	0	1,720
Atlantic Spadefish	2,348	71,524	88	111	0	11,529	2,436	83,165
Blue Runner	20,185	258,388	0	17,043	2,970	217,406	23,155	492,836
Warsaw Grouper	0	0	0	121	0	535	0	656
Scamp	0	0	0	1,503	0	3,048	0	4,551
Red Grouper	177	1,175	0	5,777	3,178	51,787	3,355	58,740
Speckled Hind	0	203	0	55	0	1,323	0	1,581

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-57. Average annual snapper grouper recreational effort, Georgia, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	7,361	33,213	920	8,746	22,246	81,163	30,527	123,122
Red Snapper	0	0	381	2,830	2,052	4,287	2,433	7,117
Vermilion Snapper	0	0	27	4,333	0	1,791	27	6,124
Red Porgy	0	0	0	572	0	556	0	1,128
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	0	9,265	368	6,140	4,376	33,532	4,744	48,938
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	0	0	2,783	0	2,932	0	5,715
Bar Jack	0	0	0	100	0	0	0	100
Nassau Grouper	0	0	0	0	0	0	0	0
Hogfish	0	0	0	10	0	0	0	10
Yellowedge Grouper	0	0	0	0	0	0	0	0
Blueline Tilefish	0	0	0	0	0	0	0	0
Lesser Amberjack	0	0	0	0	0	0	0	0
Cubera Snapper	0	0	0	27	0	0	0	27
Atlantic Spadefish	785	13,395	0	24	374	4,311	1,159	17,730
Blue Runner	0	0	0	86	0	321	0	407
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	0	421	0	245	0	666
Red Grouper	0	0	0	5	0	0	0	5
Speckled Hind	0	0	0	0	0	0	0	0

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-58. Average annual snapper grouper recreational effort, North Carolina, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	25,429	114,539	1,660	32,234	65,266	315,087	92,356	461,860
Red Snapper	0	0	0	658	0	550	0	1,208
Vermilion Snapper	0	0	0	6,074	153	6,202	153	12,275
Red Porgy	0	0	0	6,166	0	9,722	0	15,888
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	620	48,018	110	10,588	7,803	172,294	8,532	230,900
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	2,115	3,020	353	5,531	453	9,757	2,921	18,308
Bar Jack	0	0	0	0	0	71	0	71
Nassau Grouper	0	0	0	0	0	0	0	0
Hogfish	0	310	0	24	0	1,256	0	1,590
Yellowedge Grouper	0	0	0	30	0	0	0	30
Blueline Tilefish	0	0	494	9,199	844	5,049	1,338	14,247
Lesser Amberjack	0	0	0	205	0	95	0	301
Cubera Snapper	0	0	0	0	0	0	0	0
Atlantic Spadefish	198	24,529	0	0	1,736	6,819	1,934	31,349
Blue Runner	0	1,619	0	759	0	590	0	2,968
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	0	2,274	0	5,252	0	7,526
Red Grouper	0	0	503	5,035	0	14,320	503	19,355
Speckled Hind	0	0	0	0	51	0	51	0

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-59. Average annual snapper grouper recreational effort, South Carolina, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	10,837	27,160	4,377	17,596	94,351	176,928	109,565	221,684
Red Snapper	0	0	188	1,617	2,598	1,712	2,787	3,329
Vermilion Snapper	0	0	926	6,521	682	6,714	1,608	13,235
Red Porgy	0	0	0	2,010	0	2,401	0	4,412
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	0	8,441	3,236	14,688	21,596	131,397	24,832	154,526
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	0	0	1,257	330	4,277	330	5,535
Bar Jack	0	0	0	0	0	0	0	0
Nassau Grouper	0	0	0	45	0	0	0	45
Hogfish	0	0	0	27	0	407	0	434
Yellowedge Grouper	0	0	0	0	0	0	0	0
Blueline Tilefish	0	0	0	0	0	0	0	0
Lesser Amberjack	0	0	0	0	0	0	0	0
Cubera Snapper	0	0	0	0	0	0	0	0
Atlantic Spadefish	0	10,891	0	242	5,875	6,505	5,875	17,638
Blue Runner	0	0	0	142	1,646	749	1,646	892
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	256	513	0	2,240	256	2,753
Red Grouper	0	0	0	75	0	1,034	0	1,108
Speckled Hind	0	0	0	28	0	0	0	28

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Estimates of average annual recreational effort, 2005-2009, for dolphin and wahoo are provided in **Tables 3-60 to 3-67**. In each table, where appropriate, the "total" refers to the total number of target or catch trips, as appropriate, while "all trips" refers to the total number of trips regardless of target intent or catch success.

As might be expected, Florida dominates the other South Atlantic states in terms of the number of target or catch trips for dolphin and wahoo evaluations (**Tables 3-60** and **3-61**). At more than 887,000 trips per year (**Table 3-60**), target effort for dolphin is nearly as great as for all snapper grouper species combined. While target effort for wahoo is considerably less than for dolphin, at just more than 148,000 trips per year, it is still nearly three times greater than any individual snapper grouper species. Contrary to snapper grouper species, catch effort for dolphin and wahoo (**Table 3-61**) is considerably less than target effort (**Table 3-60**), at more than 540,000 and 44,000 days respectively.

The private mode is the dominant fishing mode for dolphin and wahoo target and catch trips (**Tables 3-62** and **3-63**). Accounting for approximately 95% of target effort and more than 70%

of catch effort, effort in the private mode far exceeds effort in the shore and charter modes combined for target and catch trips (**Tables 3-62** and **3-63**).

Table 3-60. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Species	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Dolphin	751,056	978	122,652	12,491	887,177	22,418,779
Wahoo	126,067	0	17,147	5,082	148,296	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-61. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Species	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Dolphin	346,493	1,461	181,842	10,603	540,399	22,418,779
Wahoo	23,065	103	19,589	1,673	44,430	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-62. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all states, 2005-2009.

	Mode				
	Shore	**Charter**	**Private**	**Total**	**All Trips**
Dolphin	748	47,726	838,704	887,177	22,418,779
Wahoo	0	6,678	141,617	148,296	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-63. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all states, 2005-2009.

	Mode				
	Shore	**Charter**	**Private**	**Total**	**All Trips**
Dolphin	210	124,581	415,609	540,399	22,418,779
Wahoo	0	12,597	31,833	44,430	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Tables 3-64 to 3-67 contain estimates of the average annual (2005-2009) dolphin and wahoo target trips and catch trips for each state and mode.

Table 3-64. Average annual dolphin and wahoo recreational effort, Florida, 2005-2009.

	Shore		Charter		Private		Total	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
Dolphin	612	0	17,296	24,748	733,148	321,744	751,056	346,493
Wahoo	0	0	2,242	1,764	123,825	21,301	126,067	23,065

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-65. Average annual dolphin and wahoo recreational effort, Georgia, 2005-2009.

	Shore		Charter		Private		Total	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
Dolphin	0	0	0	338	978	1,123	978	1,461
Wahoo	0	0	0	5	0	98	0	103

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-66. Average annual dolphin and wahoo recreational effort, North Carolina, 2005-2009.

	Shore		Charter		Private		Total	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
Dolphin	136	210	29,054	96,484	93,462	85,149	122,652	181,842
Wahoo	0	0	4,333	10,677	12,814	8,912	17,147	19,589

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-67. Average annual dolphin and wahoo recreational effort, South Carolina, 2005-2009.

	Shore		Charter		Private		Total	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
Dolphin	0	0	1,375	3,010	11,116	7,593	12,491	10,603
Wahoo	0	0	103	152	4,979	1,521	5,082	1,673

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Analysis of recreational effort at the individual species or species group level is not possible for the headboat sector because the headboat data are not collected at the angler level. Estimates of effort in the headboat sector are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. The average annual (2005-2009) number of headboat angler days is presented in **Table 3-68**. Due to confidentiality issues, Georgia estimates are combined with those of Florida. As shown in **Table 3-68**, the total (across all states) average number of headboat angler days has been variable but generally declining since 2005.

Table 3-68. Southeast headboat angler days, 2005-2009.

	South Atlantic			
	Florida/ Georgia	**North Carolina**	**South Carolina**	**Total**
2005	171,078	31,573	34,036	236,687
2006	175,522	25,736	56,074	257,332
2007	157,150	29,002	60,729	246,881
2008	124,119	16,982	47,287	188,388
2009	136,420	19,468	40,919	196,807
Average	152,858	24,552	47,809	225,219

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

3.8.2.3 Permits

For-hire vessels are required to have a for-hire snapper grouper permit to fish for or possess snapper grouper species in the South Atlantic EEZ. The number of vessels with for-hire snapper grouper permits for the period 2005-2009 is provided in **Table 3-69**. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners obtain open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued for the South Atlantic snapper grouper fishery increased from 1,904 permits in 2005 to 2,104 permits in 2008, but decreased slightly to 2,091 in 2009. The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. Many vessels with South Atlantic for-hire snapper grouper permits were homeported in states outside of South Atlantic Council's area of jurisdiction, particularly in Alabama and Texas. Although the number of vessels with South Atlantic for-hire snapper grouper permits homeported in states outside of South Atlantic Council's area of jurisdiction increased from 2005 to 2009, they still account for approximately the same proportion (9-10%) of the total number of permits.

For-hire vessels are required to have a for-hire dolphin/wahoo permit to fish for or possess dolphin/wahoo species in the South Atlantic EEZ. The number of vessels with for-hire dolphin/wahoo permits for the period 2005-2009 is provided in **Table 3-70**. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners obtain open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued for the South Atlantic dolphin/wahoo fishery increased from 1,453 permits in 2005 to 2,294 permits in 2009, or by nearly 58%. Most of the increase occurred in 2006 and 2007. The majority of dolphin/wahoo for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. The South Atlantic Council manages dolphin and wahoo throughout the Eastern seaboard (i.e., Maine to Florida). Since relatively few vessels were homeported in states outside of South Atlantic Council's area of jurisdiction, the proportion of vessels with for-hire homeported outside the South Atlantic Council's area of jurisdiction is also relatively small (approximately 3%).

Table 3-69. Number of South Atlantic for-hire snapper grouper vessel permits

Homeport State	2005	2006	2007	2008	2009	Avg.
Florida	1,267	1,304	1,312	1,310	1,280	1,295
North Carolina	294	317	353	399	391	351
South Carolina	136	142	152	160	167	151
Alabama	52	42	37	39	42	42
Georgia	37	36	37	39	42	38
Texas	36	30	31	33	30	32
Other States	82	96	104	124	139	109
Total	1,904	1,967	2,026	2,104	2,091	2,018

Table 3-70. Number of South Atlantic for-hire dolphin/wahoo vessel permits

Homeport State	2005	2006	2007	2008	2009	Avg.
Florida	800	1,019	1,147	1,190	1,190	1,069
North Carolina	324	391	434	468	468	417
South Carolina	90	118	145	158	158	134
Maryland	48	70	88	107	107	84
Delaware	39	64	74	82	82	68
New Jersey	36	61	73	78	78	65
Georgia	23	28	33	42	42	34
Other States	93	123	152	169	169	141
Total	1,453	1,874	2,146	2,294	2,294	2,012

For-hire permits do not distinguish charterboats from headboats. Based on a 1997 survey, Holland *et al.* (1999) estimated that a total of 1,080 charter vessels and 96 headboats supplied for-hire services in all South Atlantic fisheries during 1997. By 2010, the estimated number of headboats supplying for-hire services in all South Atlantic fisheries had fallen to 85, indicating a decrease in fleet size of approximately 11% between 1997 and 2010 (K. Brennan, Beaufort Laboratory, SEFSC, personal communication, Feb. 2011).

3.8.2.4 Economic Value, Expenditures, and Economic Activity

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus (cs). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips.

Estimates of the economic value of a day of saltwater recreational fishing in the South Atlantic indicate that the mean value of access per marine recreational fishing trip is $109.31 for the South Atlantic (Haab *et al.* 2001). While this estimate is not specific to snapper grouper fishing trips, it may shed light on the magnitude of an angler's willingness to pay for this type of recreational experience.

Willingness to pay for an incremental increase in catch and keep rates per trip was also estimated to be $3.01 for bottom fish snapper grouper species by Haab *et al.* (2001). Whitehead *et al.* (2001) estimated the marginal willingness to pay to avoid a one fish red snapper bag limit decrease to be $1.06 to $2.20. Finally, Haab *et al.* (2001) provided a compensating variation (the amount of money a person would have to receive to be no worse off after a reduction of the bag limit) estimate of $2.49 per fish when calculated across all private boat anglers that targeted snapper grouper snapper grouper species in the South Atlantic.

In their study of the North Carolina for-hire fishery, Dumas *et al.* (2009) estimated several measures of consumer surplus for anglers fishing through the for-hire mode. Anglers were distinguished as to whether fishing was their primary or secondary purpose for taking the trip to the coasts. An additional snapper grouper caught and kept would generate consumer surplus of $93.51 per trip for primary purpose anglers and $60.79 per trip for secondary purpose anglers. Consumer surplus per site per trip for primary purpose anglers ranged from $4.88 to $27.03 in charter trips taken in federal waters, or from $0.35 to $9.55 in charter trips taken in state waters. The corresponding range of values for secondary purpose anglers was $0.24 to $16.62 for charter trips in federal waters, or $0.12 to $16.54 for charter trips in state waters. On headboat trips in both state and federal waters, consumer surplus per site per trip ranged from $0.59 to $4.12 for primary purpose anglers and from $0.48 to $4.76 for secondary purpose anglers. Consumer surplus for the opportunity to take a for-hire fishing trip was estimated at $624.02 per angler per trip on charterboats and $101.64 per anger per trip on headboats.

In addition to the above economic values, there are estimates of the economic value of a red snapper and a red snapper trip provided in the red snapper interim rule for the South Atlantic (NOAA 2008). Although these values are derived for the Gulf of Mexico recreational fishery, they can be used as proxy values for the South Atlantic fishery. However, red snapper is a significantly more important recreational target fishery in the Gulf of Mexico than in the South Atlantic. As a result, the estimates of economic value may overstate the true values for the South Atlantic. The estimated CS to a recreational angler of one red snapper is $6.04, while the estimated CS of a red snapper fishing trip is $53.53.

Most recently, the NMFS Southeast Fisheries Science Center (NMFS 2009b) developed estimates of consumer surplus per angler trip based on various studies and data in the last ten years. These estimates were culled from various studies – Haab *et al.* (2009), Dumas *et al.* (2009), and NOAA SEFSC SSRG (2009). The values/ranges of consumer surplus estimates are (in 2009 dollars) $112 to $128 for red snapper, $123 to $128 for grouper, $11 for other snappers, and $80 for snapper grouper. These values were deemed directly applicable in assessing the changes in consumer surplus due to management measures in Amendment 17B (SAFMC 2010b). The range of consumer surplus estimates for dolphin (in 2009 dollars) is $40 to $412 (Haab, *et al*. 2009). Comparable estimates for wahoo are not currently available.

While anglers receive economic value as measured by the cs associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus (PS) is the measure of the economic value these operations receive. PS is the difference between the revenue a business receives for a good or service, such as a charter or headboat trip, and the cost the business incurs to provide that good or service. Estimates of the PS associated with for-hire trips are not available. However, proxy values in the form of net operating revenues are also provided in NMFS (2008). These values are not PS estimates because they are not net of crew costs and returns to the owner. The estimated net operating revenues per angler trip for the for-hire sector are $162 for a charterboat trip and $78 for a headboat trip.

The NOAA Fisheries Service Southeast Fisheries Science Center recently provided estimates of charterboat and headboat net operating revenues for various areas in the Southeast (NMFS 2009). These estimates were culled from several studies – Liese *et al.* (2009), Dumas *et al.* (2009), Holland *et al.* (1999), and Sutton *et al.* (1999). Estimates of net operating revenue per angler trip (2009 dollars) on representative charter trips are $135 for east Florida, $146 for Louisiana through east Florida, $156 for northeast Florida, and $128 for North Carolina. For charter trips into the EEZ only, net operating revenues are $141 in east Florida and $148 in northeast Florida. For full day and overnight trips only, net operating revenues are $155-160 in North Carolina.

Net operating revenues per angler trip are lower for headboats than for charterboats. Net operating revenue estimates for a representative headboat trip are $48 in the Gulf of Mexico (All States and all of Florida), $63-$68 in North Carolina. For full day and overnight headboat trips, net operating revenues are $74-$77 in North Carolina. Comparable estimates are not available for Georgia and South Carolina.

These valuation estimates should not be confused with angler expenditures or economic activity (impacts) associated with these expenditures. While expenditures for a specific good or service may represent a proxy or lower bound of value (a person would not logically pay more for something than it was worth to them), they do not represent the net value (benefits minus cost), nor the change in value associated with a change in the fishing experience.

Estimates of the economic activity (impacts) associated with the recreational snapper grouper fishery were derived using average coefficients for recreational angling across all fisheries (snapper grouper species), as derived by an economic add-on to the MRFSS, and described and utilized in NMFS (2009a). Business activity is characterized in the form of FTE jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values. Neither income nor value-added impacts should be added to output (sales) impacts because this would result in double counting. Job and output (sales) impacts, however, may be added across sectors.

Estimates of the average expenditures by recreational anglers are provided in NMFS (2009a) and are incorporated herein by reference. Estimates of the average recreational effort (2005-2009) and associated economic impacts (2008 dollars) are provided in **Tables 3-61 to 3-63**. Target trips were used as the measure of recreational effort. As previously discussed, more trips may catch a snapper grouper species than target the snapper grouper species. Where such occurs, estimates of the economic activity associated with the average number of catch trips can be calculated based on the ratio of catch trips to target trips because the average output impact and jobs per trip cannot be differentiated by trip intent. For example, if the number of catch trips were three times the number of target trips for a particular state and mode, the estimate of the associated business activity would equal three times the estimate associated with target trips. **Tables 3-56 to 3-59** contain estimates of the average annual (2005-2009) target trips and catch trips, by snapper grouper species or snapper grouper species group, for each state and mode.

It should be noted that output impacts and value added impacts are not additive and the impacts for individual snapper grouper species should not be added because of possible duplication (some trips may target multiple snapper grouper species). Also, the estimates of economic activity should not be added across states to generate a regional total because state-level impacts reflect the economic activity expected to occur within the state before the revenues or expenditures "leak" outside the state, possibly to another state within the region. Under a regional model, economic activity that "leaks" from, for example, Florida into Georgia would still occur within the region and continue to be tabulated. As a result, regional totals would be expected to be greater than the sum of the individual state totals. Regional estimates of the economic activity associated with the fisheries for these snapper grouper species are unavailable at this time.

The distribution of the estimates of economic activity by state and mode are consistent with the effort distribution with the exception that charter anglers, on average, spend considerably more money per trip than anglers in other modes. As a result, the number of charter trips can be a fraction of the number of private trips, yet generate similar estimates of the amount of economic activity. For example, as derived from **Table 3-71**, the average number of charter snapper grouper target trips in Florida (32,165 trips) was only approximately 7% of the number of private trips (475,789), whereas the estimated output (sales) impacts by the charter anglers (approximately $12.6 million) was approximately 70% of the output impacts of the private trips (approximately $18.0 million).

Table 3-71. Summary of snapper grouper target trips (2005-2009 average) and associated economic activity (2008 dollars) by state and mode.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	25,429	10,837	7,361	225,948
Output Impact	$6,369,109	$1,103,510	$118,570	$6,454,791
Value Added Impact	$3,546,665	$614,461	$71,098	$3,747,360
Jobs	77	14	1	68
	Private/Rental Mode			
Target Trips	65,266	94,351	22,246	475,789
Output Impact	$3,562,445	$4,151,262	$347,565	$17,992,032
Value Added Impact	$2,008,752	$2,422,205	$210,827	$10,751,195
Jobs	38	47	3	189
	Charter Mode			
Target Trips	1,660	4,377	920	32,165
Output Impact	$646,211	$1,476,045	$57,835	$12,605,516
Value Added Impact	$362,655	$833,905	$33,755	$7,421,221
Jobs	8	19	1	130
	All Modes			
Target Trips	92,355	109,565	30,527	733,902
Output Impact	$10,577,764	$6,730,817	$523,970	$37,052,338
Value Added Impact	$5,918,072	$3,870,571	$315,679	$21,919,776
Jobs	123	80	5	387

Source: effort data from the MRFSS, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009a).

Table 3-72. Summary of SWG target trips (2005-2009 average) and associated economic activity (2008 dollars). SWG = gag, red grouper, scamp, black grouper, yellowfin grouper, and speckled hind.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	0	0	0	1,749
Output Impact	$0	$0	$0	$49,965
Value Added Impact	$0	$0	$0	$29,007
Jobs	0	0	0	1
	Private/Rental Mode			
Target Trips	1,261	1,436	0	36,742
Output Impact	$68,830	$63,181	$0	$1,389,404
Value Added Impact	$38,811	$36,865	$0	$830,243

Table 3-72. Continued. Summary of SWG target trips (2005-2009 average) and associated economic activity (2008 dollars).

	North Carolina	South Carolina	Georgia	Florida
Jobs	1	1	0	15
	Charter Mode			
Target Trips	0	358	0	875
Output Impact	$0	$120,727	$0	$342,914
Value Added Impact	$0	$68,206	$0	$201,883
Jobs	0	2	0	4
	All Modes			
Target Trips	1,261	1,794	0	39,366
Output Impact	$68,830	$183,909	$0	$1,782,283
Value Added Impact	$38,811	$105,071	$0	$1,061,133
Jobs	1	2	0	19

Source: effort data from the MRFSS, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009a).

Table 3-73. Summary of SW snapper target trips (2005-2009 average) and associated economic activity (2008 dollars). SW snapper = yellowtail snapper, gray snapper, lane snapper, and mutton snapper.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	0	0	0	51,466
Output Impact	$0	$0	$0	$1,470,260
Value Added Impact	$0	$0	$0	$853,567
Jobs	0	0	0	16
	Private/Rental Mode			
Target Trips	0	0	0	112,291
Output Impact	$0	$0	$0	$4,246,301
Value Added Impact	$0	$0	$0	$2,537,390
Jobs	0	0	0	45
	Charter Mode			
Target Trips	0	0	0	2,555
Output Impact	$0	$0	$0	$1,001,309
Value Added Impact	$0	$0	$0	$589,499
Jobs	0	0	0	10

Table 3-73. Continued. Summary of SW snapper target trips (2005-2009 average) and associated economic activity (2008 dollars).

	North Carolina	South Carolina	Georgia	Florida
	All Modes			
Target Trips	0	0	0	166,312
Output Impact	$0	$0	$0	$6,717,869
Value Added Impact	$0	$0	$0	$3,980,455
Jobs	0	0	0	71

Source: effort data from the MRFSS, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009a).

Table 3-74. Summary of dolphin target trips (2005-2009 average) and associated economic activity (2008 dollars).
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	136	0	0	612
Output Impact	$34,063	$0	$0	$17,483
Value Added Impact	$18,968	$0	$0	$10,150
Jobs	0	0	0	0
	Private/Rental Mode			
Target Trips	93,462	11,116	978	733,148
Output Impact	$5,101,480	$489,083	$15,280	$27,724,100
Value Added Impact	$2,876,567	$285,373	$9,269	$16,566,623
Jobs	55	6	0	291
	Charter Mode			
Target Trips	29,054	1,375	0	17,296
Output Impact	$11,310,242	$463,688	$0	$6,778,331
Value Added Impact	$6,347,330	$261,965	$0	$3,990,594
Jobs	144	6	0	70
	All Modes			
Target Trips	122,652	12,491	978	751,056
Output Impact	$16,445,786	$952,770	$15,280	$34,519,914
Value Added Impact	$9,242,865	$547,338	$9,269	$20,567,367
Jobs	199	11	0	361

Source: effort data from the MRFSS, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009a).

Table 3-75. Summary of wahoo target trips (2005-2009 average) and associated economic activity (2008 dollars).
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	0	0	0	0
Output Impact	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0
Jobs	0	0	0	0
	Private/Rental Mode			
Target Trips	12,814	4,979	0	123,825
Output Impact	$699,433	$219,066	$0	$4,682,461
Value Added Impact	$394,388	$127,822	$0	$2,798,019
Jobs	8	2	0	49
	Charter Mode			
Target Trips	4,333	103	0	2,242
Output Impact	$1,686,765	$34,734	$0	$878,643
Value Added Impact	$946,616	$19,624	$0	$517,282
Jobs	21	0	0	9
	All Modes			
Target Trips	17,147	5,082	0	126,067
Output Impact	$2,386,198	$253,801	$0	$5,561,104
Value Added Impact	$1,341,004	$147,446	$0	$3,315,301
Jobs	29	3	0	58

As previously noted, the values provided in **Tables 3-71 to 3-75** only reflect effort derived from the MRFSS. Because the headboat sector in the Southeast is not covered by the MRFSS, the results in **Tables 3-71 to 3-75** do not include estimates of the economic activity associated with headboat anglers. While estimates of headboat effort are available (see **Table 3-68**), species target information is not collected in the Headboat Survey, which prevents the generation of estimates of the number of headboat target trips for individual snapper grouper, dolphin, or wahoo species. Further, because the model developed for NMFS (2009a) was based on expenditure data collected through the MRFSS, expenditure data from headboat anglers was not available and appropriate economic expenditure coefficients have not been estimated. As a result, estimates of the economic activity associated with the headboat sector comparable to those of the other recreational sector modes cannot be provided.

3.8.3 Social and Cultural Environment

The demographic description of the social environment is presented primarily at the county level and will include a brief discussion of the communities within in those counties that are most reliant upon the various species, both commercially and recreationally. Utilizing demographic data at the county level will allow for updated statistics from the Census Bureau which produces estimates for geographies (counties; minor civil divisions; census designated places, etc.) that are larger than 20,000 prior to the decennial census.[2] Estimates for smaller geographies are not available at this time. Because employment opportunities often occur within a wider geographic boundary than just the community level, a discussion of various demographics within the county is appropriate and will be used to address environmental justice concerns. A more detailed description of environmental justice concerns will be included at the end of this section. The county descriptions will correspond with recent research that was also conducted at the county level concerning social vulnerability and is described below.

The county-level description will focus primarily on the demographic character while fishing activity at the community level will be described where possible. The following is a brief discussion of coastal growth and development that seems to affect many coastal communities, especially those with either or both commercial and recreational working waterfronts that might be reflected in those demographic statistics. The rapid disappearance of these types of waterfronts has important implications as the disruption of various types of fishing-related businesses and employment. The process of "gentrification," which tends to push those of a lower socio-economic class out of traditional communities as property values and taxes rise has become common along coastal areas of the U.S. and around the world. This is especially true for Monroe County, which has very limited land area and has seen a steady rise in land values. Recent research on the Key's communities (Shivlani 2009) has described the problem of increasing land values and disappearance of working waterfronts, especially for communities like Key West. Working waterfronts tend to be displaced with development that is often stated as the "highest and best" use of waterfront property, but often is not associated with water-dependent occupations. However, with the continued removal of these types of businesses over time the local economy becomes less diverse and more reliant on the service sector and recreational tourism. As home values increase, people within lower socio-economic strata find it difficult to live within these communities and eventually must move. Consequently, they spend more time and expense commuting to work, if jobs continue to be available. Newer residents often have no association with the water-dependent employment and may see that type of work and its associated infrastructure as unappealing. They often do not see the linkage between those occupations and the aesthetics of the community that produced the initial appeal for many migrants. The demographic trends within counties can provide some indication as to whether these types of coastal change may be occurring if an unusually high rate of growth or change in the demographic character of the population is present. A rise in education levels, property values, fewer owner occupied properties and an increase in the median age can at times indicate a growing process of gentrification.

Although the most recent estimates of census data have been used here, many of the statistics related to the economic condition of counties or communities do not capture the recent downturn in the economy, which may have significant impacts on current employment opportunities and business operations. Therefore, in the descriptions of both counties and communities, it should be understood that in terms of unemployment, the current conditions could be worse than

[2] American Community Survey estimates are based on data collected over a three year time period. The estimates represent the average characteristics of population and housing between January 2006 and December 2008 and do not represent a single point in time. Because these data are collected over three years, they include estimates for geographic areas with populations of 20,000 or more.

indicated by the estimates used here. To be consistent, census data are used for the various demographic characteristics and as noted earlier are limited to the most recent estimates which are an average for 2006-2008. Other aspects of trade and market forces as a result of the economic downturn could also affect the business operations of vessels, dealers, wholesalers and retail seafood businesses for the commercial sector and charter services and other support services for the recreational fishery. These may not be reflected in the demographic profile provided here.

3.8.3.1 Marine Related Employment

Other county level tables provide summaries of marine related employment within the coastal counties of the South Atlantic states. These estimates provide the number of sole proprietors (# Prop) and the number of employed persons (# Emp) for various sectors associated with employment in the marine environment. These categories were chosen because the occupations that are represented within each sector often include fishing related activities or fishing related support activities. For instance, the sector entitled Scenic Water includes charter fishermen within its estimate. The sector Shipping includes various shipping containers that would be used by fish houses and others to handle seafood. While these estimates do not encompass all employment related to fishing and its support activities, they do provide some approximation of the amount of activity associated with employment related to both recreational and commercial fishing.

3.8.3.2 Social Vulnerability

Recent research has identified counties along the South Atlantic Coast that may be vulnerable to a variety of coastal hazards through the use of what has been called the Social Vulnerability Index (SoVI) (Cutter et al. 2003). The Index was created by the Hazards Research Lab at the University of South Carolina to understand how places that are susceptible to coastal hazards might also exhibit vulnerabilities to social change or disruptions (http://webra.cas.sc.edu/hvri/products/sovi.aspx#).

These vulnerabilities may come in the form of high unemployment, high poverty rates, low education and other demographic characteristics. In fact, the SoVI is an index that consists of 32 different variables combined into one comprehensive index to measure social vulnerability. Although the SoVI was created to understand social vulnerability to coastal environmental hazards, it can also be interpreted as a general measure of vulnerability to other social disruptions, such as adverse regulatory change or manmade hazards. This does not mean that there will be adverse effects, only that there may be a potential for adverse effects under the right circumstances. Fishing communities in these counties may have more difficulty adjusting to regulatory changes if those impacts affect employment or other critical social capital. At present, a social vulnerability index is being created for fishing communities in the Southeast region with more timely data (the SoVI uses 2000 census data). Until that index is completed, the SoVI will substitute at the county level for a measure of vulnerability for those communities that are within the boundaries of a particular coastal county. This concept is closely tied to environmental justice and the thresholds that are addressed with regard to that concept.

3.8.3.3 Fishing Communities

The communities listed in figures below represent a categorization of communities based upon their overall value of local commercial landings divided by the overall value of South Atlantic commercial landings. These data were assembled from the ALS, which includes all species from both state and federal waters landed in 2008. All communities were ranked on this "local quotient" and divided by those who were above the mean and those below. Those above the mean were then divided into thirds with the top tier classified as Primarily Involved in fishing; the second tier classified as Secondarily Involved; and the third classified as being Tangentially Involved. The communities included within each state map were only those communities that were categorized as Primarily or Secondarily Involved. This breakdown of fisheries involvement is similar to the how communities were categorized in the community profiling of South Atlantic fishing communities (Jepson et al. 2005). However, the categorization within the community profiles included other aspects associated with fishing such as infrastructure and other measures to determine a community's status with regard to reliance upon fishing.

In many cases, descriptions of fishing communities are including only if they have substantial landings of species relevant to this amendment. Many communities have been identified as being primarily or secondarily involved in fishing within each state, however, to conserve space all communities are not profiled within this document.

3.8.3.4 Florida Counties

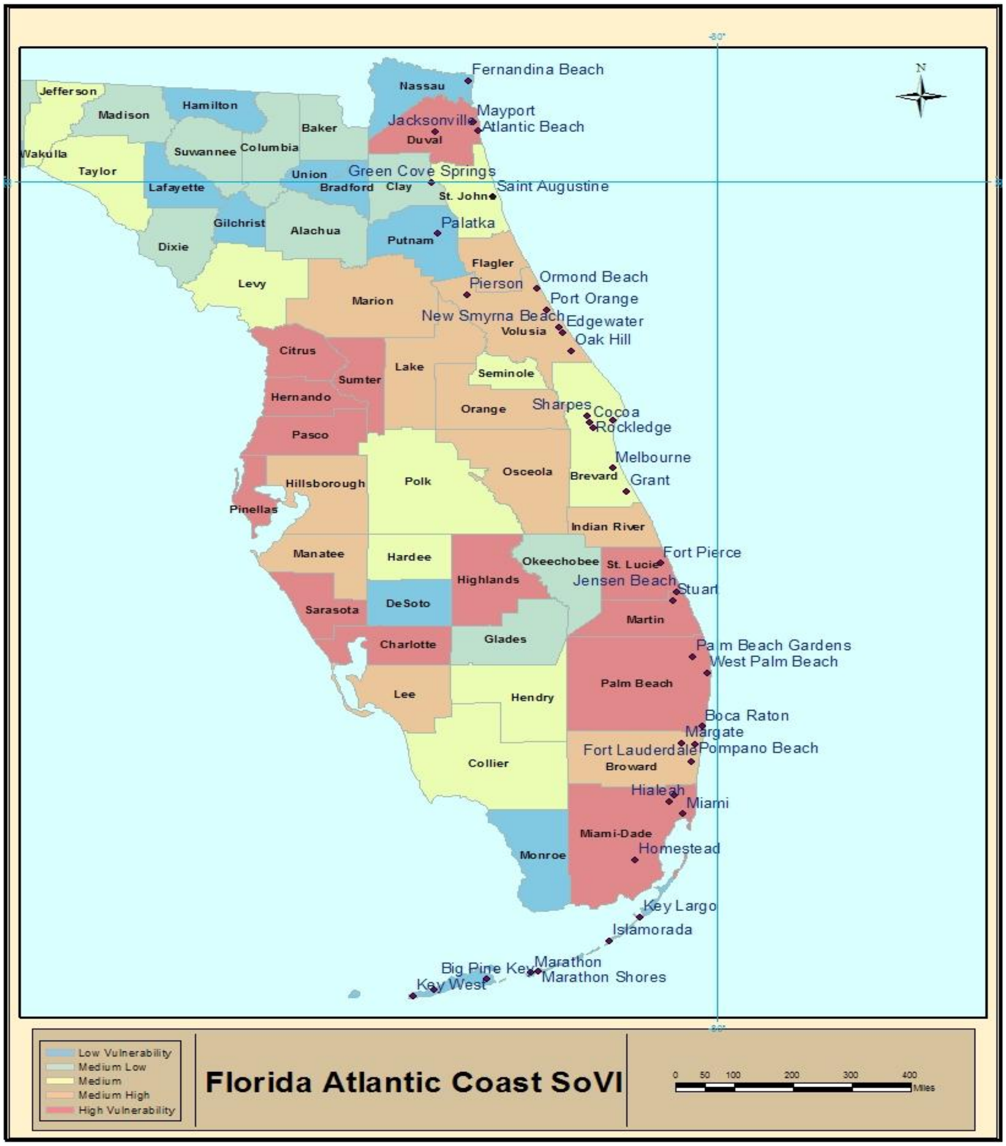


Figure 3-4. The Social Vulnerability Index applied to Florida Counties with Fishing Communities.
Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in the Florida that were categorized as having high social vulnerability using the SoVI are: Miami-Dade, Palm Beach, Martin, St. Lucie, and Duval; those counties with medium high social vulnerability are: Broward, Indian River, Volusia and Flagler. Much of the Florida eastern coast is classified as either medium high or high social vulnerability. This is likely due to the fact that there are a high number of retirees and a high number of minorities in these counties, especially in south Florida. In terms of environmental justice, which looks at the number of minorities and poverty in relation to the state, the only counties that exceed the thresholds are Miami-Dade for both poverty and minority population while Broward exceeds the threshold for the latter only.

Marine related employment is an important part of the economy for Florida's east coast as harvesting and selling seafood, tourism, recreational fishing and boat building are all important and related sectors. **Table 3-76** provides the number of proprietors and employees for marine related employment for the Atlantic coastal counties in Florida.

Table 3-76. Marine Related Employment for 2007 in Florida East Coast Counties. Source: Census Bureau 2010.

Florida County	Nassau		Duval		St. Johns		Flagler		Volusia		Brevard	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	0	.	19	.	19	.	7	.	11	.	26	.
Seafood Dealers	.	14	.	92	.	6	.	14	.	16	.	75
Seafood Harvesters	59	.	199	.	103	.	17	.	183	.	282	.
Seafood Retail	.	4	20	60	0	5	0	2	.	.	0	7
Marinas	.	18	.	216	.	19	.	21	.	137	.	223
Processors	0	.	12	210	0	.	0	.	.	.	0	27
Scenic Water	.	8	.	27	.	6	.	1	.	50	.	22
Ship Boat Builders	.	.	.	827	.	333	.	692	.	758	.	846
Shipping Support	.	82	.	1598	.	6	.	1	.	38	.	193
Shipping		8	.	1522	.	.	.	1	.	15	.	137

<u>Nassau County</u>

Nassau County had a total population of 67,663 in 2000 that is estimated to have grown to 68,186 by 2007. Population density was 103 persons per square mile in 2000 and has grown to 105 persons in 2007. The majority of county residents were White (89.5) and the Hispanic population was 2.6 % in 2007. The percent of population that identified themselves as White alone was 87.0% and 8.3% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16% Black. The median age for residents of Nassau County was estimated to have been 41.2, so Nassau County's median age is slightly older than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $59,072, higher than that for the state which was $48,637. There was an estimated 6.0% of the population in the civilian force that was estimated to be unemployed in Nassau County, which was just below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 7.9% which was lower than the 12.6% for the state as a whole during 2007. Nassau County had a higher owner occupied housing rate higher than the state with 77.7% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

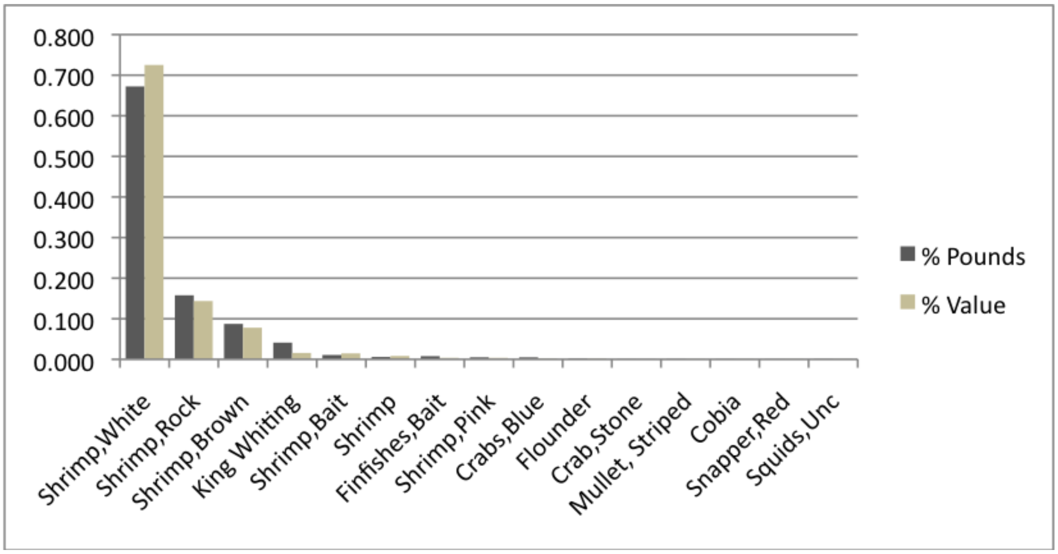


Figure 3-5. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fernandina Beach, Florida.

The only community identified in Nassau County as being either primarily or secondarily involved in fishing was Fernandina Beach. As shown in **Figure 3-5** the majority of landings and value are derived from shrimp with the other top species constituting less than 3%.

Duval County

Duval County had a total population of 778,866 in 2000 that is estimated to have grown to 846,237 by 2007. Population density was 1022 persons per square mile in 2000 and has grown to 1114 persons in 2007. The majority of county residents were White (65.0) and the Hispanic population was 6.1 % in 2007. The percent of population that identified themselves as White alone was 59.5% and 29.9% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of Duval County was estimated to have been 36.3, so Duval County's median age is younger than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $50,301, higher than that for the state which was $48,637. There was an estimated 6.5 % of the population in the civilian force that was estimated to be unemployed in Duval County, which was slightly higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 12.7% which was almost equal to the 12.6% for the state as a whole during 2007. Duval County had a lower owner occupied housing rate higher than the state with 64.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

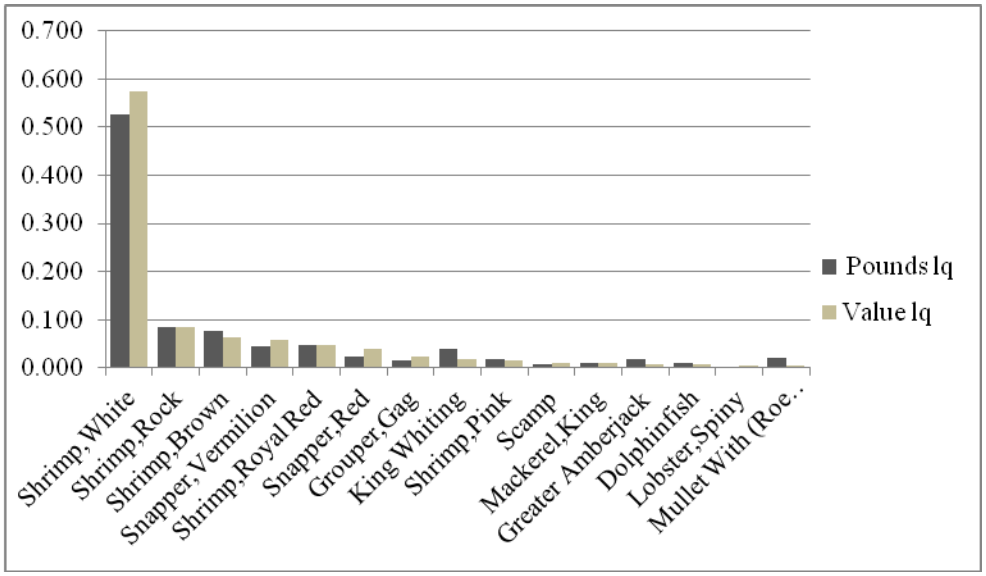


Figure 3-6. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mayport, Florida.
Source: ALS 2008

The top species with a high local quotient landed in Mayport is white shrimp, other species like vermilion snapper and red snapper both have a local quotient of lbs and value that are over 3% for each of those species (**Figure 3-6**).

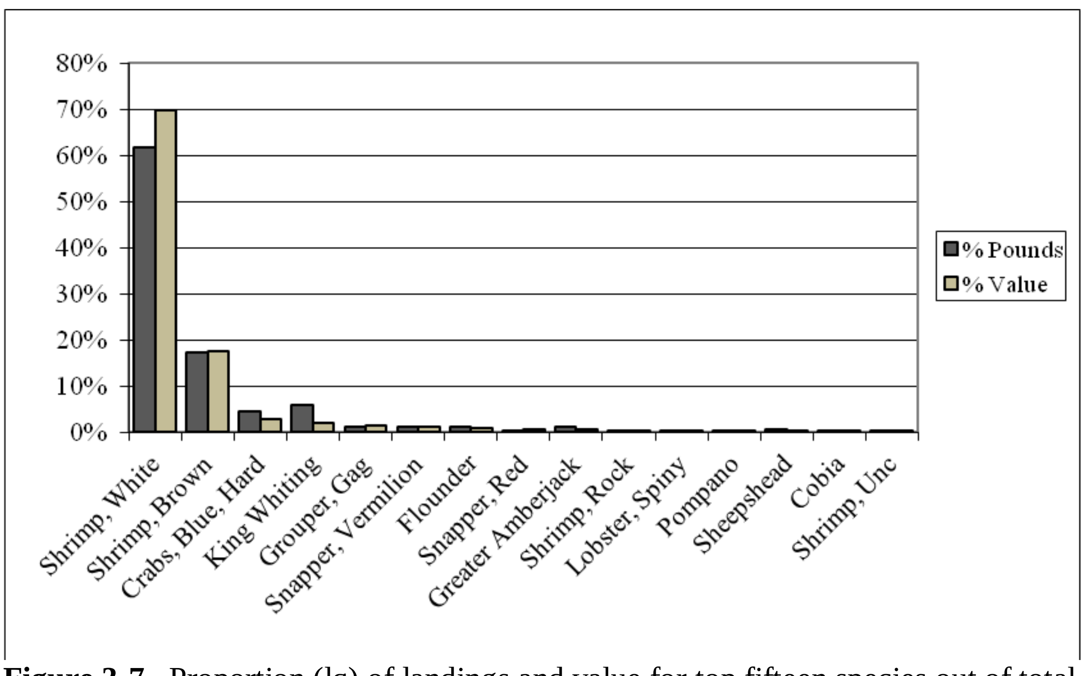


Figure 3-7. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Atlantic Beach, Florida.
Source: ALS 2008

The local quotient for landing and value for species other than shrimp as depicted in **Figure 3-7** are relatively low for Atlantic Beach. Gag grouper, vermilion snapper and red snapper make up less than 3% of the local quotient combined.

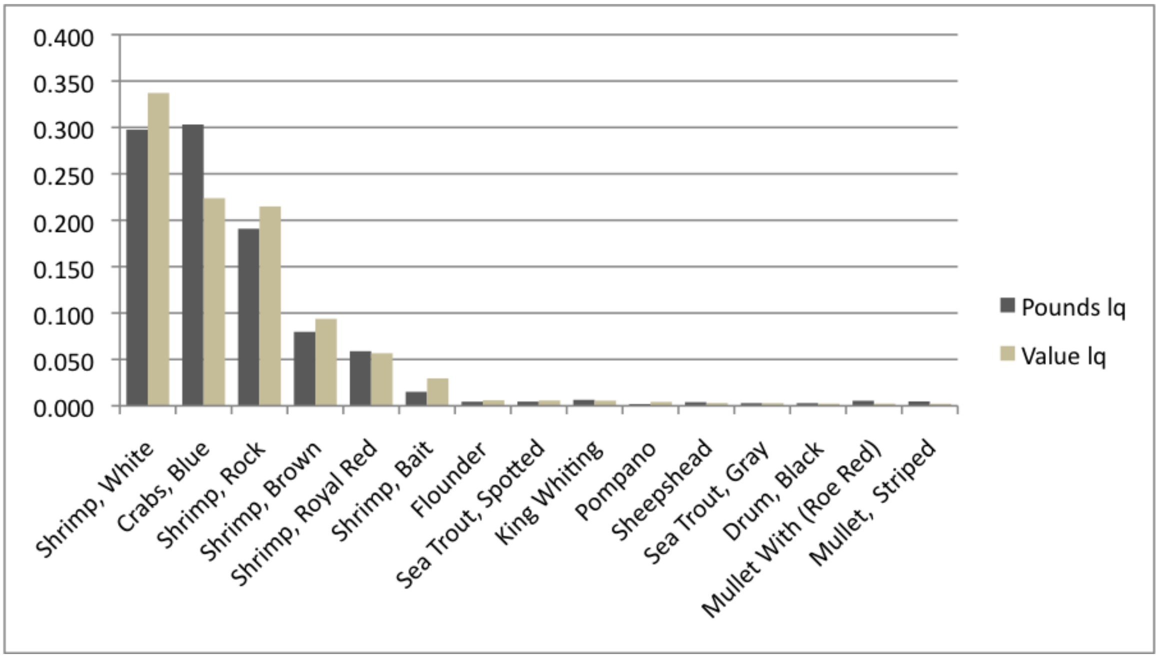


Figure 3-8. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Jacksonville, Florida.
Source: ALS 2008

Jacksonville much like the other communities in Duval County is heavily reliant upon shrimp as shown in **Figure 3-8.** Most other species makeup less than 2% individually in local quotient , out of total value for the community.

Duval County is classified as being highly vulnerable on the social vulnerability scale, however, it will depend upon whether or not communities within this county are affected by the alternatives within this amendment. Of those communities above, Mayport and Atlantic Beach are the only communities that have landings and value of snapper grouper species within the top fifteen.

St. Johns County

St. Johns County had a total population of 123,148 in 2000 that is estimated to have grown to 174,959 by 2007. Population density was 205 persons per square mile in 2000 and has grown to 292 persons in 2007. The majority of county residents were White (90.7) and the Hispanic population was 4.4 % in 2007. The percent of population that identified themselves as White alone was 86.2% and 6.7% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of St. Johns County was estimated to have been 40.7, so St. Johns County's median age is almost equal to the state's 40.1 as a whole. Median household income for 2007 was estimated to be $63,927, much higher than that for the state which was $48,637. There was an estimated 5.6 % of the population in the civilian force that was estimated to be unemployed in St. Johns County, which was below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 7.4% which was much lower than the 12.6% for the state as a whole during 2007. St. Johns County had a higher owner occupied housing rate higher than the state with 76.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

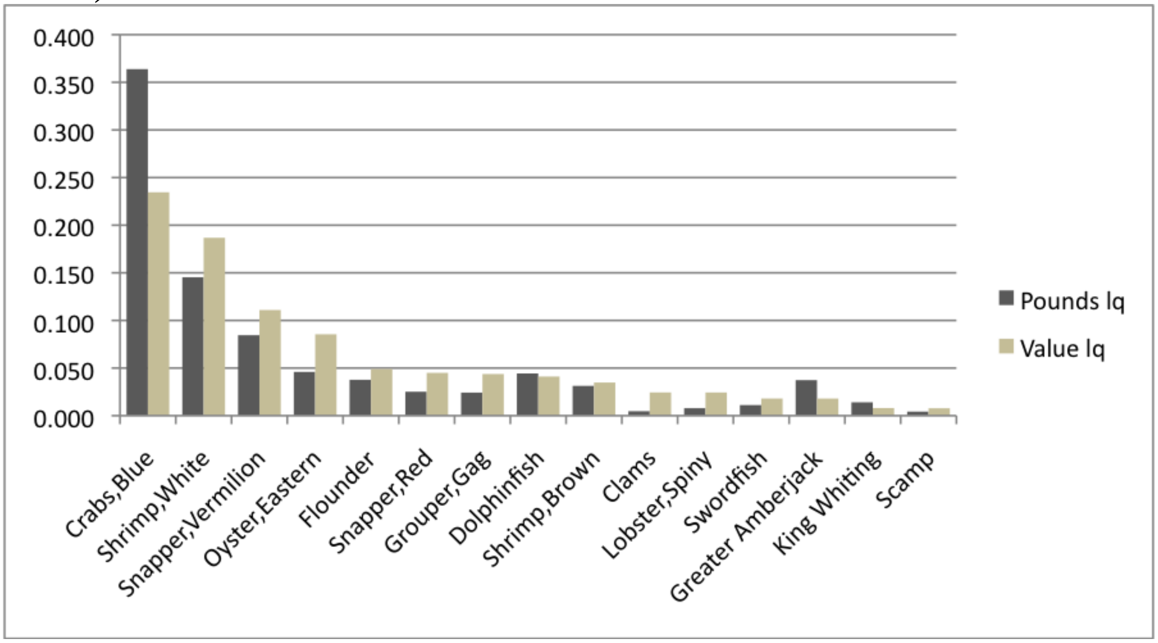


Figure 3-9. Proportion (lq) of landings and value for top fifteen species out of total landings and value for St. Augustine, Florida.
Source: ALS 2008

The community of St. Augustine has several snapper grouper species with a local quotient of landings and value of over 3%. Vermilion snapper, red snapper and gag grouper all contribute at least 4% of value lq each, with vermilion snapper contributing over 10% of value according to **Figure 3-9.**

Flagler County

Flagler County had a total population of 49,832 in 2000 that is estimated to have grown to 87,233 by 2007. Population density was 101 persons per square mile in 2000 and has grown to 182 persons in 2007. The majority of county residents were White (86.0) and the Hispanic population was 8.0 % in 2007. The percent of population that identified themselves as White alone was 78.2% and 11.2% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of Flagler County was estimated to have been 43.9, so Flagler County's median age is higher than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $45,674, lower than that for the state which was $48,637. There was an estimated 5.0 % of the population in the civilian force that was estimated to be unemployed in Flagler County, which was below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was just lower than the 12.6% for the state as a whole during 2007.

Flagler County had a higher owner occupied housing rate higher than the state with 77.0% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

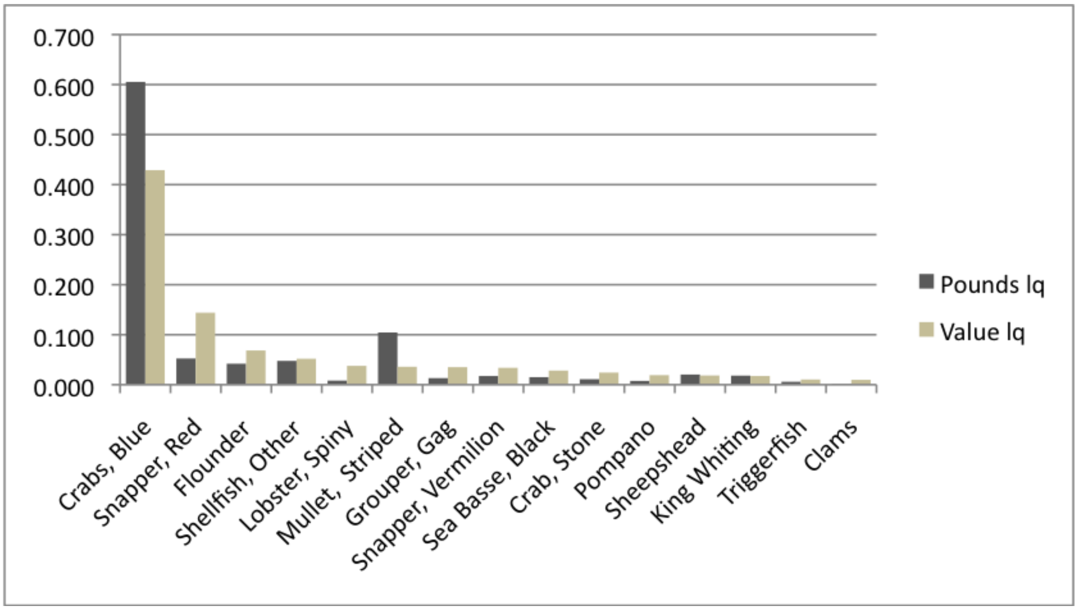


Figure 3-10. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Ormond Beach, Florida.
Source: ALS 2008

Red snapper contribute over 10% of landings value for the community of Ormond Beach with gag grouper and vermilion snapper close to 3% of landings value as depicted in **Figure 3-10.**

<u>Volusia County</u>

Volusia County had a total population of 443,343 in 2000 that is estimated to have grown to 497,597 by 2007. Population density was 402 persons per square mile in 2000 and has grown to 454 persons in 2007. The majority of county residents were White (85.6) and the Hispanic population was 10.2 % in 2007. The percent of population that identified themselves as White alone was 76.8%. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Volusia County was estimated to have been 42.5, so Volusia County's median age is slightly older than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $44,304, lower than that for the state which was $48,637. There was an estimated 5.5 % of the population in the civilian force that was estimated to be unemployed in Volusia County, which was below the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 13.1% which was higher than the 12.6% for the state as a whole during 2007. Volusia County had a higher owner occupied housing rate higher than the state with 75.9% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

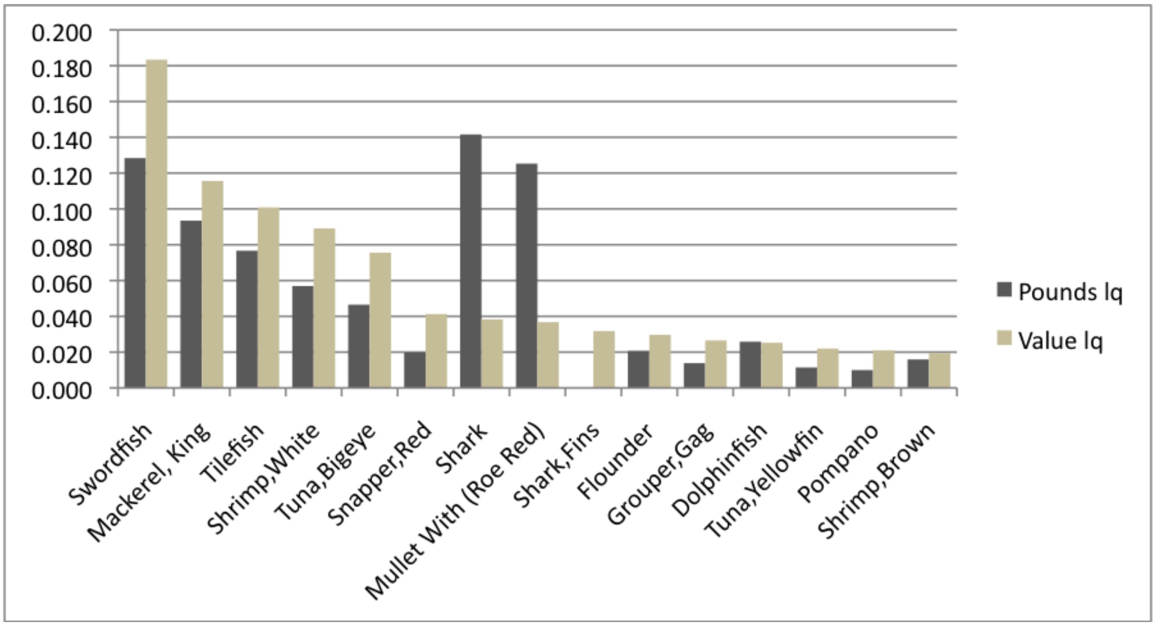


Figure 3-11. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Port Orange, Florida.
Source: ALS 2008

The community of Port Orange gets about 10% of its landed value of commercial harvest from tilefish according to **Figure 3-11**. The next closest snapper grouper species is red snapper with 4% and then gag grouper which contributes just over 2% of the landed value.

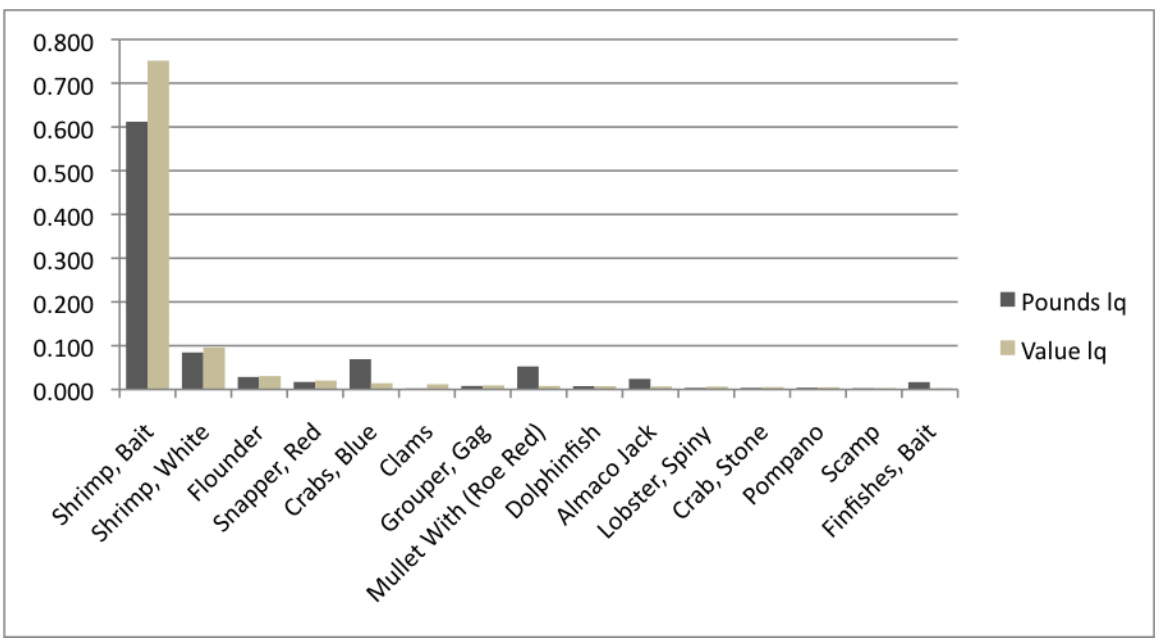


Figure 3-12. Proportion (lq) of landings and value for top fifteen species out of total landings and value for New Smyrna Beach, Florida.
Source: ALS 2008

Figure 3-12 shows the only snapper grouper species within the top fifteen for New Smyrna are red snapper, which contributes only 2% to landings value for the community and gag grouper which is less than 1% both in landings and value. Dolphinfish are also within the top fifteen, but constitutes less than 1% landings and value also.

Brevard County

Brevard County had a total population of 476,230 in 2000 that is estimated to have grown to 534,165 by 2007. Population density was 467 persons per square mile in 2000 and has grown to 527 persons in 2007. The majority of residents (86.0%) were identified a White in 2007 and the Hispanic population was 6.9% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Brevard County was 79.5% with a Black population of 10.4%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Brevard County was estimated to have been 43.6 while the median age for the state of Florida was 40.1 by 2007 so Brevard County's median age is older than the state as a whole. Median household income for 2007 was estimated to be $50,080, higher than that for the state which was $48,637. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Brevard County, which was almost equal to the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 9.6% which was below the 12.6% for the state as a whole during 2007. Brevard County had a higher owner occupied housing rate than the state with over 76.9% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

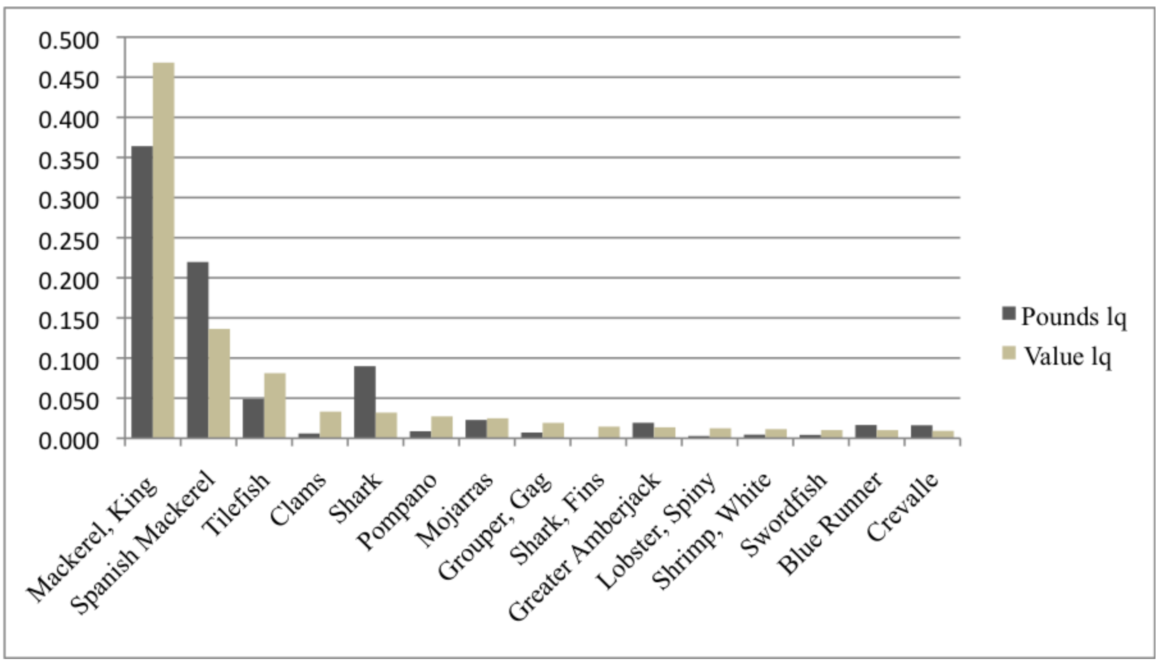


Figure 3-13. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Cocoa, Florida.
Source: ALS 2008

Gag grouper and generic tilefish are the only snapper grouper species within the top fifteen for the community of Cocoa as depicted in **Figure 3-13.** Tilefish make almost 8% of landed value for the community, while gag are less than 2% of landed value.

Table 3-77. Marine Related Employment for 2007 in Florida Southeast Coast Counties. Source: Census Bureau 2010.

Florida County	Indian River		St. Lucie		Martin		Palm Beach		Broward		Miami-Dade		Monroe	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	11	.	16	.	60	.	108	.	253	.	108	.		
Seafood Dealers	.	1	136	.	.	9	.	46	.	406	.	.	.	112
Seafood Harvesters	70	.	0	.	128	.	287	.	228	.	287	.	934	.
Seafood Retail	0	.	.	2	0	93	18	57	28	291	18	.	7	7
Marinas	.	17	.	49	.	113	10	887	.	707	10	.	.	191
Processors	.	.	.	.	0	.	.	176	0	142	.	.	0	.
Scenic Water	.	13	.	9	.	42	.	94	.	313	.	.	.	315
Ship Boat Builders	.	76	.	502	.	340	.	100	.	776	.	.	.	17
Shipping Support	.	8	.	7	.	13	.	756	.	1557	.	.	.	67
Shipping	.	15	.	38	.	2		69		995	.	.	.	35

<u>Indian River County</u>

Indian River County had a total population of 112,947 in 2000 that is estimated to have grown to 131,020 by 2007. Population density was 224 persons per square mile in 2000 and has grown to 262 persons in 2007. The majority of residents (88.5%) were identified a White in 2007 and the Hispanic population was 9.7% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Indian River County was 79.5% with a Black population of 8.9%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Indian River County was estimated to have been 45.4 while the median age for the State of Florida was 40.1 by 2007 so Indian River County's median age is older than the state as a whole. Median household income for 2007 was estimated to be $47,069, lower than that for the state which was $48,637. There was an estimated 7.2 % of the population in the civilian force that was estimated to be unemployed in Indian River County, which was higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.4% which was below the 12.6% for the state as a whole during 2007. Indian River County had a higher owner occupied housing rate than the state with over 74.8% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

Sebastian is one of the communities within Indian River County that has landings from the ALS dataset but not included in the list of primarily or secondarily involved in fishing. In **Figure 3-14** the snapper grouper species that has the highest landings and value local quotient is gag grouper which makes up about 5% of landings value within the community.

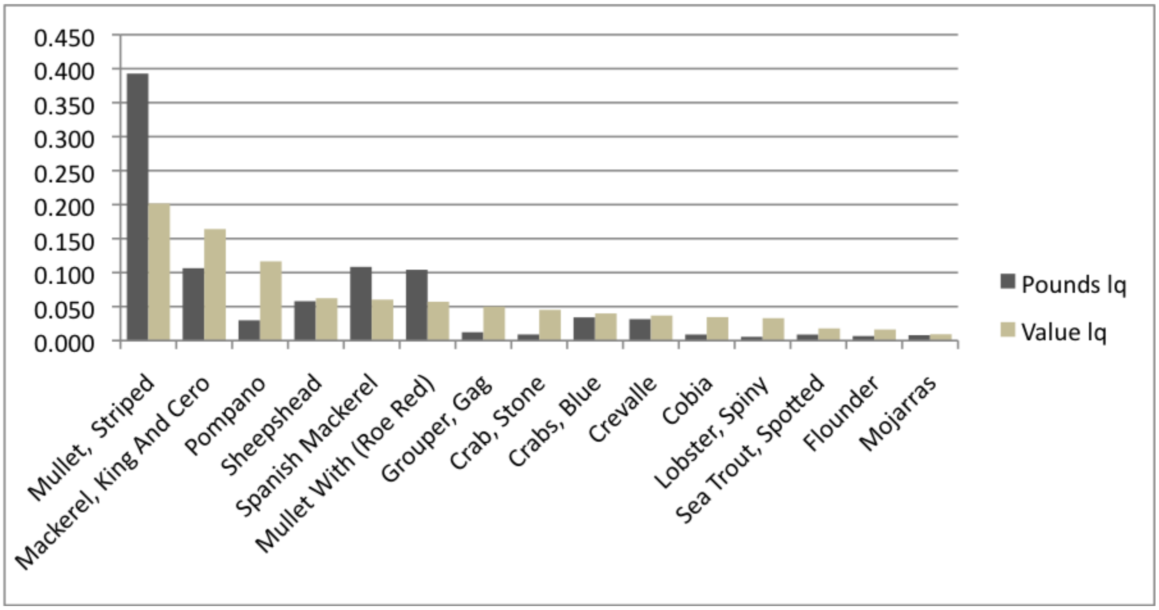


Figure 3-14. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sebastian, Florida.
Source: ALS 2008

St. Lucie County

St. Lucie County had a total population of 192,695 in 2000 that is estimated to have grown to 258,272 by 2007. Population density was 336 persons per square mile in 2000 and has grown to 456 persons in 2007. The majority of residents (77.5%) were identified a White in 2007 and the Hispanic population was 14.9% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for St. Lucie County was 65.2% with a Black population of 18.1%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of St. Lucie County was estimated to have been 40.1 while the median age for the state of Florida was 40.1 by 2007 so St. Lucie County's median age is equal to the state as a whole. Median household income for 2007 was estimated to be $46,829, lower than that for the state which was $48,637. There was an estimated 8.7 % of the population in the civilian force that was estimated to be unemployed in St. Lucie County, which was higher than the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.6% which was below the 12.6% for the state as a whole during 2007. St. Lucie County had a higher owner occupied housing rate than the state with over 76.0% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

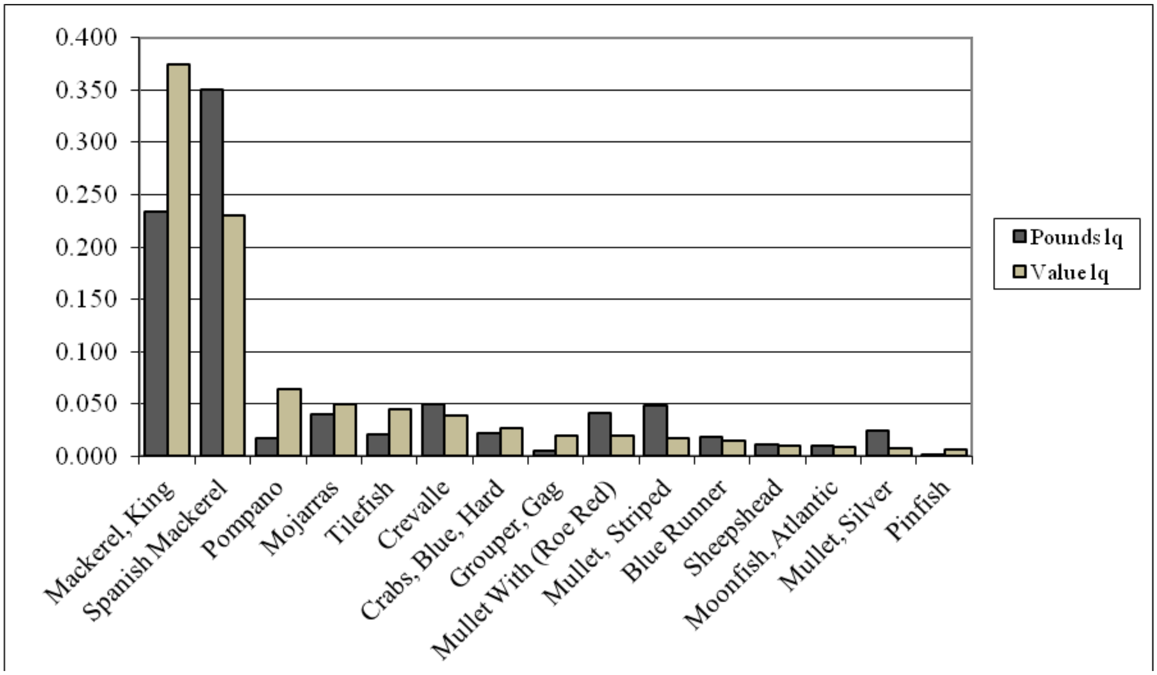


Figure 3-15. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Pierce, Florida.
Source: ALS 2008

While coastal pelagics make up the majority of landings and value for the community of Fort Pierce, tilefish and gag grouper contribute over 5% of value for landings combined according to **Figure 3-15.**

Martin County

Martin County had a total population of 126,731 in 2000 that is estimated to have grown to 138,495 by 2007. The majority of residents (88.2%) were identified a White in 2007 and the Hispanic population was 10.1% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Martin County was 81.6% with a Black population of 6.8%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Martin County was estimated to have been 47.1 while the median age for the State of Florida was 40.1 by 2007 so Martin County's median age is higher than the state as a whole. Median household income for 2007 was estimated to be $54,182, higher than that for the state which was $48,637. There was an estimated 6.9 % of the population in the civilian force that was estimated to be unemployed in Martin County, which was slightly higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 9.3% which was below the 12.6% for the state as a whole during 2007. Martin County had a higher owner occupied housing rate than the state with over 79.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

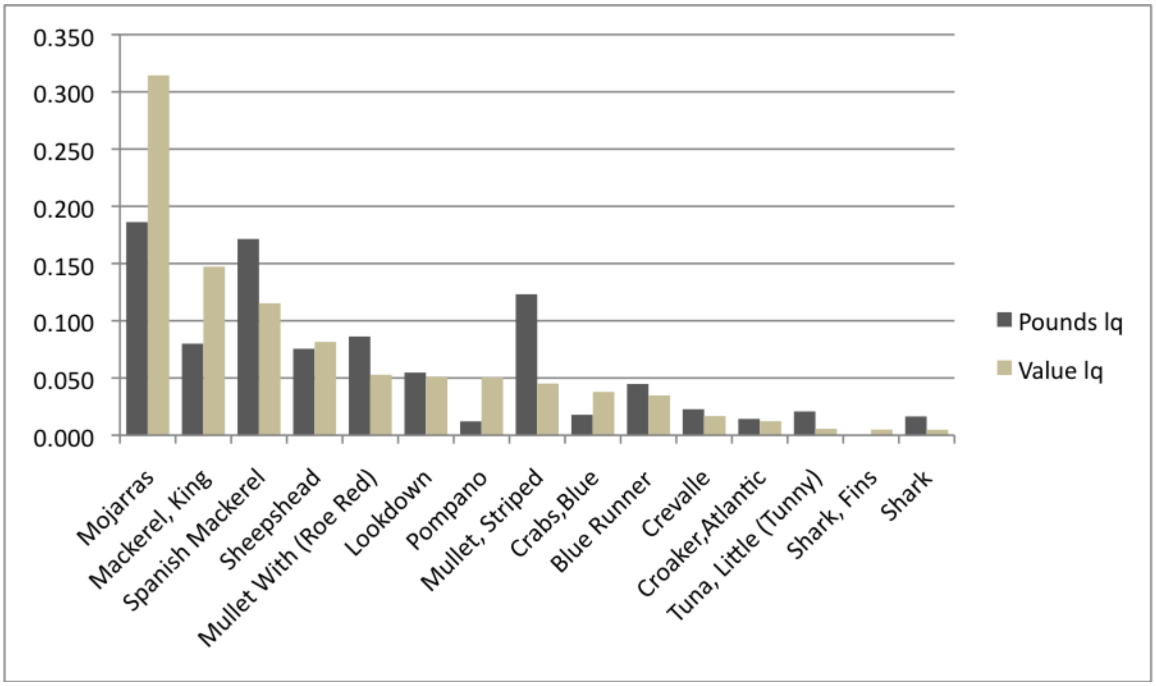


Figure 3-16. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Stuart, Florida.
Source: ALS 2008

Stuart is the only community in Martin County with substantial landings to be considered primarily or secondarily involved in fishing. Much of the landings and value for the community are derived from coastal pelagics as seen in **Figure 3-16.**

Palm Beach County

Palm Beach County had a total population of 1,131,191 in 2000 that is estimated to have grown to 1,754,846 by 2007. The majority of residents (75.6%) were identified a White in 2007 and the Hispanic population was 17.3% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Palm Beach County was estimated to have been 43.0 while the median age for the State of Florida was 40.1 by 2007 so Palm Beach County's median age is higher than the state as a whole. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Palm Beach County, which was almost the same as the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was below the 12.6% for the state as a whole during 2007. Palm Beach County had a higher owner occupied housing rate than the state with over 74.3% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

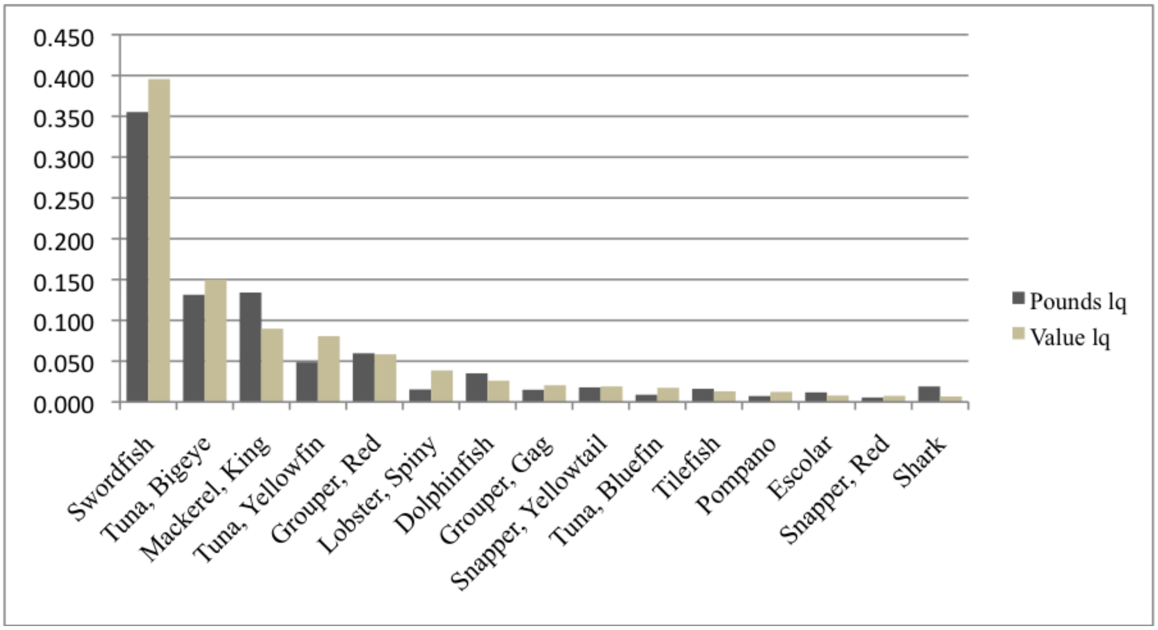


Figure 3-17. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Palm Beach Gardens, Florida.
Source: ALS 2008

The community of Palm Beach Gardens derives over 5% of landings value from red grouper with dolphinfish, yellowtail snapper and gag grouper contributing a little less than 3% each from **Figure 3-17.** Tilefish and red snapper are other snapper grouper species that are found in the top fifteen species for local quotient of landings and value.

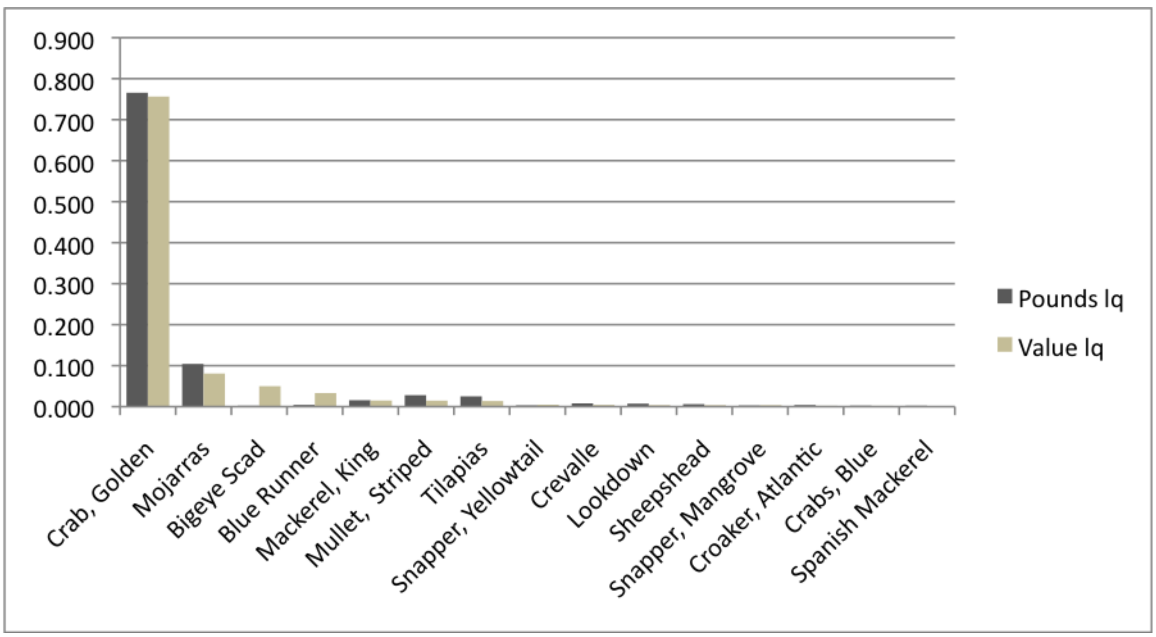


Figure 3-18. Proportion (lq) of landings and value for top fifteen species out of total landings and value for West Palm Beach, Florida.
Source: ALS 2008

Golden crab is by far the most important species in terms of landings and value for the community of West Palm Beach. Over 70% of landings and value are derived from this species according to **Figure 3-18.**

Broward County

Broward County had a total population of 1,623,018 in 2000 that is estimated to have grown to 1,754,846 by 2007. The majority of residents were identified a White (92.0%) in 2000 and was estimated to have dropped slightly to 67.8% in 2007. The Hispanic population was 23.3% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Broward County was estimated to have been 39.6 while the median age for the State of Florida was 40.1 by 2007 so Broward County's median age is close to the state as a whole. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Broward County, which was almost the same as the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was below the 12.6% for the state as a whole during 2007. Broward County had a slightly higher owner occupied housing rate than the state with slightly over 71.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

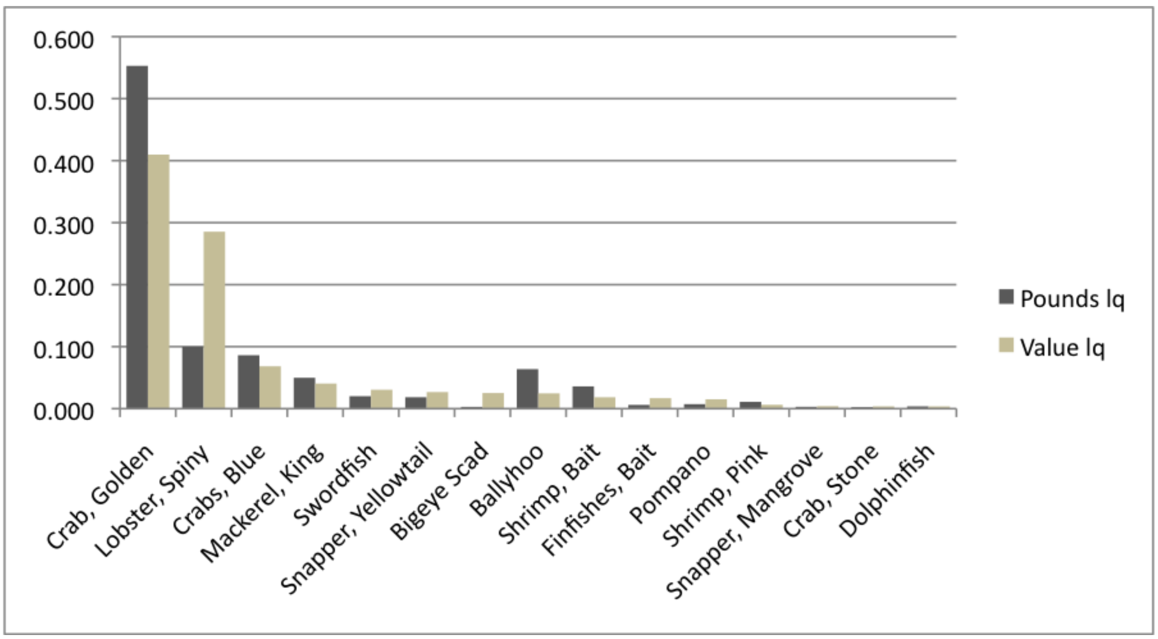


Figure 3-19. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Lauderdale, Florida**.**
Source: ALS 2008

In Broward County, the community of Ft. Lauderdale derives a considerable amount of its landings and value from golden crab. Over 50% of landings and 40% of value come from that species as depicted in **Figure 3-19**. Yellowtail snapper contributes around 2% of value and landings. Other managed species addressed in this amendment are included in the top fifteen species but contribute much less.

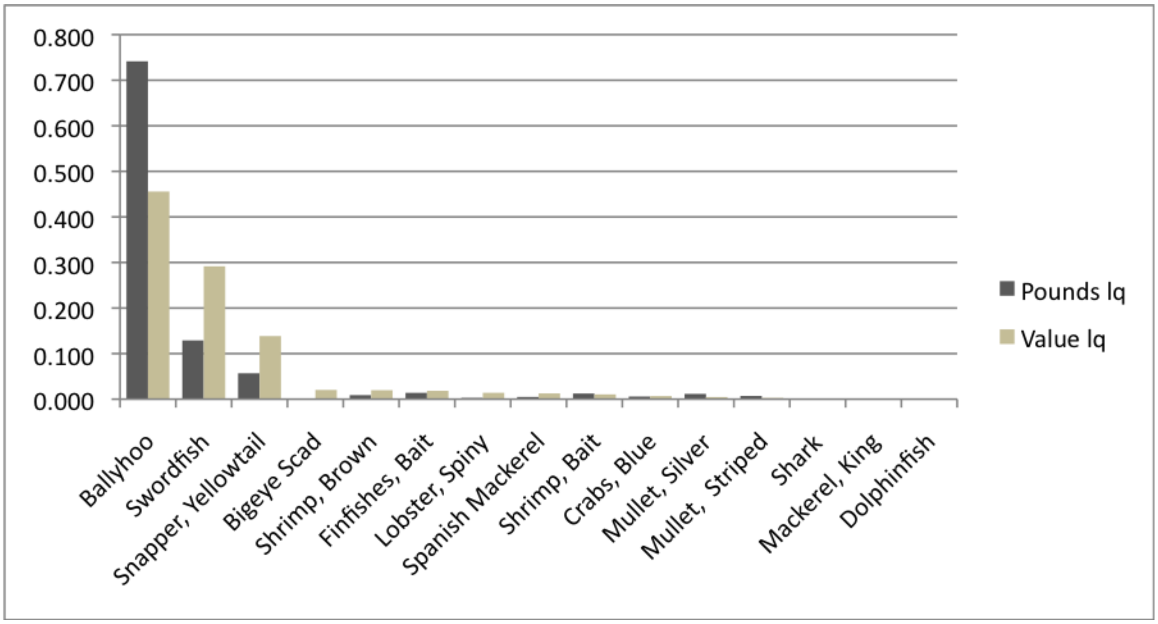


Figure 3-20. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Pompano Beach, Florida.
Source: ALS 2008

According to **Figure 3-20** yellowtail snapper contribute over 10% of value for the community of Pompano Beach. No other snapper grouper species was in the top fifteen in terms of landings and value for the community.

Miami-Dade County

Miami-Dade County had a total population of 2,253,779 in 2000 that is estimated to have grown to 2,387,170 by 2007. The majority of residents were identified a White (74.4%) in 2007 and the Hispanic population was 61.7%, the largest in the state. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Miami-Dade County was estimated to have been 38.7 while the median age for the State of Florida was 40 by 2007 so Miami-Dade County's median age is slightly younger than the state as a whole. There was an estimated 5.9 % of the population in the civilian force that was estimated to be unemployed in Miami-Dade County, which was somewhat lower than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 16.1% which was above the 12.6% for the state as a whole during 2007. Miami-Dade County had a lower owner occupied housing rate than the state with over 60.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

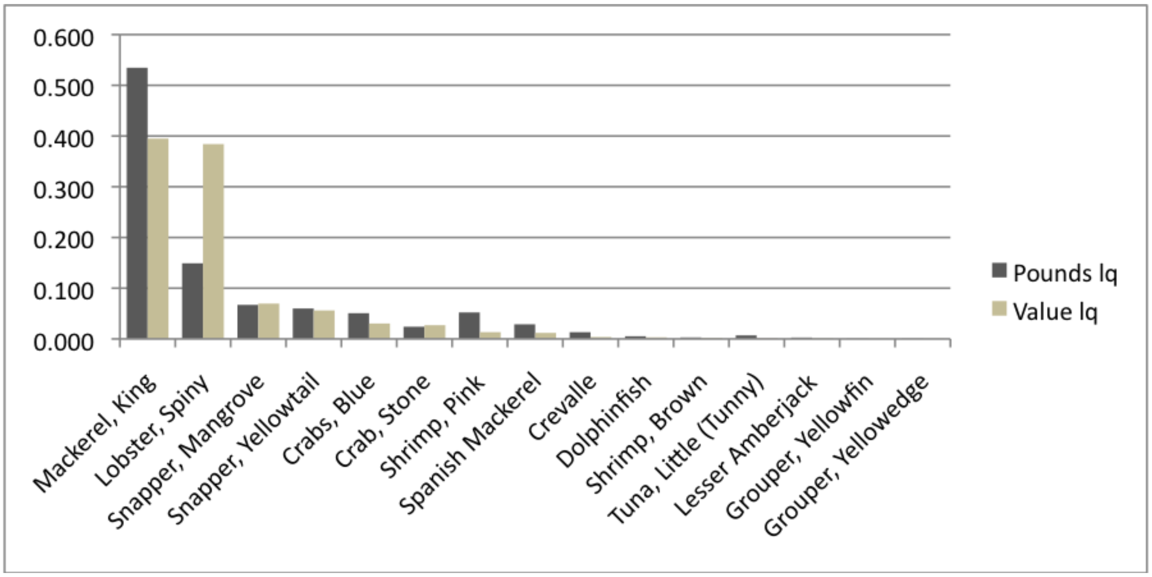


Figure 3-21. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Hialeah, Florida.
Source: ALS 2008

While there are a number of snapper grouper species within the top fifteen species landed in Hialeah (**Figure 3-21**), mangrove and yellowtail snappers are the only species that contribute over 5% each in terms of landings and value for the community overall. King mackerel leads in terms of value and landings with close to 40% of value and over 50% of landings

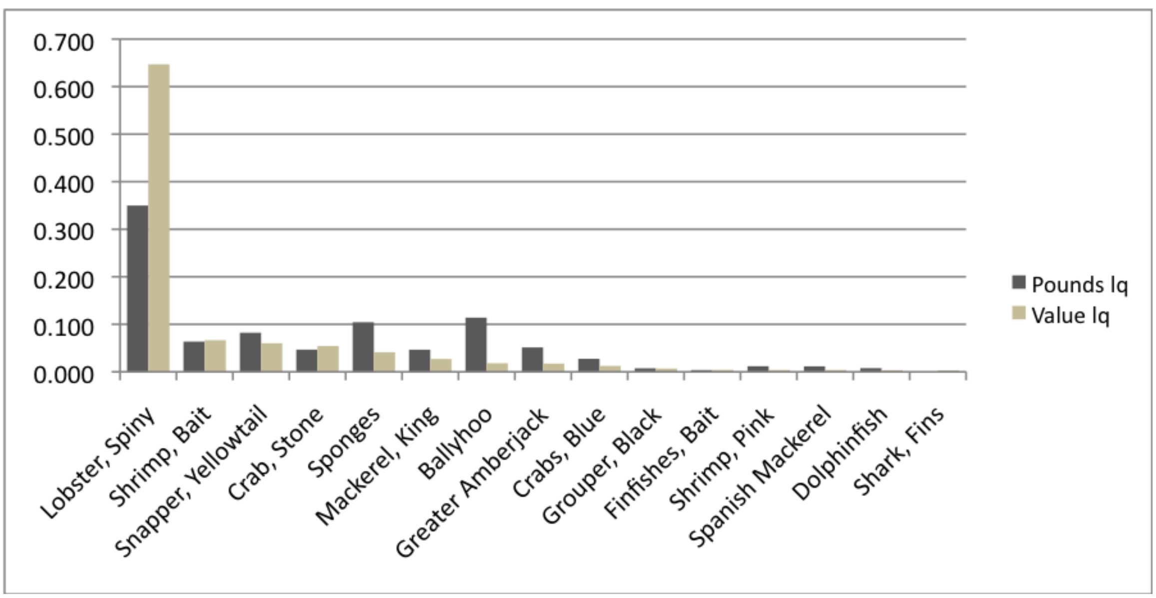


Figure 3-22. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Miami, Florida.
Source: ALS 2008

Spiny lobster makes up the substantial portion of value from landings for Miami in **Figure 3-22** with over 60%. Yellowtail snapper is the highest snapper grouper species with about 6% value and 8% of landings. Greater amberjack is the next highest snapper grouper species with 5% of landings but less than 2% of value.

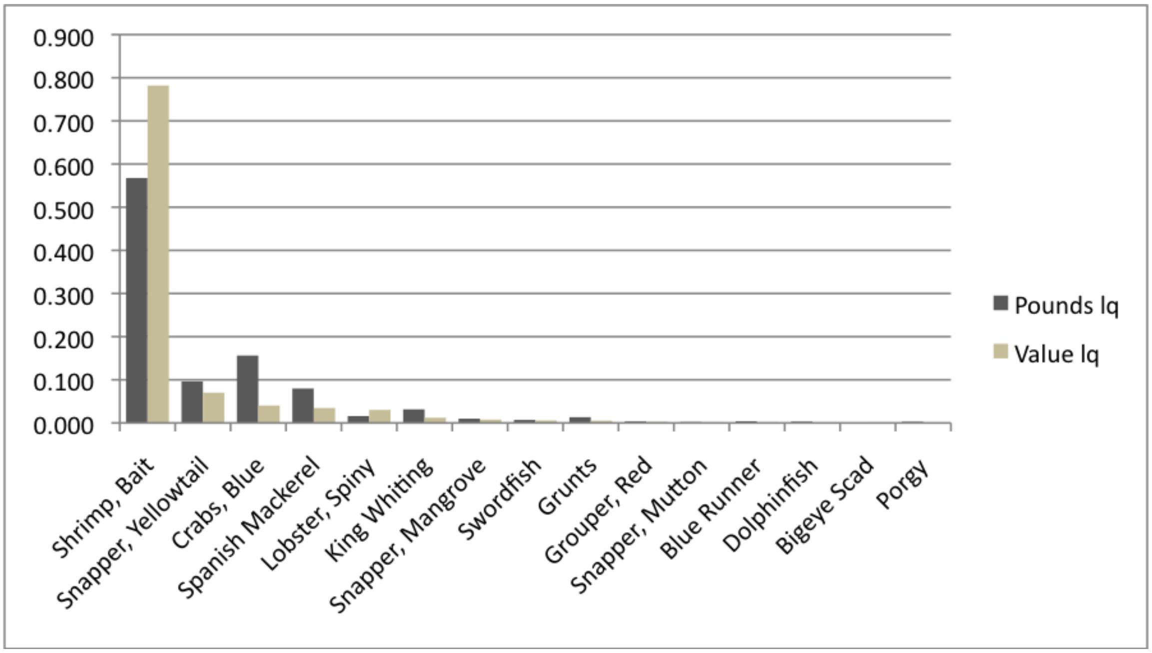


Figure 3-23. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Homestead, Florida.
Source: ALS 2008

Homestead derives a considerable amount of its landings and value from bait shrimp with yellowtail snapper the next closes species in **Figure 3-23**. Yellowtail contribute close to 10% in terms of landings 8% of value. Several snapper grouper species are included in the top fifteen species but only mangrove snapper contribute more than 1% of landings and less than 1% of value.

<u>Monroe County</u>
Monroe County had a total population of 79,589 in 2000 that is estimated to have fallen to 74,397 by 2007. The majority of residents were identified a White (92.0%) in 2000 and was estimated to have dropped slightly to 90.4% in 2007. The Hispanic population has grown from 16.0 % in 2000 to 18.0% in 2007. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Monroe County was estimated to have been 47.2, which is slightly higher than it was in 2000 when it was 43.0. The median age for the State of Florida was 38.7 in 2000 and was estimated to have increased to 40.1 by 2007 so Monroe County's median age is considerably older than the state as a whole. There was an estimated 2.8 % of the population in the civilian force that was estimated to be unemployed in Monroe County, which was quite a bit lower than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 10.1% which was below the 12.6% for the state as a whole during 2007. Monroe County had a slightly higher owner occupied housing rate than the state with slightly over 71.2% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

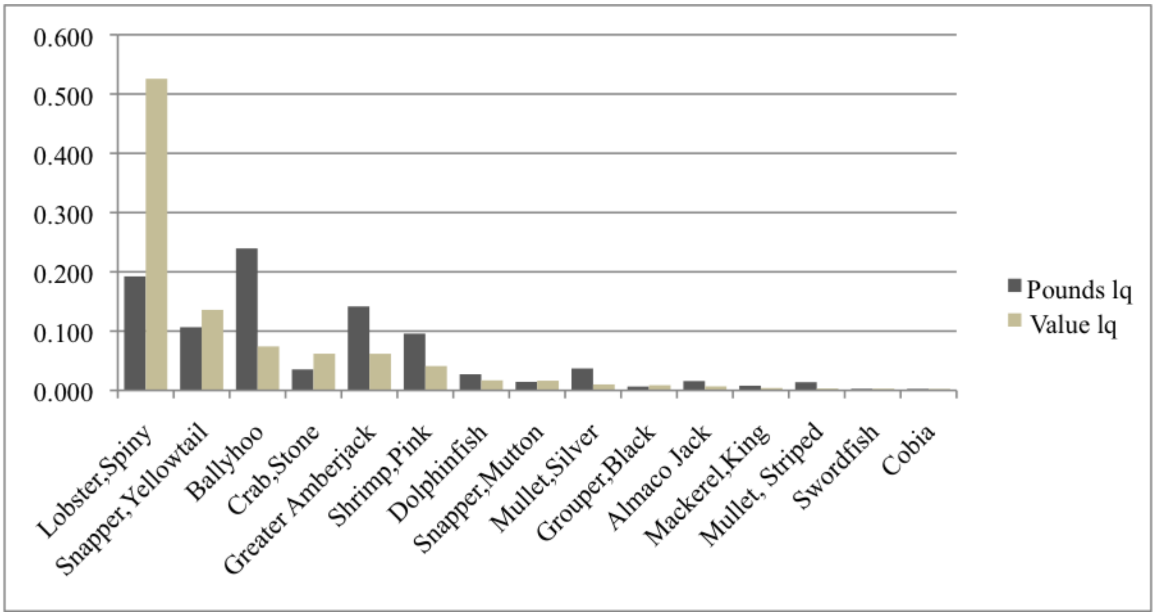


Figure 3-24. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key Largo, Florida.
Source: ALS 2008

A number of snapper grouper species are listed within the top fifteen species for Key Largo. Yellowtail snapper contribute over 10% of value and landings according to **Figure 3-24.** Greater amberjack is third in terms of lbs landed with over 14%, yet only accounts for just over 6% of landings value. Several other snapper grouper species are within the top fifteen but none contribute more than 2% to landings or value.

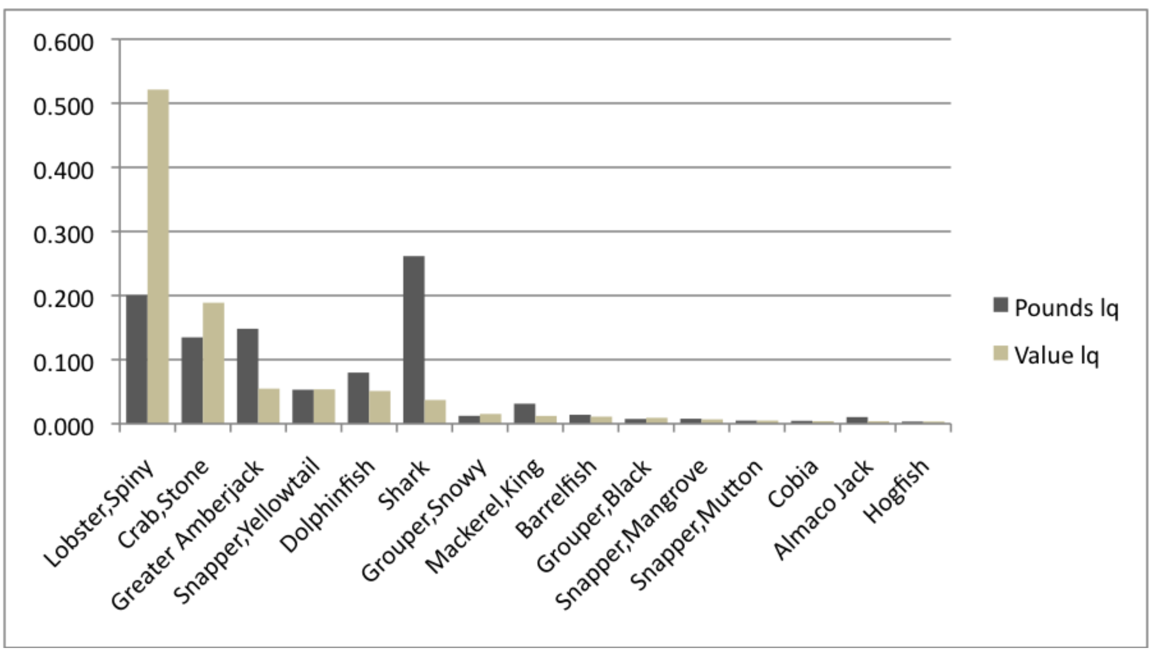


Figure 3-25. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Islamorada, Florida.
Source: ALS 2008

Like most Keys communties, Islamorada landings value is dominated by spiny lobster, however, greater amberjack contribute almost as much in terms of lbs landed as spiny lobster with almost 15% as shown in **Figure 3-25.** Other snapper grouper species with comparable value include yellowtail snapper and dolphinfish also have a local quotient value of just over 5%.

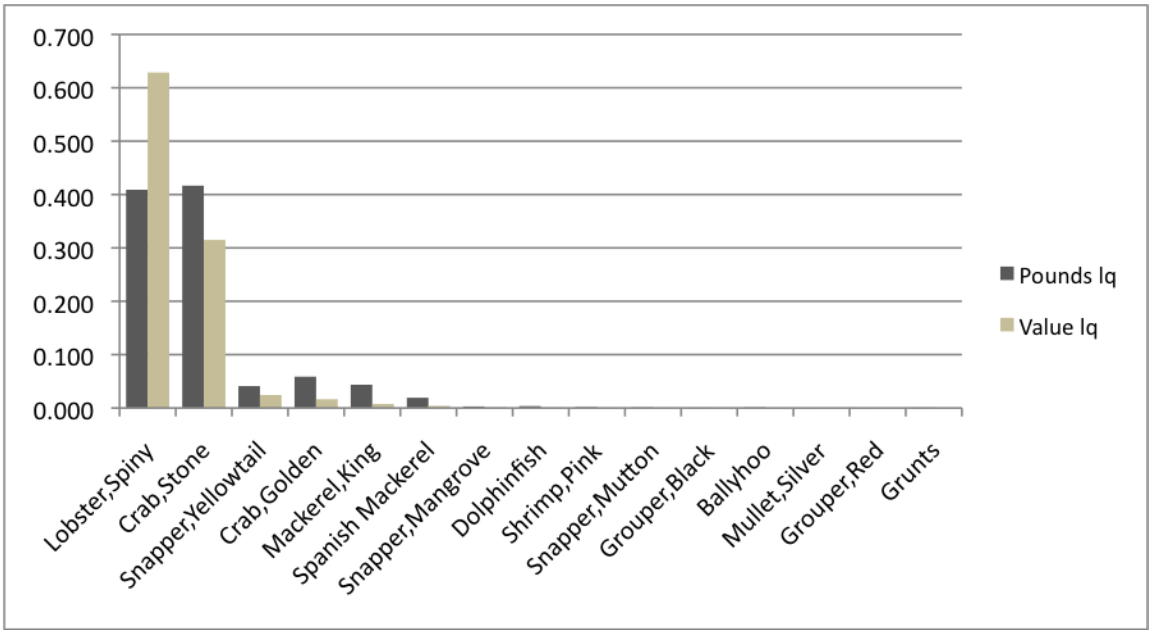


Figure 3-26. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Marathon, Florida.
Source: ALS 2008

Marathon also has a considerable amount of its local quotient derived from spiny lobster, but stone crab is the second most important species with just over 40% of lbs landed and 30% of overall value. Yellow tail snapper is the next most important species followed by golden crab with both contributing around 2% in terms of value according the **Figure 3-26.**

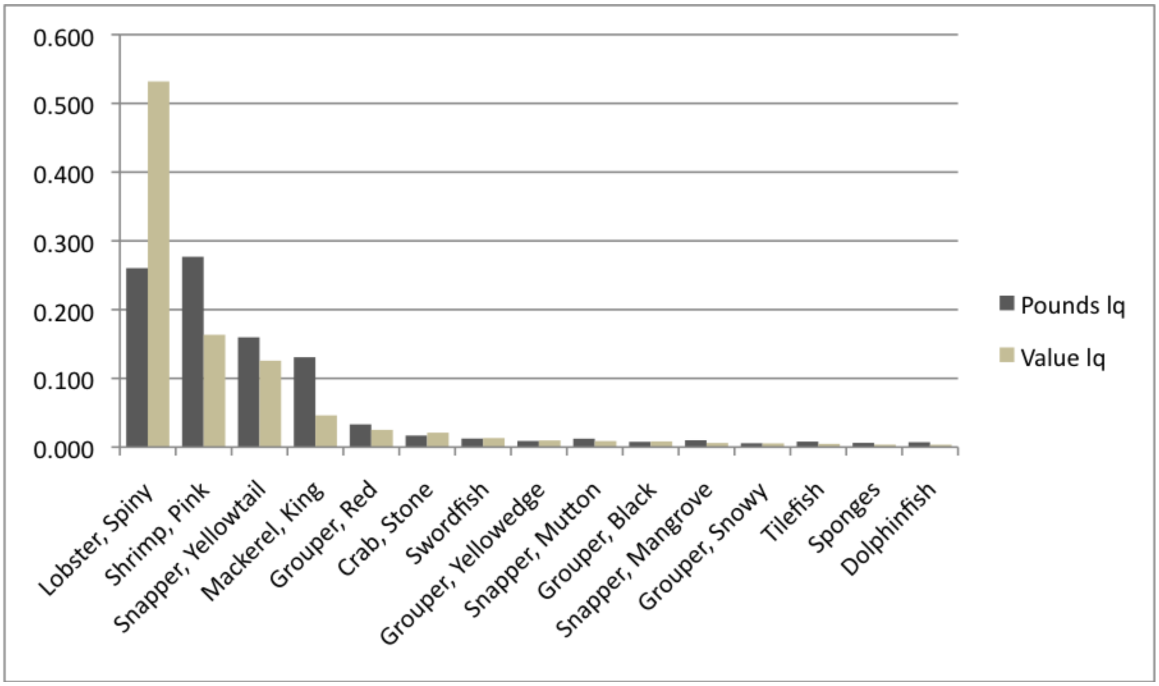


Figure 3-27. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key West, Florida.
Source: ALS 2008

Several snapper grouper species are included in the top fifteen species for Key West, but value of landings is dominated by spiny lobster as with most Keys communities. Yellowtail snapper, however, do contribute over 15% of lbs landed and over 12% of overall value. Red grouper is next with a little over 3% in landings and 2.5% of value.

3.8.3.5 Georgia Counties

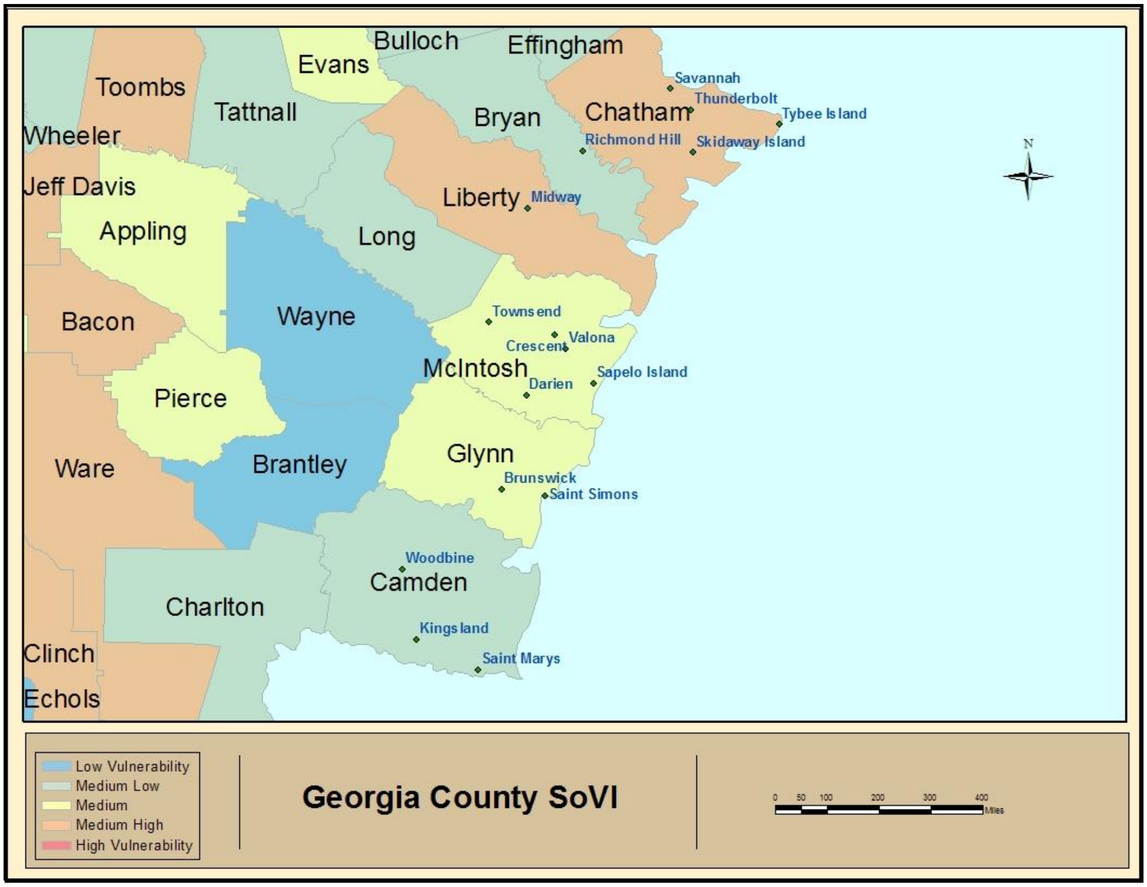


Figure 3-28. The Social Vulnerability Index applied to Georgia Counties.
Source http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in Georgia which were categorized as having medium high vulnerability were Liberty and Chatham counties. The fishing communities within those counties are: Savannah, Tybee Island, Thunderbolt, Skidaway Island and Midway.

Table 3-78. Marine Related Employment for 2007 in Georgia Coastal Counties.
Source: Census Bureau 2010.

Georgia County	Camden		Glynn		McIntosh		Liberty		Bryan		Chatham	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	.	.	.	.	.	.	.	.	0	.	5	.
Seafood Dealers	.	.	.	183	.	1	.	.	.	.	.	6
Seafood Harvesters	13	.	60	.	100	.	10	.	13		73	
Seafood Retail	.	.	.	.	.	.	.	9	.	.	6	49
Marinas		13	.	85	.	.	.	.	.	2		110
Processors	.	.	.	846	.	13	.	.	.	.	.	.
Scenic Water	.	.	.	15	.	.	.	.	.	.	.	62
Ship Boat Builders	.	.	.	.	.	9	.	.	.	.	.	297
Shipping Support	.	.	.	299	.	27	.	9	.	.	.	2515
Shipping	.	.	.	7	.	27	.	.	.	.	.	43

All coastal counties within Georgia have employment in the seafood harvester sector in **Table 3-78.** Other marine related sectors are more sporadic. Seafood dealers appear in only Glynn, McIntosh and Chatham. Processor employment is important in Glynn with 846 persons employed in that sector. The marina sector has employees in Camden, Glynn, Bryan and Chatham. Shipping support has the highest number of employees of any sector with over 2500 in Chatham County.

Camden County

Camden County had a total population of 43,664 in 2000 that is estimated to have grown to 46,710 by 2007. Population density was 71 persons per square mile in 2000 and has grown to 79 persons in 2007. The majority of county residents were White (77.3%) and the Hispanic population was 3.1% in 2007. The percent of population that identified themselves as White alone was 73.6% with 20.5% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Camden County was estimated to have been 31.4, so Camden County's median age is younger than the State's 34.8. Median household income for 2007 was estimated to be $48,634, lower than that for the state which was $50,549. There was an estimated 6.5% of the population in the civilian force that was estimated to be unemployed in Camden County, which was just slightly lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 12.9% which was lower than the 14.5% for the state as a whole during 2007. Camden County had a lower owner occupied housing rate than the state with 85% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

The three communities identified as being primarily or secondarily involved in fishing are St. Mary's, Woodbine and Kingsland in Camden County. The majority of landings in each community are shrimp and blue crabs with no snapper grouper species nor dolphin or wahoo being landed in the top fifteen species. Golden crab was not landed in any of these communities.

Glynn County
Glynn County had a total population of 67,568 in 2000 that is estimated to have grown to 74,614 by 2007. Population density was 161 persons per square mile in 2000 and has grown to 179 persons in 2007. The majority of county residents were White (72.2%) and the Hispanic population was 4.6% in 2007. The percent of population that identified themselves as White alone was 67.6% with 26.0% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Glynn County was estimated to have been 37.3, so Glynn County's median age is older than the State's 34.8. Median household income for 2007 was estimated to be $51,785, higher than that for the state which was $50,549. There was an estimated 3.9% of the population in the civilian force that was estimated to be unemployed in Glynn County, which was much lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 15.1% which was higher than the 14.5% for the state as a whole during 2007. Glynn County had a lower owner occupied housing rate than the state with 77.1% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Two communities in Glynn County were identified as primarily or secondarily involved in fishing, St. Simon Island and Brunswick, based upon landings in 2008. As with the communities above in Camden there were no snapper grouper species within the top fifteen species landed nor was there any golden crab, dolphin or wahoo.

McIntosh County
McIntosh County has a smaller population base than the other coastal counties in Georgia, which prevents the county from estimated updates on census population as only populations greater than 65,000 are updated. However, five communities were identified as primarily or secondarily involved in fishing: Darien, Sapelo Island, Valona, Crescent, and Townsend.

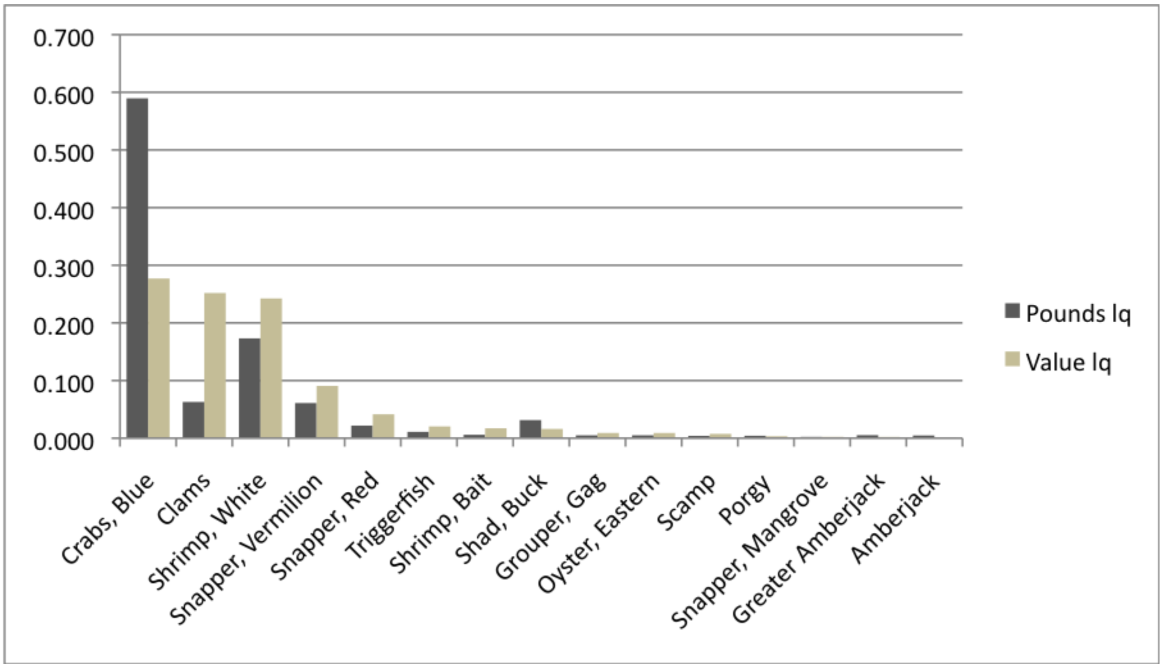


Figure 3-29. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Townsend, Georgia.
Source: ALS 2008

Townsend in McIntosh County has numerous snapper grouper species within the top fifteen species in terms of value local quotient as depicted in **Figure 3-29.** Vermilion snapper is the highest in value with over 9% of value. Red snapper are next with just over 4% of value and trigger fish follow with 2%.

<u>Liberty County</u>

Liberty County had a total population of 61,610 in 2000 that is estimated to have decreased to 59,747 by 2007. Population density was 125 persons per square mile in 2000 and decreased to 124 persons in 2007. The majority of county residents were White (51.5%) and the Hispanic population was 7.0% in 2007. The percent of population that identified themselves as White alone was 46.7% with 42.9% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Liberty County was estimated to have been 27.4, so Liberty County's median age is much younger than the State's 34.8. Median household income for 2007 was estimated to be $41,689, lower than that for the state which was $50,549. There was an estimated 9.3% of the population in the civilian force that was estimated to be unemployed in Liberty County, which was much higher than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 16.3% which was higher than the 14.5% for the state as a whole during 2007. Liberty County had a higher owner occupied housing rate than the state with 88.3% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Midway was the only community identified as being either primarily or secondarily involved in fishing in Liberty County. Landings and value for Midway consist of shrimp, crab and clams. No snapper grouper or dolphin or wahoo are reported landed in the community.

Bryan County

Bryan County had a total population of 28,417 in 2000 that is estimated to have increased to 29,956 by 2007. Population density was 58 persons per square mile in 2000 and has grown to 69 persons in 2007. The majority of county residents were White (82.7%) and the Hispanic population was 3.0% in 2007. The percent of population that identified themselves as White alone was 78.6% with 15.0% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Bryan County was estimated to have been 33.4, so Bryan County's median age is a little younger than the State's 34.8. Median household income for 2007 was estimated to be $66,054, much higher than that for the state which was $50,549. There was an estimated 3.9% of the population in the civilian force that was estimated to be unemployed in Bryan County, which was much lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 6.9% which was much lower than the 14.5% for the state as a whole during 2007. Bryan County had a higher owner occupied housing rate than the state with 89.7% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Richmond Hill was the only community identified as being primarily or secondarily involved in fishing in Bryan County. Like other coastal fishing communities in Georgia landings come solely from blue crabs and shrimp for the community of Richmond Hill.

Chatham County

Chatham County had a total population of 232,347 in 2000 that is estimated to have increased to 247,833 by 2007. Population density was 547 persons per square mile in 2000 and has grown to 585 persons in 2007. The majority of county residents were White (56.2%) and the Hispanic population was 3.1% in 2007. The percent of population that identified themselves as White alone was 53.2% with 40.7% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Chatham County was estimated to have been 34.8, so Chatham County's median age is equal to the State's 34.8. Median household income for 2007 was estimated to be $44,990, lower than that for the state which was $50,549. There was an estimated 4.9% of the population in the civilian force that was estimated to be unemployed in Chatham County, which was lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 16.0% which was higher than the 14.5% for the state as a whole during 2007. Chatham County's owner occupied housing rate was almost equal to the state with 86.8% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Savannah, Tybee Island, Thunderbolt, Skidaway Island were all identified as being primarily or secondarily involved in fishing within Chatham County. Chatham County was also identified as being vulnerable according to the Social Vulnerability Index. Of the four communities, Savannah was the only community in which snapper grouper species were listed within the top fifteen species as shown in **Figure 3-30.** However, none of these species consisted of more than 1% of landings or value. As for most coastal Georgia fishing communities landings were comprised primarily of blue crabs and penaeid shrimp.

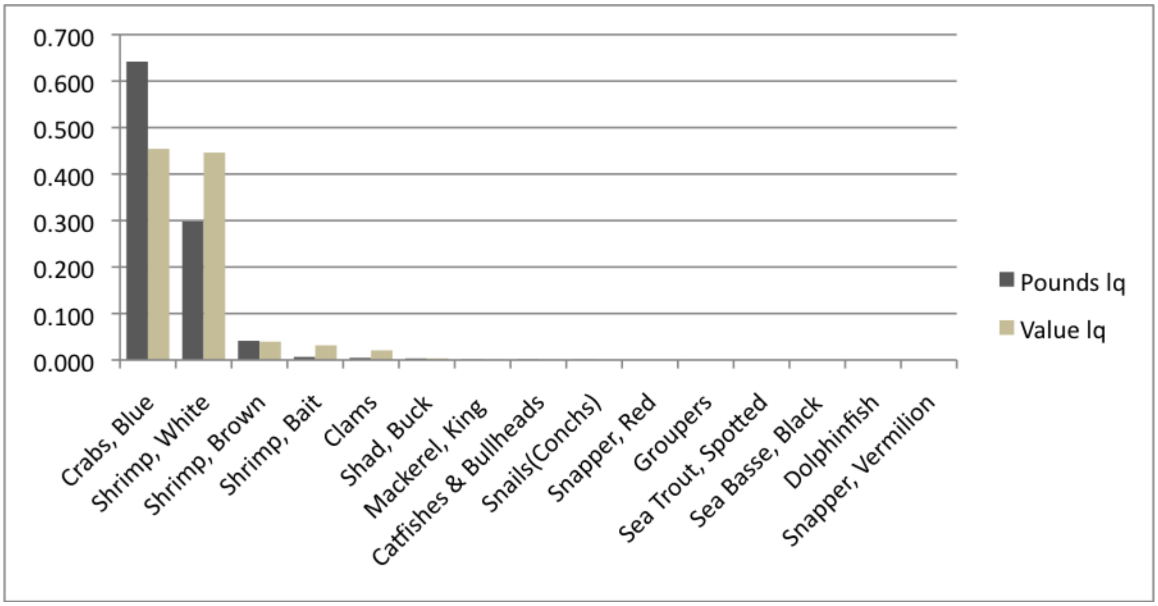


Figure 3-30. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Savannah, Georgia.
Source: ALS 2008

3.8.3.6 South Carolina Counties

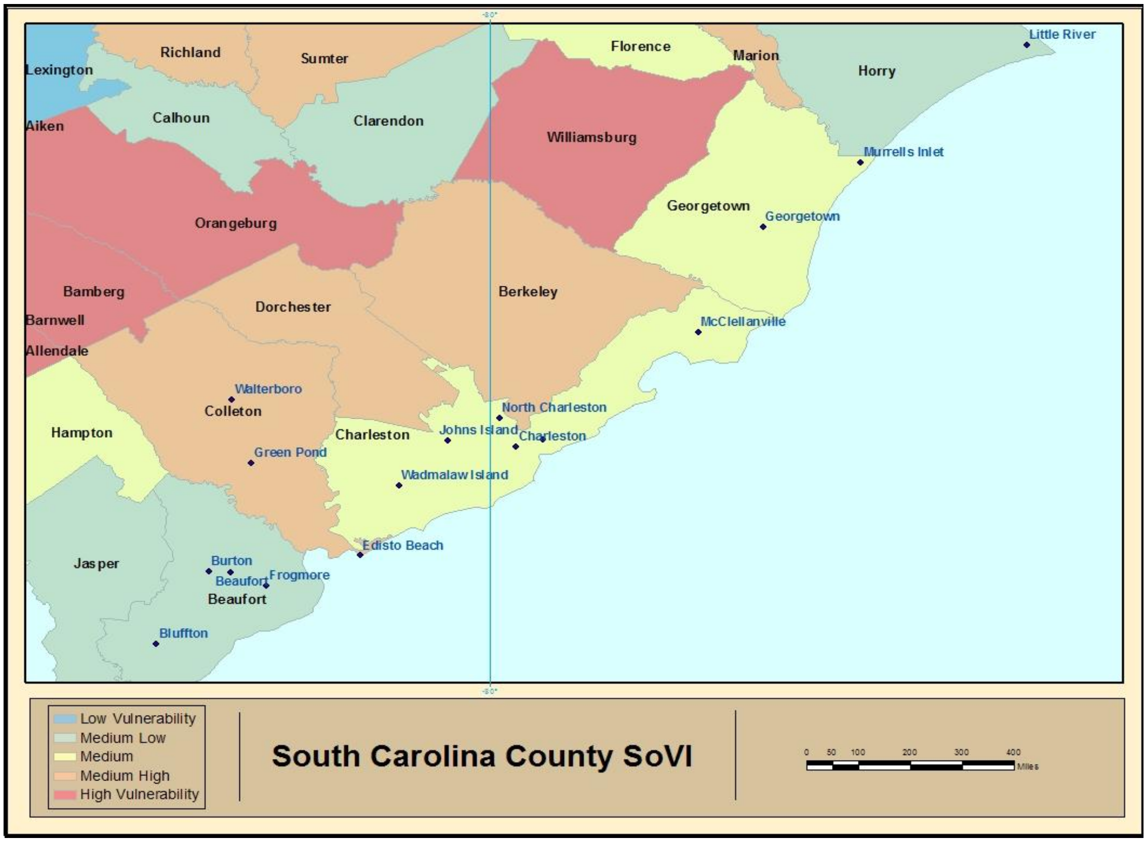


Figure 3-31. The Social Vulnerability Index applied to South Carolina Counties
Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx#

There were no coastal counties in South Carolina which were categorized as having high social vulnerability with Colleton County the only coastal county with medium high vulnerability. The communities of Walterboro, Green Pond and Edisto Beach are located within Colleton County.

Table 3-79. Marine Related Employment for 2007 in South Carolina Coastal Counties. Source: Census Bureau 2010.

South Carolina County	Beaufort		Charleston		Colleton		Georgetown		Horry	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	7	.	18		.	.	.	.	7	.
Seafood Dealers	.	26	.	115	.	.	.	25	.	21
Seafood Harvesters	99	.	168		18	.	91	.	47	.
Seafood Retail	7	13	8	76	.	.	.	14	5	25
Marinas	.	62	.	115	.	5	.	39	.	59
Processors	.	12	4	4	.	.	.	.	.	.
Scenic Water	.	36	.	137	.	.	.	18	.	15
Ship Boat Builders	.	2	.	640	.	.	.	2	.	2
Shipping Support	.	4	.	1101	.	.	.	25	.	.
Shipping	.	11	.	121	.	.	.	.	.	2

This does not mean the communities located within other coastal counties are not susceptible to social disruptions as a result of management actions. Based upon this index, those communities within Colleton County may be more susceptible or have more difficulty adapting to disruptions, whether natural or man-made.

Beaufort County

Beaufort County had a total population of 120,948 in 2000 that is estimated to have grown to 146,743 by 2007. Population density was 206 persons per square mile in 2000 and has grown to 251 persons in 2007. The majority of county residents were White (75.2%) and the Hispanic population was 9.6% in 2007. The percent of population that identified themselves as White alone was 67.7% with 21.1% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Beaufort County was estimated to have been 38.1, so Beaufort County's median age is older than the State's 37.3. Median household income for 2007 was estimated to be $54,356, higher than that for the state which was $44,326. There was an estimated 5.9% of the population in the civilian force that was estimated to be unemployed in Beaufort County, which was just slightly lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 10.3% which was lower than the 15.5% for the state as a whole during 2007. Beaufort County had a lower owner occupied housing rate than the state with 71.9% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

The communities within Beaufort County do not have substantial landings of snapper grouper species or dolphin wahoo and therefore do not have figures documenting the local quotient for those species.

Charleston County

Charleston County had a total population of 309,978 in 2000 that is estimated to have grown to 344,064 by 2007. Population density was 338 persons per square mile in 2000 and has grown to 373 persons in 2007. The majority of county residents were White (65.4%) and the Hispanic population was 3.7% in 2007. The percent of population that identified themselves as White alone was 62.6% with 31.6% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Charleston County was estimated to have been 36.7, so Charleston County's median age is slightly younger than the State's 37.3. Median household income for 2007 was estimated to be $49,118, higher than that for the state which was $44,326. There was an estimated 5.9% of the population in the civilian force that was estimated to be unemployed in Charleston County, which was lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 10.3% which was lower than the 15.5% for the state as a whole during 2007. Charleston County had a lower owner occupied housing rate than the state with 71.9% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

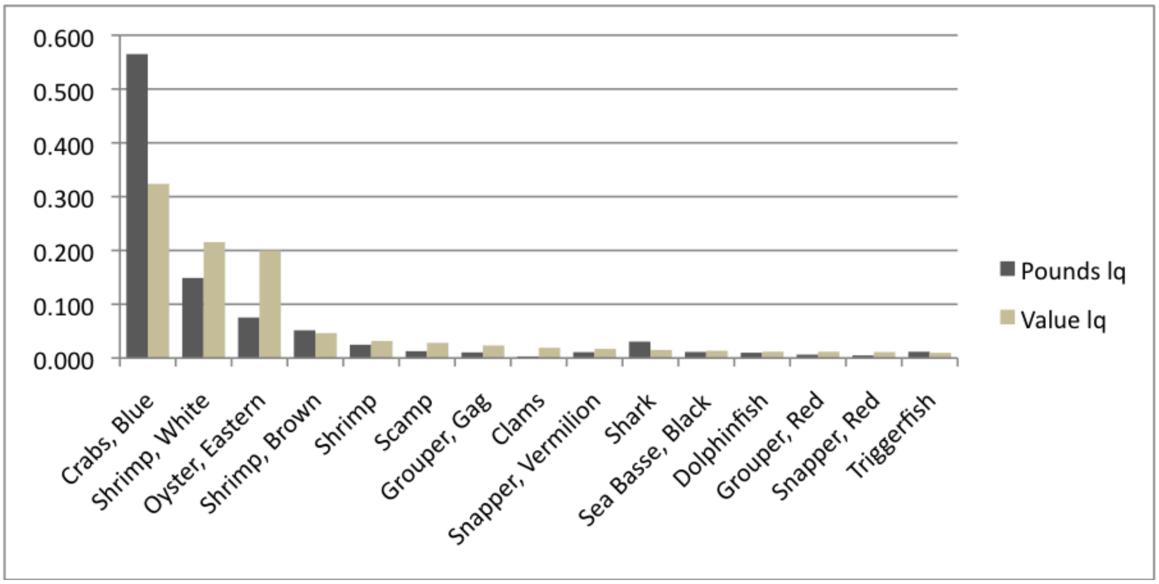


Figure 3-32. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Charleston, South Carolina.
Source: ALS 2008

There are a number of snapper grouper species that are in the top fifteen species in terms of landings and value for Charleston. Scamp is the top species in terms of value according to **Figure 3-32** with slightly less than 3% of landed value overall. Gag grouper, vermilion snapper and black sea bass follow with less than 2% of value and lbs landed each.

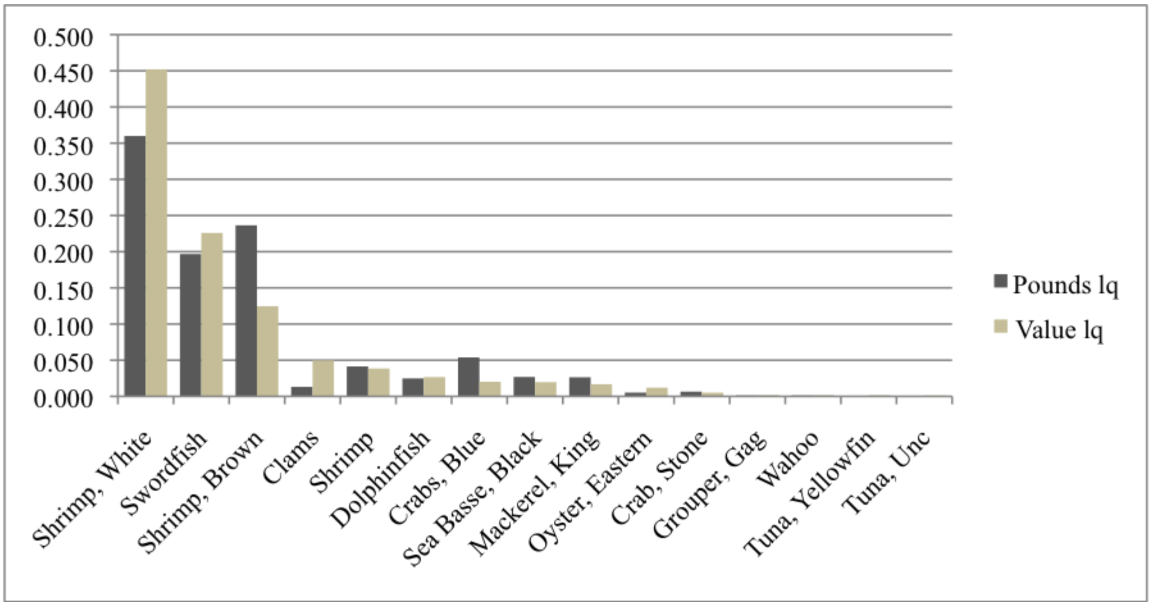


Figure 3-33. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mount Pleasant, South Carolina.
Source: ALS 2008

For the community of Mount Pleasant dolphinfish contribute about 3% of value to overall landed value for the community as depicted in **Figure 3-33**. Black sea bass are the next highest valued snapper grouper species with 2% of value. Gag grouper and wahoo are both in the top fifteen but makeup up less than 1% each.

<u>Colleton County</u>
Colleton County has a smaller population base than the other coastal counties in South Carolina, which excludes the county from estimated updates on census population. However, the communities of Walterboro, Green Pond and Edisto Beach are located within Colleton County. Landings in these communities were dominated by blue crab and shrimp with relatively little, if any, snapper grouper species or dolphin wahoo.

<u>Georgetown County</u>
Georgetown County had a total population of 55,762 in 2000 that is estimated to have grown to 60,344 by 2007. Population density was 69 persons per square mile in 2000 and has grown to 74 persons in 2007. The majority of county residents were White (64.1%) and the Hispanic population was too small to estimate in 2007. The percent of population that identified themselves as White alone was 64.1% with 33.9% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Georgetown County was estimated to have been 41.1, so Georgetown County's median age is slightly older than the State's 37.3. Median household income for 2007 was estimated to be $47,686, higher than that for the state which was $44,326. There was an estimated 7.8% of the population in the civilian

force that was estimated to be unemployed in Georgetown County, which was slightly higher than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 19.1% which was higher than the 15.5% for the state as a whole during 2007. Georgetown County had a much lower owner occupied housing rate than the state with 65.4% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

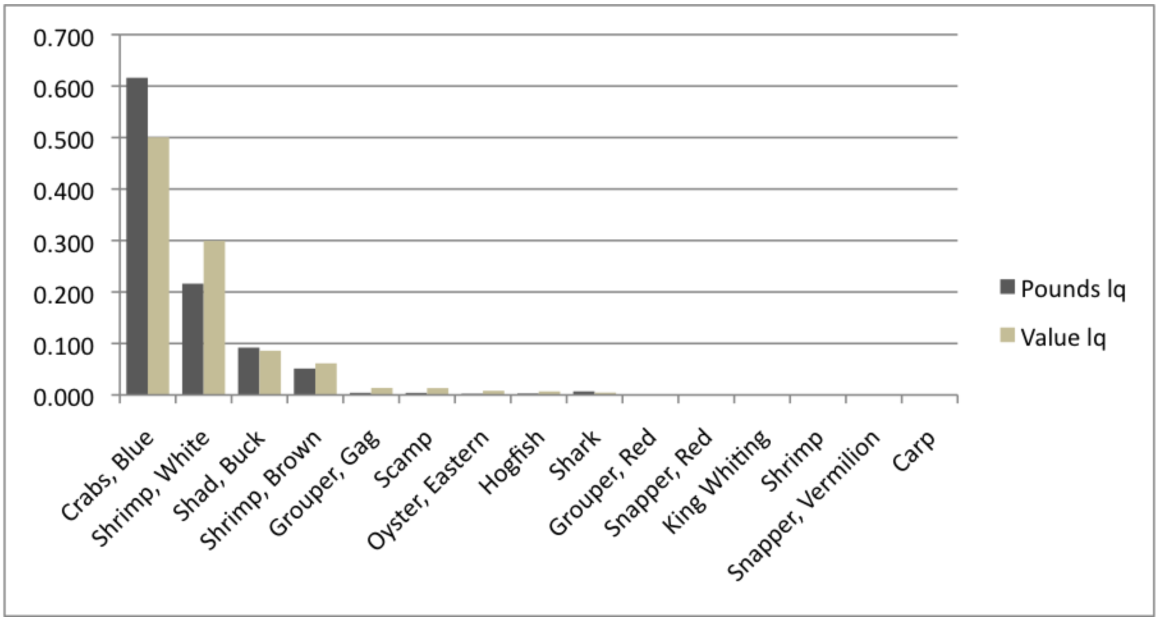


Figure 3-34. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Georgetown, South Carolina.
Source: ALS 2008

Of the snapper grouper species landed in Georgetown, gag grouper is ranked the highest in terms of overall value contributing just over 1% as with scamp as shown in **Figure 3-34.** Other species like red and vermilion snapper are also listed in the top fifteen, but contribute less than 1% each.

Horry County

Horry County had a total population of 196,660 in 2000 that is estimated to have grown to 248,862 by 2007. Population density was 173 persons per square mile in 2000 and has grown to 221 persons in 2007. The majority of county residents were White (81.3%) and the Hispanic population was 4.3% in 2007. The percent of population that identified themselves as White alone was 78.8% with 14.7% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Horry County was estimated to have been 39.6, so Horry County's median age is slightly older than the State's 37.3. Median household income for 2007 was estimated to be $43,270, lower than that for the state which was $44,326. There was an estimated 5.5% of the population in the civilian force that was estimated to be unemployed in Horry County, which was lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 15.4% which was close to the 15.5% for the state as a whole during 2007. Horry County had a much lower owner occupied housing rate than the state with 65.1% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

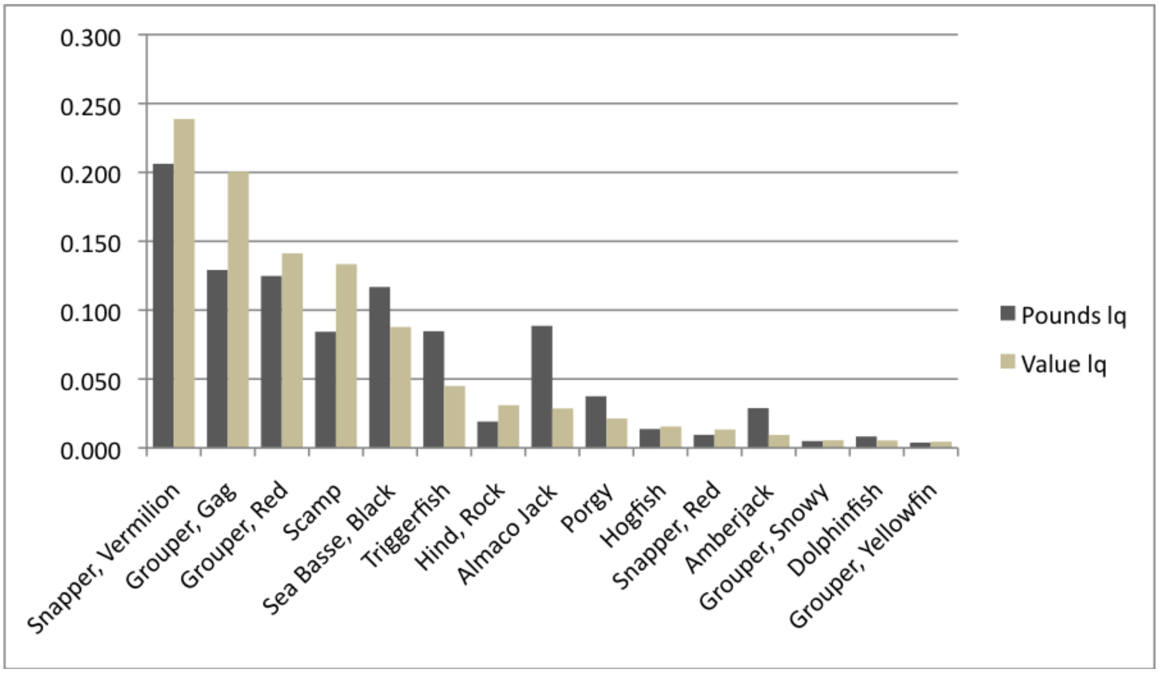


Figure 3-35. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Little River, South Carolina.
Source: ALS 2008

The community of Little River has much of its landed value derived from snapper grouper species with vermilion landed the most with close to 25% of total value. **Figure 3-35** shows that gag and red grouper are next with almost identical proportion of lbs landed at over 12% but gag contributing much more to value with 20% while red grouper contributes less than 15%.

The community of Murrell’s Inlet also derives a considerable amount of its landed value from snapper grouper species as shown in **Figure 3-36**. Gag grouper has the highest proportional value at close to 23%. Scamp is next with just over 18% and vermilion snapper a close third with just over 17%.

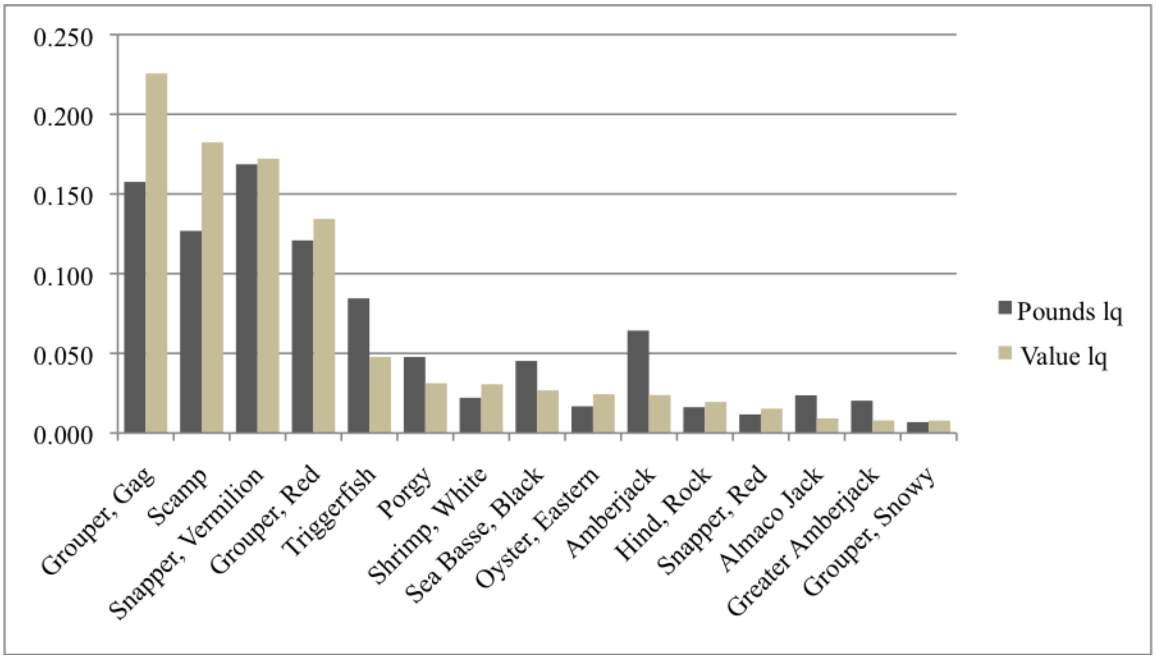


Figure 3-36. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Murrell's Inlet, South Carolina.
Source: ALS 2008

3.8.3.7 North Carolina Counties

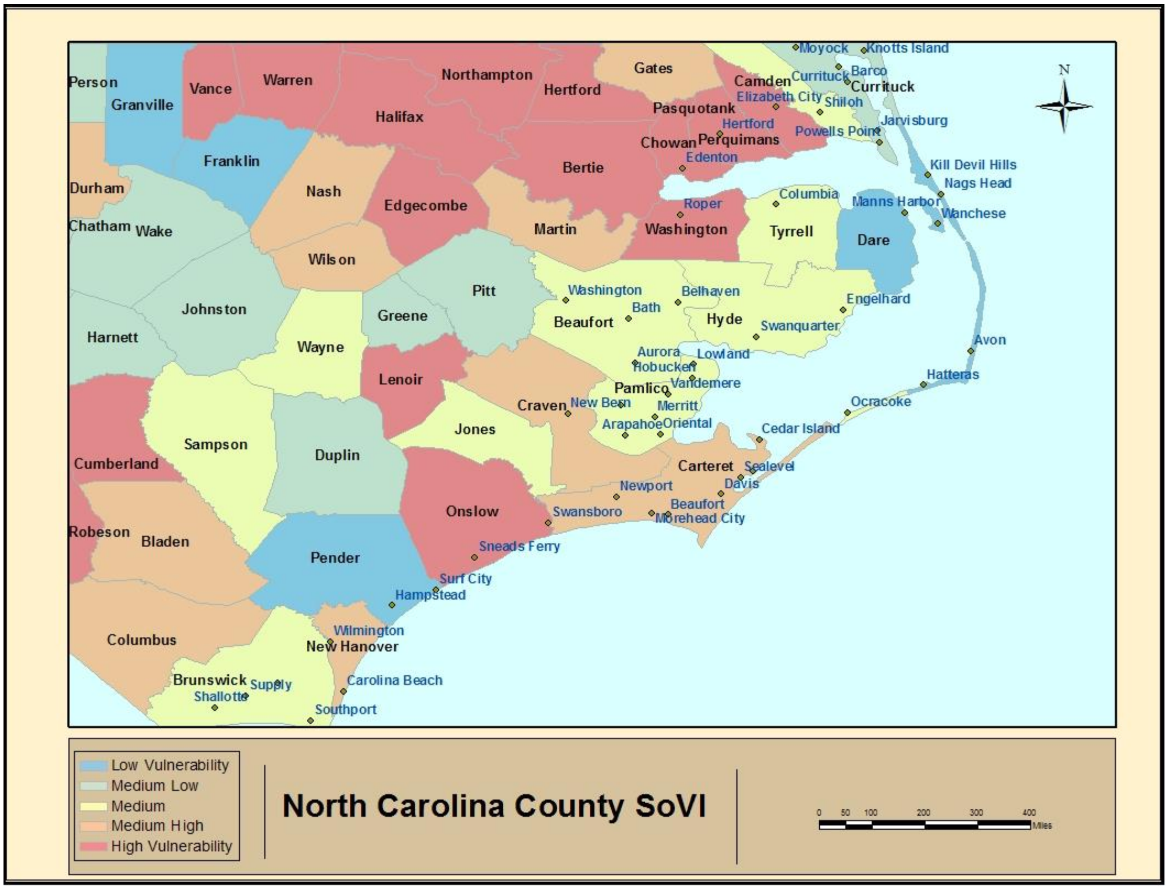


Figure 3-37. The Social Vulnerability Index applied to North Carolina Counties. Source http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in North Carolina, which were categorized as having high social vulnerability using the SoVI, are: Onlsow, Washington, Bertie, Chowan, Perquimans. Those with medium high vulnerability were New Hanover, Carteret, and Craven.

All six counties profiled under marine related employment in **Table 3-80** have persons involved in the seafood harvesting sector with the most in Carteret (440). The next sector with the most employed is ship boat builders with persons in Beaufort, Brunswick, Carteret and Chowan employ in that sector. Most have persons employed in the seafood dealer sector with Bertie County the only county without persons employed there.

Table 3-80. Marine Related Employment for 2007 in North Carolina Coastal Counties. Source: Census Bureau 2010

North Carolina County	Beaufort		Bertie		Brunswick		Camden		Carteret		Chowan	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	4	.	.	.	7	.	.	.	17	.	.	.
Seafood Dealers	.	60	.	.	.	28	.	5	.	29	.	38
Seafood Harvesters	167	.	6	.	240	.	37	.	440	.	26	.
Seafood Retail	4	.	.	.	12	12	.	.	17	22	.	.
Marinas	.	11	.	.	.	24	.	2	.	153	.	.
Processors	.	30	.	11	.	29	.	.	0	3	.	.
Scenic Water	.	.	.	.	.	13	.	.	.	10	.	.
Ship Boat Builders	.	326	.	.	.	295	.	.	.	343	.	349
Shipping Support	.	.	.	2	.	11	.	.	.	54	.	.
Shipping	.	.	.	2	.	67	.	.	.	10	.	.

Beaufort County

Beaufort County had a total population of 44,948 in 2000 that is estimated to have grown to 45,795 by 2007. Population density was 54 persons per square mile in 2000 and has grown to 55 persons in 2007. The majority of county residents were White (68.7%) and the Hispanic population was 4.2% in 2007. The percent of population that identified themselves as White alone was 67.4% with 28.2% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Beaufort County was estimated to have been 41.9, so Beaufort County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $39,341, lower than that for the state which was $46,107. There was an estimated 4.8% of the population in the civilian force that was estimated to be unemployed in Beaufort County, which was slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 15.1% which was higher than the 14.6% for the state as a whole during 2007. Beaufort County had a slightly lower owner occupied housing rate than the state with 82.2% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

The communities of Washington and Bath were identified as being primarily and secondarily involved fishing but neither community had either snapper grouper species or dolphin wahoo landings within the top fifteen.

Bertie County

Bertie County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. However, there were no communities identified as being either primarily or secondarily involved in Bertie County.

Brunswick County

Brunswick County had a total population of 73,141 in 2000 that is estimated to have grown to 98,667 by 2007. Population density was 86 persons per square mile in 2000 and has grown to 117 persons in 2007. The majority of county residents were White (71.6%) and the Hispanic population was 3.8% in 2007. The percent of population that identified themselves as White alone was 82.1% with 12.7% of the population Black. North Carolina as a state had an estimated 71.6% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Brunswick County was estimated to have been 41.0, so Brunswick County's median age is older than the State's 36.8. Median household income for 2007 was estimated to be $45,596, lower than that for the state which was $46,107. There was an estimated 4.9% of the population in the civilian force that was estimated to be unemployed in Brunswick County, which was just slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 12.4% which was lower than the 14.6% for the state as a whole during 2007. Brunswick County had a lower owner occupied housing rate than the state with 60.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

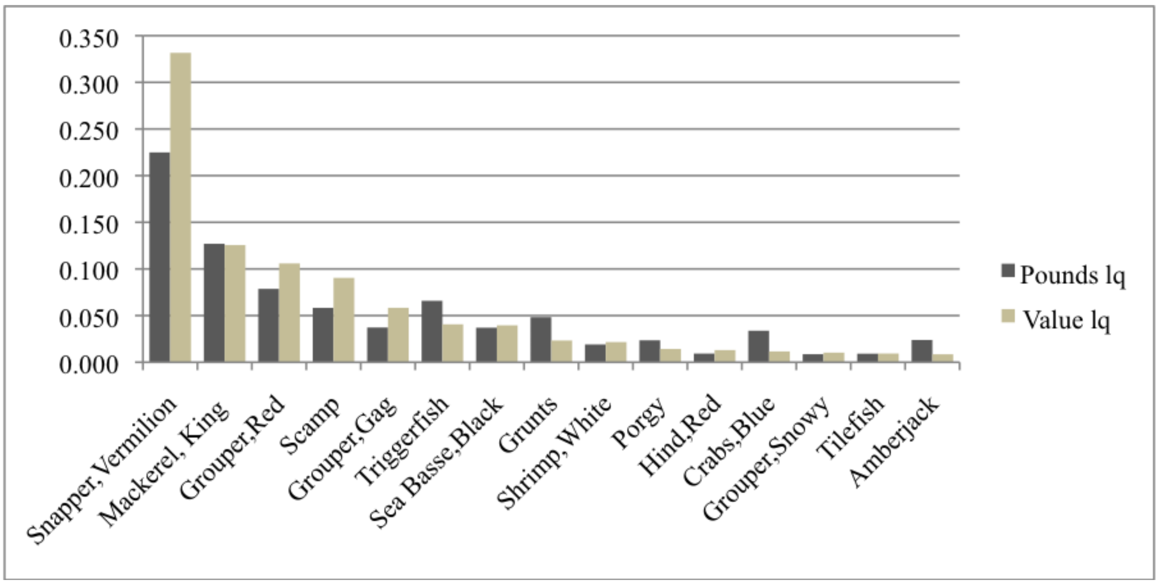


Figure 3-38. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Southport, North Carolina.
Source: ALS 2008

The community of Southport derives over 30% of its landed value from vermilion snapper and over 20% of lbs landed as depicted in **Figure 3-38**. Other snapper grouper species within the top fifteen were red grouper with just over 10% of proportional value and scamp at just under 10%. Gag grouper followed with 5.8% black sea bass and triggerfish 4% respectively.

The community of Supply does not derive as much of its landed value from snapper grouper species as does Southport, but does have over 14% of its value come from vermilion snapper. Gag, red grouper and scamp all contribute less than 2% each to the total landed value for the community.

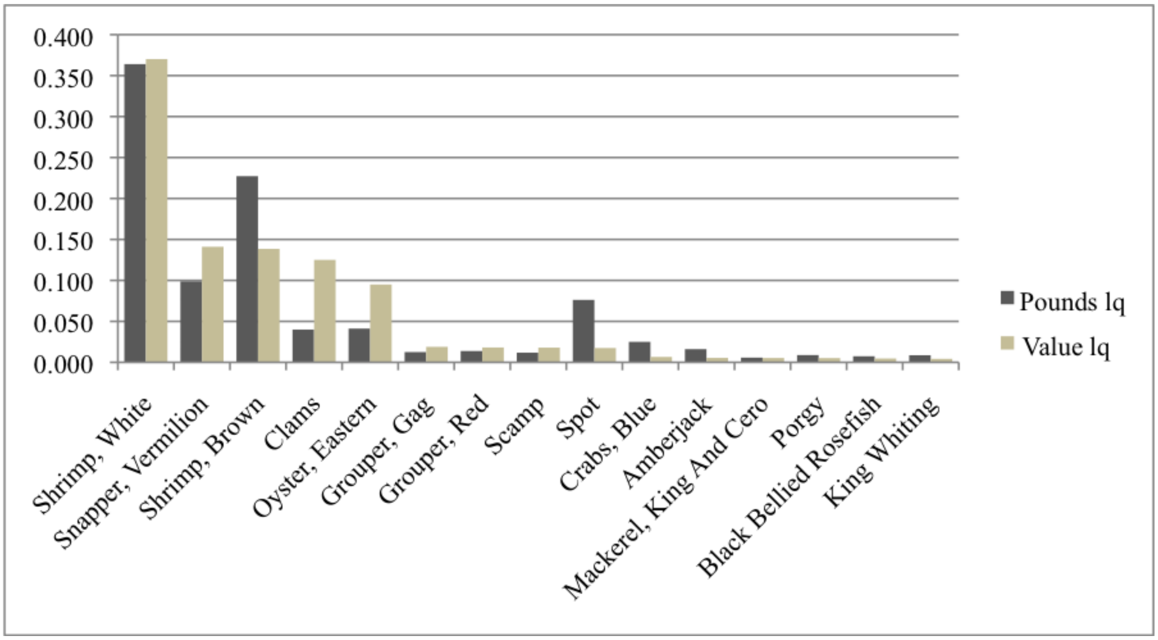


Figure 3-39. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Supply, North Carolina.
Source: ALS 2008

Camden County
Camden County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Shiloh was the only community identified as being either primarily or secondarily involved in Camden County and had no snapper grouper species landed in 2008 nor any dolphin or wahoo.

Carteret County
Carteret County had a total population of 59,383 in 2000 that is estimated to have grown to 63,184 by 2007. Population density was 117 persons per square mile in 2000 and has grown to 125 persons in 2007. The majority of county residents were White (90.0%) and the Hispanic population was 2.4% in 2007. The percent of population that identified themselves as White alone was 87.6% with 7.7% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Carteret County was estimated to have been 43.7, so Carteret County's median age is considerably older than the State's 36.8. Median household income for 2007 was estimated to be $49,948, higher than that for the state which was $46,107. There was an estimated 4.8% of the population in the civilian force that was estimated to be unemployed in Carteret County, which was slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 11.2% which was lower than the 14.6% for the state as a whole during 2007. Carteret County had a much lower owner occupied housing rate than the state with 59.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

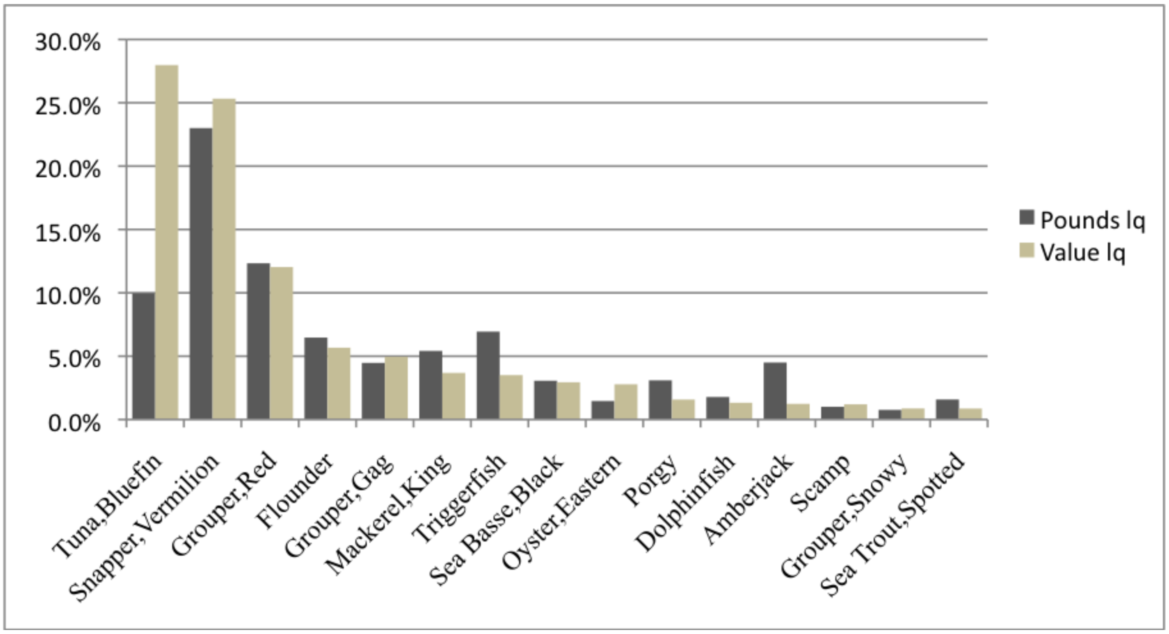


Figure 3-40. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Morehead City, North Carolina.
Source: ALS 2008

Although there are several communities within Carteret County that are identified as primarily involved in fishing, Morehead City was the only one with substantial landings of snapper grouper for 2008. Vermilion snapper provided over 25% of landed value in **Figure 3-40** with red grouper accounting for 12%. Gag comprises 5% of landed value and black sea bass just below 3% for the community as a whole.

Chowan County

Chowan County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Edenton was the only community identified as being either primarily or secondarily involved in Chowan County and had no snapper grouper species landed in 2008 nor any dolphin or wahoo.

The second six counties profiled under the continuation of **Table 3-80** and marine related employment also have persons employed in seafood harvesting in all counties. The most are in Dare County where 488 persons are counted as proprietors. Hyde and New Hanover have well over 100 each employed in the sector. The ship boat builder sector also has numerous persons employed, but Craven County has by far the most with 1369 persons employed and Dare County next with 392. All counties except for Hertford have employment in the marinas sector.

Table 3-80. Continued. Marine Related Employment for 2007 in North Carolina Coastal Counties.
Source: Census Bureau 2010

North Carolina County	Craven		Currituck		Dare		Hertford		Hyde		New Hanover	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	.	.	.	.	3	.	.	.	.	.	19	.
Seafood Dealers	.	.	.	33	.	41	.	.	.	.	.	5
Seafood Harvesters	45	.	66	.	488	.	6	.	136	.	151	.
Seafood Retail	.	2	.	2	9	14	.	6	.	5	4	34
Marinas	.	18	.	37	.	37	.	.	.	3	.	74
Processors	.	7	.	.	.	.	.	.	.	56	3	.
Scenic Water	.	.	.	.	.	31	.	.	.	2	.	28
Ship Boat Builders	.	1369	.	3	.	392	.	.	.	.	.	43
Shipping Support	.	.	.	.	.	2	.	27	.	.	.	367
Shipping	.	.	.	.	.	.	.	27	.	.	.	6

Craven County

Craven County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. New Bern was the only community identified as being either primarily or secondarily involved in Craven County and had snapper grouper landings of less than 2% in 2008 and less than 1% of dolphin or wahoo landing proportionate to overall landings.

Currituck County

Currituck County had a total population of 18,190 in 2000 that is estimated to have grown to 23,829 by 2007. Population density was 69 persons per square mile in 2000 and has grown to 91 persons in 2007. The majority of county residents were White (91.6%) and the Hispanic population was 2.1% in 2007. The percent of population that identified themselves as White alone was 88.5% with 7.7% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Currituck County was estimated to have been 38.6, so Currituck County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $56,953, higher than that for the state which was $46,107. There was an estimated 4.5% of the population in the civilian force that was estimated to be unemployed in Currituck County, which was almost equal to the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 7.6% which was much lower than the 14.6% for the state as a whole during 2007. Currituck County had a much lower owner occupied housing rate than the state with 66.8% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

Currituck communities that were identified as primarily or secondarily involved in fishing did not have sufficient numbers of snapper grouper landings nor did they have dolphin or wahoo landings of any substantial nature.

Dare County

Dare County had a total population of 29,967 in 2000 that is estimated to have grown to 33,677 by 2007. Population density was 78 persons per square mile in 2000 and has grown to 88 persons in 2007. The majority of county residents were White (95.1%) and the Hispanic population was 0.0% in 2007. The percent of population that identified themselves as White alone was 95.1% with 3.1% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Dare County was estimated to have been 42.4, so Dare County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $54,594, higher than that for the state which was $46,107. There was an estimated 3.3% of the population in the civilian force that was estimated to be unemployed in Dare County, which was lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 9.2% which was lower than the 14.6% for the state as a whole during 2007. Dare County had a much lower owner occupied housing rate than the state with 48.5% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

Although the fishing communities in Dare County land a considerable amount of seafood, very little of it is snapper grouper species. Of the three main communities, Wanchese was the only one that had a snapper grouper species in the top fifteen and that was black sea bass. Neither Manteo nor Mann's Harbor had a snapper grouper species listed in the top fifteen species in terms of the proportion of landings out of total landings. While black sea bass is only eleventh in terms of the top species landed in Wanchese, it represents a substantial amount of black sea bass, although it represents only a little over 2% of total landing for the community in **Figure 3-41.**

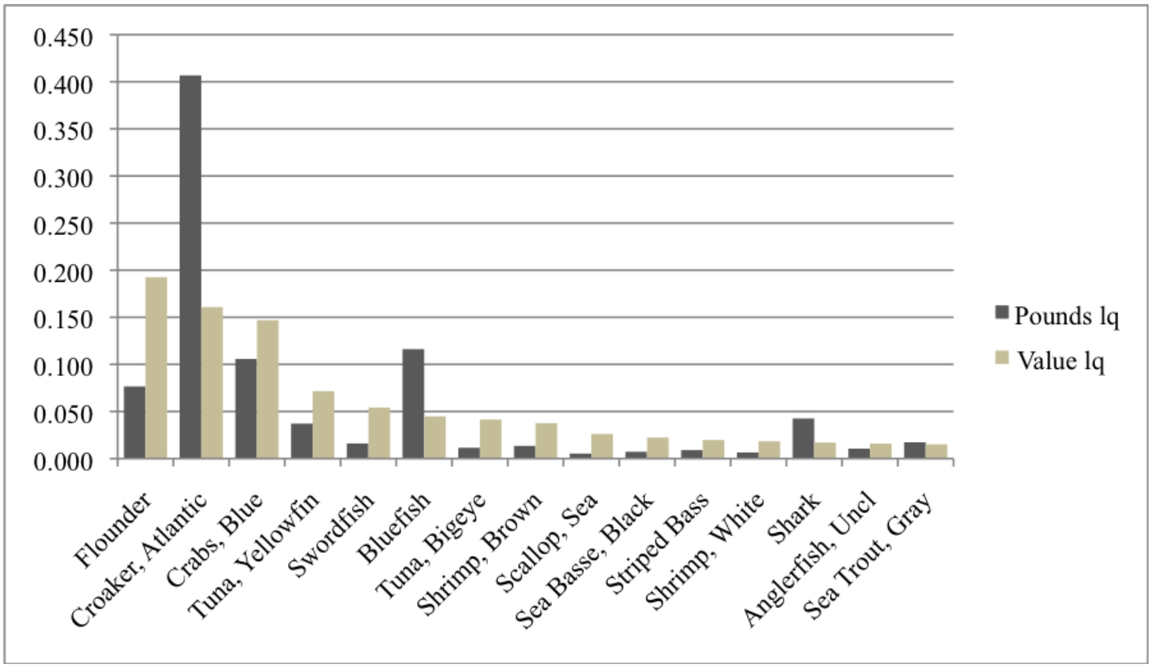


Figure 3-41. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wanchese, North Carolina.
Source: ALS 2008

<u>Hertford County</u>
Hertford County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. There were no communities identified as being either primarily or secondarily involved in fishing within Hertford County.

<u>Hyde County</u>
Hyde County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Ocracoke and Swan Quarter were the only communities identified as being either primarily or secondarily involved in fishing within Hyde County.

<u>New Hanover County</u>
New Hanover County had a total population of 160,327 in 2000 that is estimated to have grown to 189,860 by 2007. Population density was 835 persons per square mile in 2000 and has grown to 994 persons in 2007. The majority of county residents were White (80.7%) and the Hispanic population was 3.3% in 2007. The percent of population that identified themselves as White alone was 78.4% with 16.2% of the population Black. North Carolina as a state had an estimated 71.6% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of New Hanover County was estimated to have been 37.4, so New Hanover County's median age is just slightly older than the State's 36.8. Median household income for 2007 was estimated to be $49,068, higher than that for the state which was

$46,107. There was an estimated 3.6% of the population in the civilian force that was estimated to be unemployed in New Hanover County, which was just lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 13.9% which was lower than the 14.6% for the state as a whole during 2007. New Hanover County had a slightly lower owner occupied housing rate than the state with 84.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

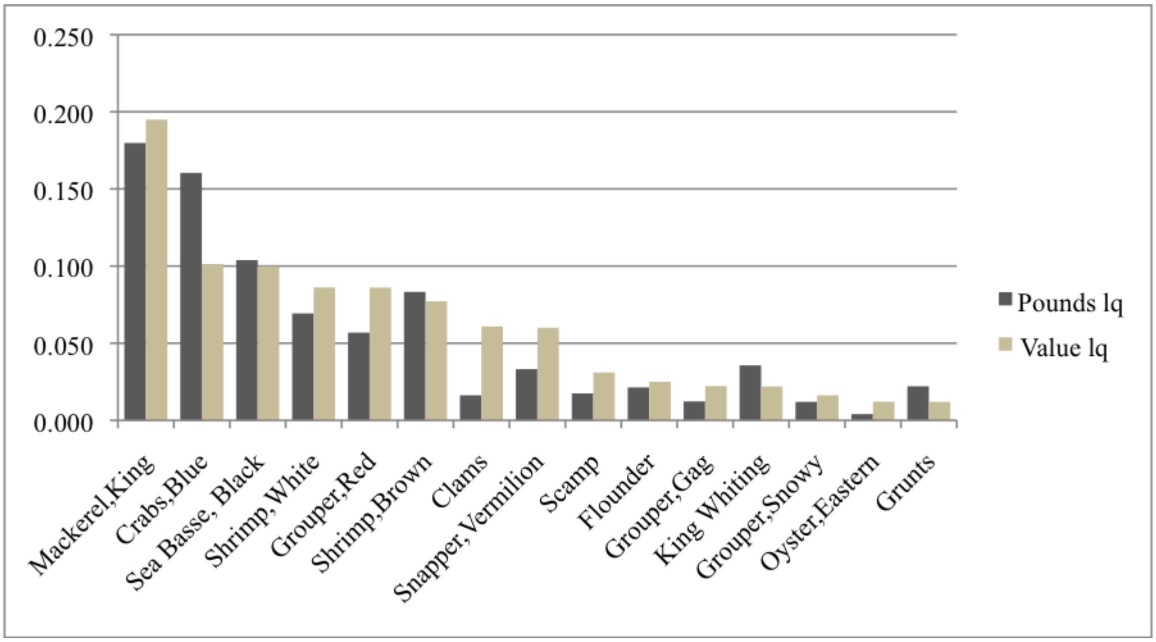


Figure 3-42. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Carolina Beach, North Carolina.
Source: ALS 2008

Carolina Beach has several snapper grouper species within its top fifteen species for landings and value with black sea bass accounting for slightly over 10% of value and landings. In **Figure 3-42** red grouper is the next most valuable snapper grouper species with over 8% of value and vermilion snapper with 6%.

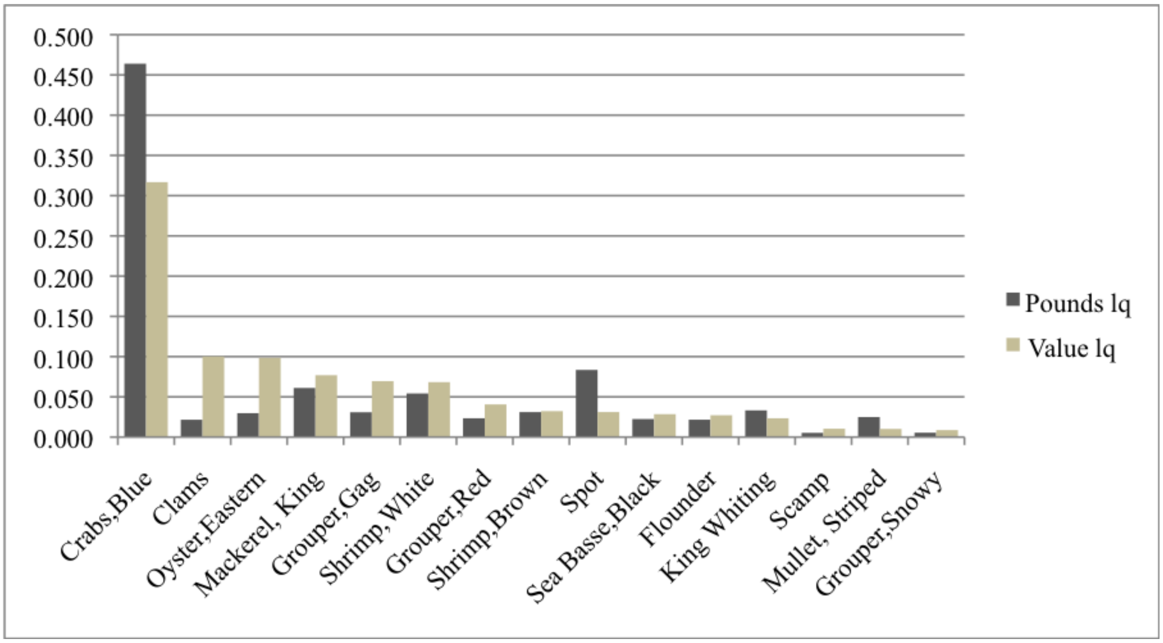


Figure 3-43. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wilmington, North Carolina.
Source: ALS 2008

Wilmington had several species of snapper grouper listed in **Figure 3-43** within the top fifteen out of total landings. Gag grouper was the highest in terms of value for snapper grouper with almost 7% of value from overall landings. Red grouper was next with 4% and black sea bass with just less than 3% of value of total landings for the community.

Table 3-80. Continued. Marine Related Employment for 2007 in North Carolina Coastal Counties.
Source: Census Bureau 2010.

North Carolina County	**Onslow**		**Pamlico**		**Pasquotank**		**Pender**		**Perquimans**		**Tyrrell**		**Washington**	
Sector	**# Prop**	**# Emp**	**# Prop**	**# Emp**	**# Prop**	**# Emp**	**# Prop**	**# Emp**	**# Prop**	**# Emp**	**# Prop**	**# Emp**	**# Prop**	**# Emp**
Boat Dealers	6	.	.	.	.	.	.	.	.	.	.	.	.	.
Seafood Dealers	.	4	.	40	.	67	.	47	.	2	.	.	.	.
Seafood Harvesters	237	.	130	.	31	.	67	.	28	.	61	.	8	.
Seafood Retail	6	9	.	.	.	29	3	3	.	.	.	.	.	.
Marinas	.	6	.	12	.	.	.	4	.	.	.	.	.	.
Processors	.	.	.	55	.	.	.	.	.	.	.	36	.	.
Scenic Water	.	2	.	.	.	.	.	.	.	.	.	.	.	.
Ship Boat Builders	.	153	.	14	.	.	.	16	.	.	.	.	.	.
Shipping Support	.	.	.	15	.	.	.	15	.	.	.	.	.	.
Shipping	.	.	.	.	.	12	.	.	.	.	.	.	.	.

Of all the counties in the final **Table 3-80**, only Onslow County has a population large enough to provide estimates of census demographics. With regard to marine related employment Onslow County has by far the most persons employed in the seafood harvester sector with 237 persons and Pamlico is second with 130. Each of the other counties has persons employed in that sector also. The other sectors do show some employment but it is sporadic and not in all counties.

Onslow County

Onslow County had a total population of 150,355 in 2000 that is estimated to have grown to 163,390 by 2007. Population density was 197 persons per square mile in 2000 and has grown to 213 persons in 2007. The majority of county residents were White (76.2%) and the Hispanic population was 6.9% in 2007. The percent of population that identified themselves as White alone was 74.2% with 18.4% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Onslow County was estimated to have been 25.7, so Onslow County's median age is considerably younger than the State's 36.8. Median household income for 2007 was estimated to be $44,641, lower than that for the state which was $46,107. There was an estimated 3.0% of the population in the civilian force that was estimated to be unemployed in Onslow County, which was lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 13.3% which was lower than the 14.6% for the state as a whole during 2007. Onslow County had a slightly lower owner occupied housing rate than the state with 84.8% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

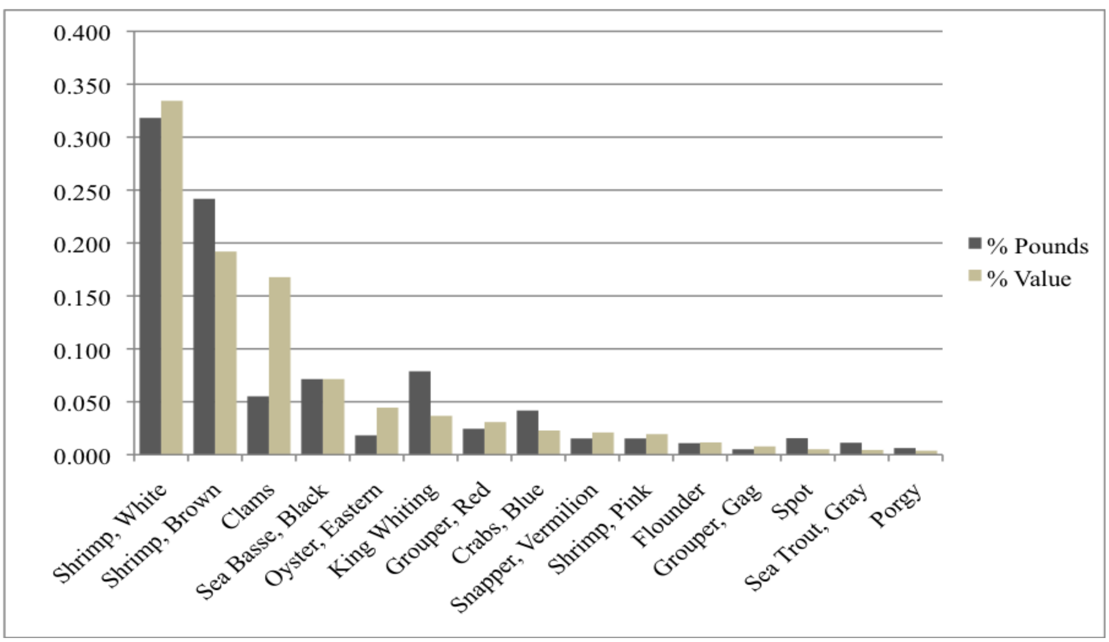


Figure 3-44. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sneads Ferry, North Carolina.
Source: ALS 2008

Sneads Ferry does have snapper grouper species listed in the top fifteen in **Figure 3-44** with black sea bass contributing 7% to overall landings and value. Red grouper is the next highest with just over three percent of landed value out of total value and vermilion snapper shows 2%.

3.8.4 Snapper Grouper Fishery Social Environment

Permit requirements for the commercial snapper grouper fishery were established in 1998 by Amendment 8 (SAFMC 1997a). The amendment created a limited entry system for the fishery and established two types of permits based on the historic landings associated with a particular permit. Those who could demonstrate a certain amount of landings over a certain time period received transferable permits that did not limit the number of lbs of snapper grouper that could be landed from federal waters (hereafter referred to as "unlimited commercial permits"). Vessels with verified landings, but did not meet the threshold were issued permits that allowed them to land 225 lbs of snapper grouper species from federal waters each trip (hereafter referred to as "limited commercial permits"). These permits were not transferable. New entry into the fishery required the purchase of two unlimited permits from existing permit holders for exchange for a new permit. This "two for one" system was intended to gradually decrease the number of permits in the fishery. These restrictions only applied to the commercial snapper grouper permit.

Over time the limited entry system has reduced capacity in the commercial fishery as evidenced by the reduction in the number of permits over the eight year period beginning in 2001 through 2008 (**Figure 3-45**). There was a 34% decrease in the number of unlimited permits and a 54% decrease in the number of limited permits during that time period. This downward trend in permits is also reflected in other measures of effort that also show a steady decline, i.e. number of trips, landings, etc. (SAFMC 2009a). While the limited entry program has contributed to the reduced capacity, other factors have also contributed to this downward trend. Economic factors like increased imports, decreasing prices and rising prices for diesel fuel have had a widespread affect on commercial fishing throughout many regions of the U.S. In addition, the loss of working waterfronts has contributed to a growing loss of fishing infrastructure that may play a role in the decline in many different fisheries.

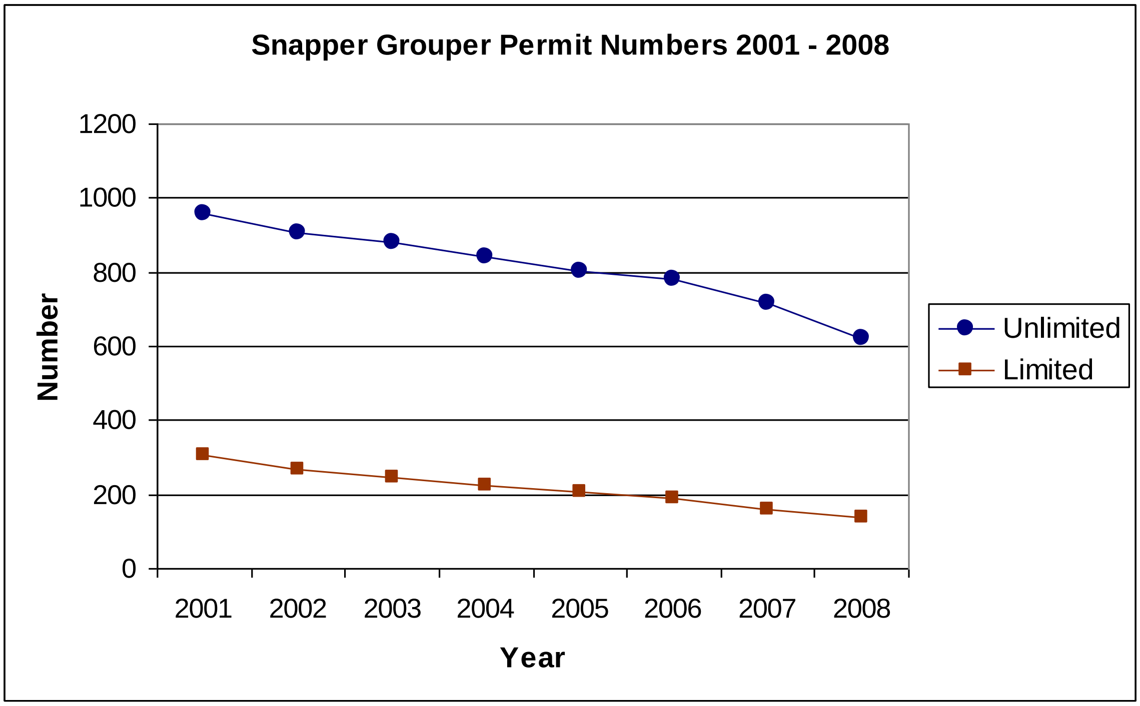


Figure 3-45. Snapper Grouper Permits from 2001-2008.
Source: SERO Permits.

The factors that affect the loss of working waterfronts in fishing communities are coastal development, rising property taxes, decreasing access to waterfront due to increasing privatization of public resources, rising cost of dockage and fuel, lack of maintenance of waterways and ocean passages, competition with imported fish, and other less tangible (often political) factors. These along with increasingly strict regulations have combined to place a great deal of stress on all communities and their associated fishing sectors including commercial, charter/headboat and private recreational. This is especially true for Monroe County in Florida which has very limited land area and has seen a steady rise in land values. Recent research on the Key's communities (Shivlani 2009) has described the problem of increasing land values and disappearance of working waterfronts, especially for communities like Key West.

Recreational fishing communities in the South Atlantic are listed in **Table 3-81**. These communities were selected by their ranking on a number of criteria including number of charter permits per thousand population and recreational fishing infrastructure as listed under the MRIP survey identified within each community.

Table 3-81. South Atlantic Recreational Fishing Communities.

Community	State	Community	State
Jekyll Island	GA	Cape Carteret	NC
Hatteras	NC	Kill Devil Hill	NC
Manns Harbor	NC	Murrells Inlet	SC
Manteo	NC	Little River	SC
Atlantic Beach	NC	Georgetown	SC
Wanchese	NC	Islamorada	FL
Salter Path	NC	Cudjoe Key	FL
Holden Beach	NC	Key West	FL
Ocean Isle	NC	Tavernier	FL
Southport	NC	Little Torch Key	FL
Wrightsville Beach	NC	Ponce Inlet	FL
Marshallberg	NC	Marathon	FL
Carolina Beach	NC	Sugarloaf Key	FL
Oriental	NC	Palm Beach Shores	FL
Topsail Beach	NC	Big Pine Key	FL
Swansboro	NC	Saint Augustine	FL
Nags Head	NC	Key Largo	FL
Harkers Island	NC	Summerland Key	FL
Calabash	NC	Sebastian	FL
Morehead City	NC	Cape Canaveral	FL

While studies on the general identification of fishing communities have been undertaken in the past few years, little social or cultural investigation into the nature of the snapper grouper fishery itself has occurred. A socioeconomic study by Waters et al. (1997) covered the general characteristics of the fishery in the South Atlantic, but those data are now over 10 years old and do not capture more recent important changes in the fishery. Cheuvront and Neal (2004) conducted survey work of the North Carolina commercial snapper grouper fishery south of Cape Hatteras, but did not include ethnographic examination of communities dependent upon fishing.

Figure 3-46. Snapper Grouper Dealers by Zip code of Permit Holder
Source: SERO 2010

Snapper Grouper dealers range the entire US east coast, with the heaviest concentration in the Florida Keys. There are also scattered dealers with permits in the Gulf of Mexico but primarily along Florida's west coast (**Figure 3-46**).

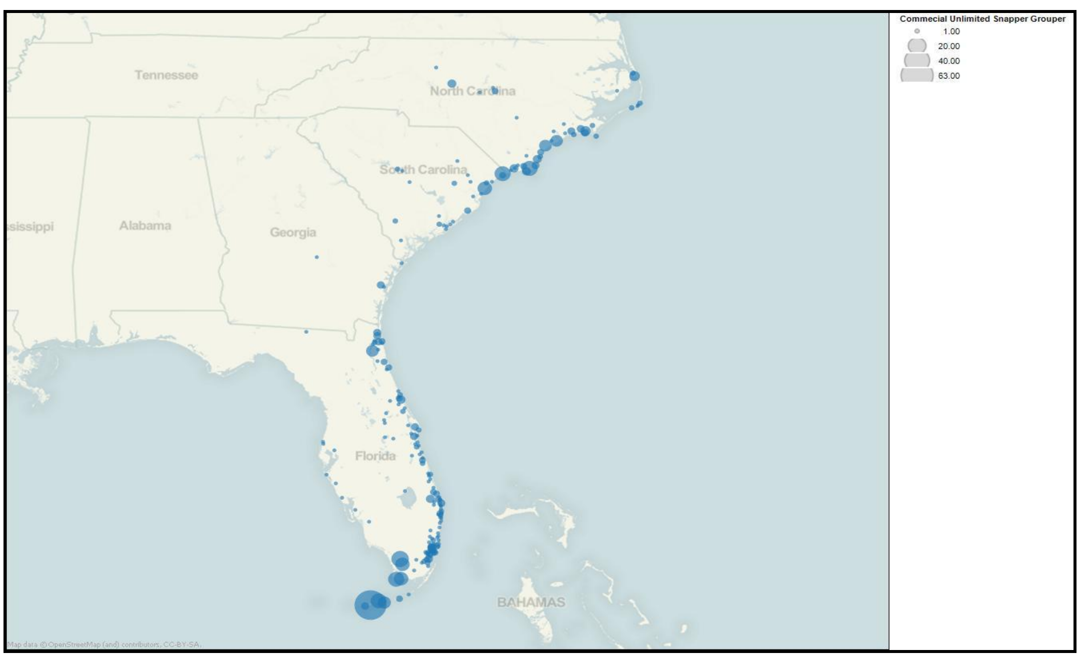


Figure 3-47. Snapper Grouper Commercial Limited Permits by Zip code of Permit Holder
Source: SERO 2010

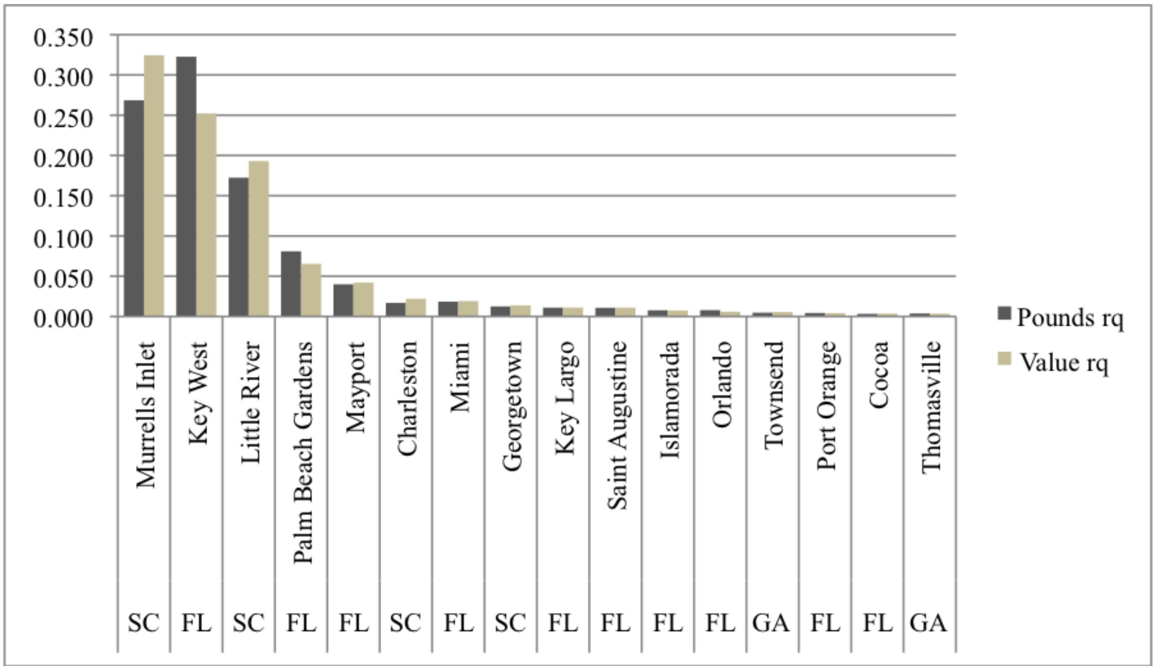


Figure 3-48. Shallow Water Grouper Regional Quotient Landings and Value for South Atlantic Coast Communities.
Source: ALS 2008

The eighteen communities in **Figure 3-48** represent those communities with at least 3% of the regional landings and value from shallow water grouper within the South Atlantic.

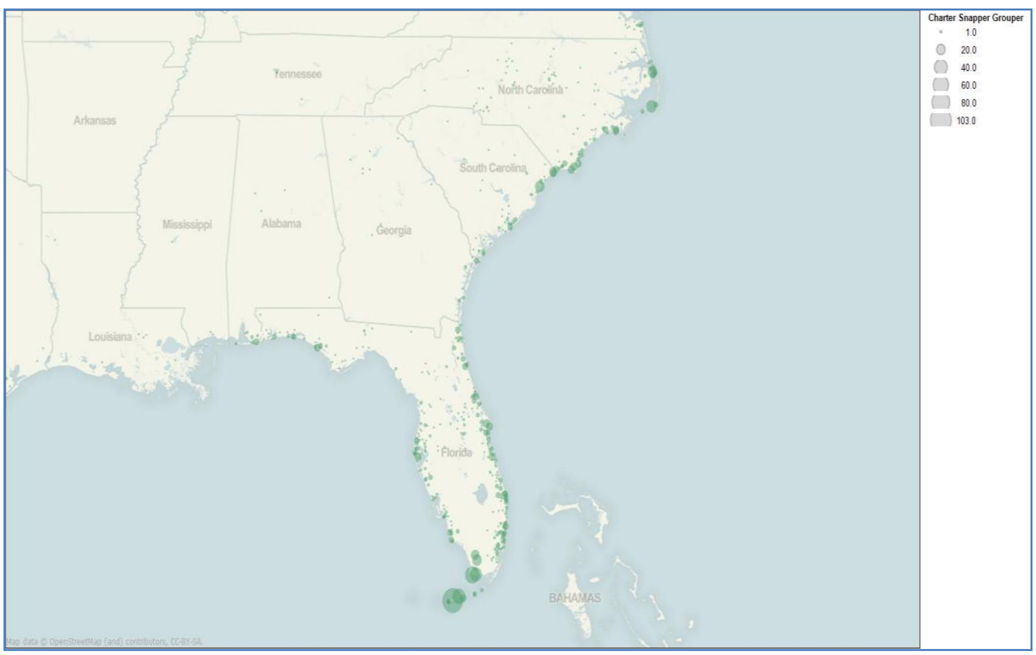


Figure 3-49. Snapper Grouper Charter Permits by Zip code of Permit Holder
Source: SERO 2010.

Like dealer permits, snapper grouper commercial permits also are located throughout the US east coast, with a heavier concentration in the South Atlantic states. The largest concentration of permits is in Monroe County and primarily the Florida Keys (**Figure 3-47**). Snapper grouper charter permits are shown in **Figure 3-49**.

3.8.5 Dolphin Wahoo Fishery Social Environment

The South Atlantic Fishery Ecosystem Plan contains a complete description of the fishing communities and fisheries of the South Atlantic, including the dolphin-wahoo fishery. These descriptions are summarized here and incorporated by reference.

There are little data available that are directly applicable to dolphin and wahoo recreational and commercial fishing communities in the U.S. South Atlantic. The data that are available are only partial for some communities and then, in many cases, only some sectors in those communities (commercial, charter, and/or recreational).

The dolphin wahoo fishery is primarily a recreational fishery with some commercial catch. In the mid 1990s there was considerable concern about the possibility of an increased commercial catch and its impact upon the recreational fishery. That concern spawned the fishery management plan that is in effect today with the South Atlantic Council as lead council (SAFMC 2003a). The commercial sector has remained a steady but small part of the fishery.

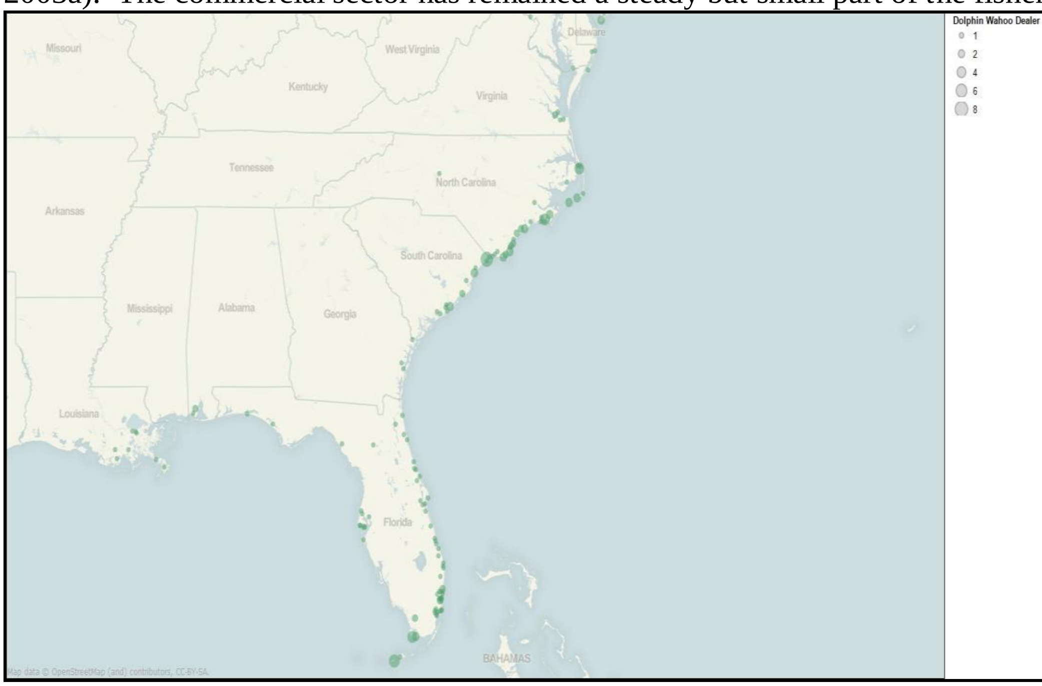


Figure 3-50. Dolphin Wahoo Dealers by Zip code of Permit Holder
Source: SERO 2010

Dolphin Wahoo dealers are located throughout the east coast of the US as far north as Maine. Permit holders are concentrated in the Florida Keys and both North and South Carolina., although the Florida east coast has a significant number from the central coast to Miami (**Figure 3-50**).

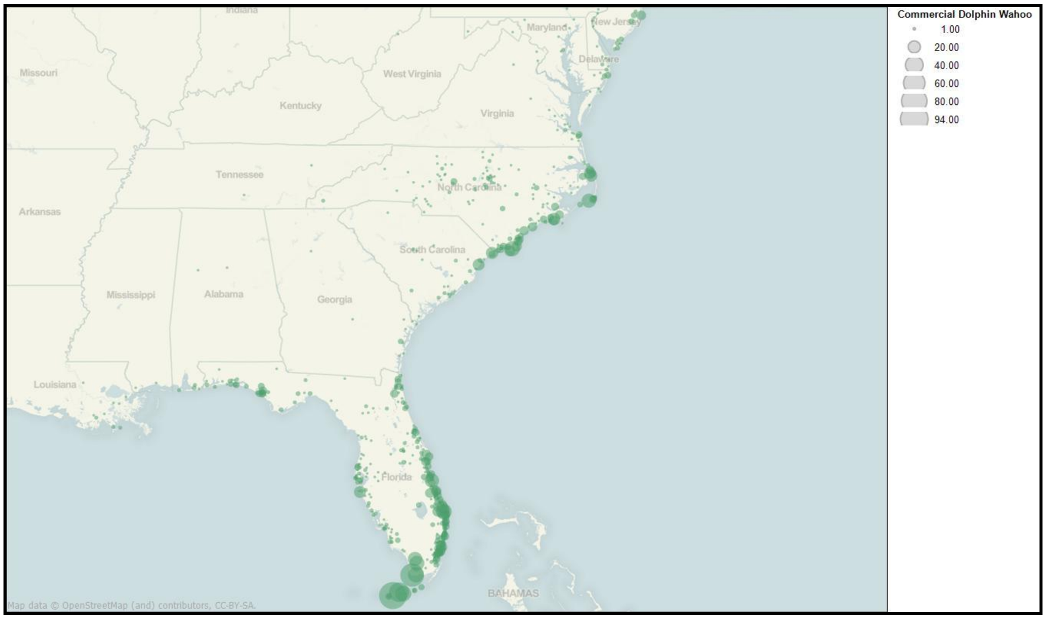


Figure 3-51. Dolphin Wahoo Commercial Permits by Zipcode of Permit Holder
Source: SERO 2010

Dolphin Wahoo commercial fishermen are also located throughout the east coast of the US. Permit holders are concentrated in the Florida Keys and both North and South Carolina., although the Florida east coast has a significant number from the central coast to Miami (**Figure 3-51**). This is true for Charter permits also according to **Figure 3-52**.

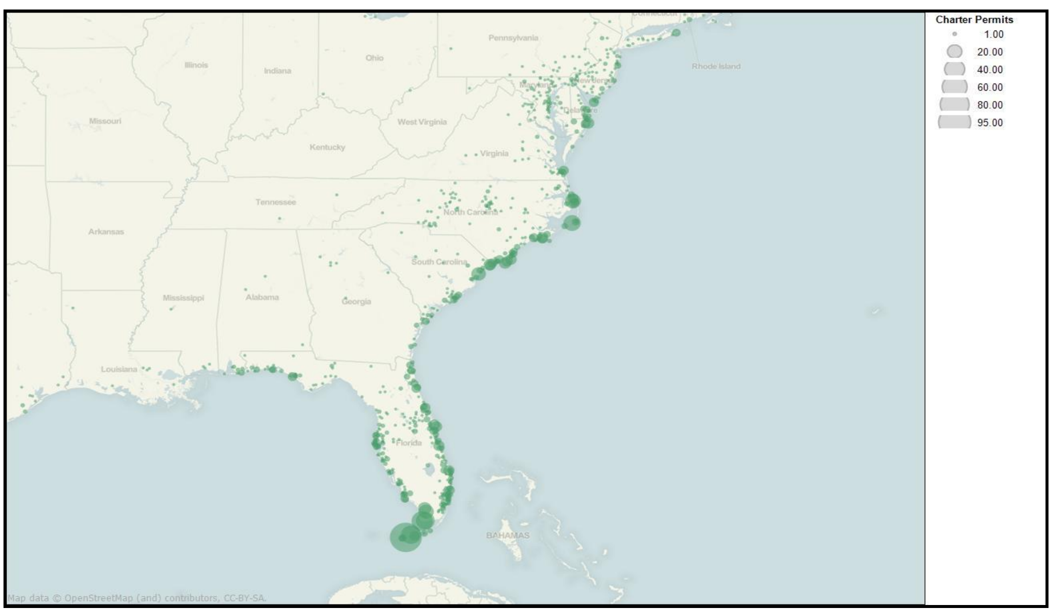


Figure 3-52. Dolphin Wahoo Charter Permits by Zipcode of Permit Holder
Source: SERO 2010

3.8.6 Sargassum Fishery Social Environment

At this time there is little information on the social environment of the *Sargassum* fishery. In the past there had been one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Today, it is likely that there are no vessels harvesting *Sargassum*.

3.8.7 Golden Crab Fishery Social Environment

The golden crab FMP was initiated in the mid 1990s and provided a management framework for a small fishery which harvested a deep water crab. The fishery has remained small and is prosecuted primarily off the southeastern coast of Florida, while golden crab dealers range the entire east coast of the US with the majority in Florida. (**Figure 3-53**).

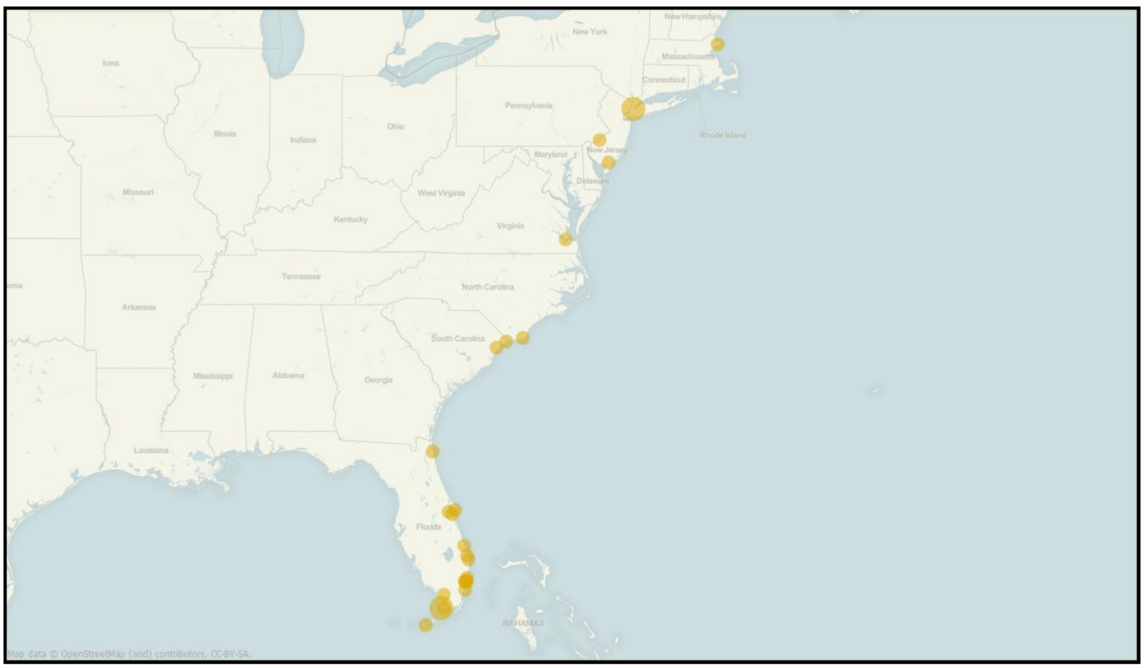
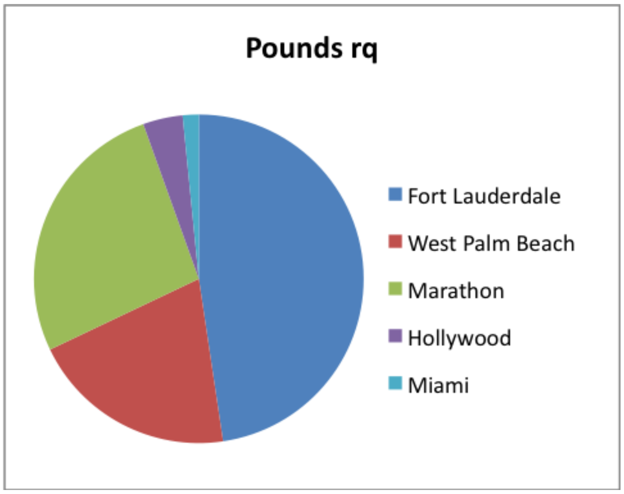


Figure 3-53. Golden Crab Dealer Permits by Zip code of Permit Holder
Source: SERO 2010

In terms of Golden crab landings and value, Fort Lauderdale has by far the largest portion of the regional quotient as shown in **Figure 3-54.** Marathon has the next largest portion of lbs landed, but West Palm Beach has a slightly higher portion of the value. Hollywood and Miami follow with much smaller percentages.



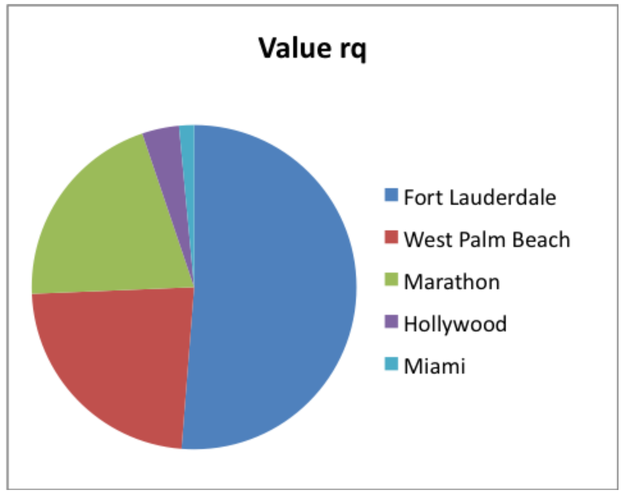


Figure 3-54. Golden Crab Landings and Value Regional Quotient by Community
Source: ALS 2008

3.8.8 Environmental Justice

As mentioned, environmental justice is related to the idea of social vulnerability; however, there are no thresholds with regard to social vulnerability. Environmental Justice is addressed through Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations and requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Impacts of commercial and recreational fishing on subsistence fishing are a concern in fisheries management; however, there are no such implications from the action proposed in this amendment.

Although it is anticipated that the impacts of this amendment may affect communities with environmental justice concerns, because the impacts should not discriminate against any group, this action should not trigger any environmental justice concerns. In reviewing the thresholds for minorities among all coastal counties involved, Liberty County in Georgia, Miami-Dade and Broward in Florida, all exceed the threshold for minorities. With regard to poverty, Georgetown County in South Carolina; Miami-Dade Counties in Florida all exceed the poverty threshold. Again, as illustrated by the SoVI, environmental justice is closely tied to social vulnerability index as most of the counties that do not meet these thresholds are also considered medium high or highly vulnerable. It is anticipated that the impacts from the following management actions may impact minorities and the poor, but not through discriminatory application of these regulations.

4.0 Environmental Effects

4.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers)

4.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU)

Alternative 1 (No Action). Do not remove any species from the Snapper Grouper FMU.

Alternative 2 (Preferred). Remove species from the Snapper Grouper FMU with 95% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate		

Alternative 3. Remove species from the Snapper Grouper FMU with 90% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice	

Alternative 4. Remove species from the Snapper Grouper FMU with 80% (or greater) of landings in state waters, except hogfish and mutton snapper.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice
Graysby	Schoolmaster	Saucereye porgy	Puddingwife	Margate

Alternative 5 (Preferred). Remove all the species under the Florida Marine Life Species Rule from the Snapper Grouper FMU.

Queen triggerfish	Porkfish	Puddingwife

Alternative 6. Remove species with state and federal (combined) landings that are less than, or equal to 10,000 lbs (with the exception of speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Spanish grunt
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Puddingwife
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 7. Remove species with state and federal (combined) landings that are less than, or equal to 20,000 lbs (with the exception of cubera snapper, warsaw grouper, lesser amberjack and speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Puddingwife
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Bar jack
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	Ocean triggerfish
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	
Sand tilefish	Yellowfin grouper	Graysby	Sailors choice	Spanish grunt	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 8. Remove tomtate, knobbed porgy, jolthead porgy, and whitebone porgy from the Snapper Grouper FMU.

Tomtate Knobbed porgy Jolthead porgy Whitebone porgy

Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the Snapper Grouper FMU.

Tiger grouper Smallmouth grunt

Note: Zero landings for both species.

4.1.1.1 Biological Effects

Alternative 1 (No Action) would not change the current composition of the multi-species snapper grouper fishery management unit (FMU), which includes 73 species of snappers, groupers, tilefishes, jacks, hinds, grunts, triggerfishes, porgies, and several other bottom fish. Sixty-nine of those species were identified in the original FMP for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (SAFMC 1983). Wreckfish was added to the FMU through Amendment 3 to the Snapper Grouper FMP (SAFMC 1990b), and Atlantic spadefish, lesser amberjack, and banded rudderfish were added in Amendment 4 to the FMP (SAFMC 1991). According to the Snapper Grouper FMP, the composition of the snapper grouper FMU was originally defined to include species that:

1. Are considered to be sub-tropical/tropical in distribution and therefore limited to south of Cape Hatteras on the east coast of the U.S.;
2. Comprise overlapping ranges; and
3. Are part of a large multi-species fishery where co-occurring species are taken together with the same gear in the same area (SAFMC 1983).

At the time the FMU was established, the South Atlantic Council was concerned that about 13 of the species included in the FMU could be experiencing growth overfishing and that many others could be subject to overfishing in the future if corrective action was not taken (SAFMC 1983).

Currently, five species in the FMU (black sea bass, red grouper, red porgy, red snapper, and snowy grouper) are classified as "overfished," and nine species (black sea bass, red grouper, red snapper, snowy grouper, golden tilefish, gag, speckled hind, and warsaw grouper) are classified as "subject to overfishing". The South Atlantic Council has recently established restrictive measures to end overfishing and rebuild overfished species, with the exception of red grouper, which is currently being addressed in Amendment 24 to the Snapper Grouper FMP.

All the remaining species in the snapper grouper FMU are either classified as "not overfished", "not subject to overfishing", or "unknown", with the vast majority classified under the latter. These species are not likely to be assessed in the foreseeable future because they are not generally landed in sufficient quantities to provide scientists with data needed to estimate stock abundance. Commercial catches of these less desirable species are subject to general permitting requirements.

There are two types of snapper grouper federal commercial permits: (1) a transferable unlimited permit, and (2) a 225-lb trip limit non-transferable permit, which limits the permit holder to harvesting no more than 225 lbs of snapper grouper species on a given trip. No new 225-lb permits are being issued and the 225-lb permits cannot be sold or transferred to other individuals. The transferable unlimited permit is a limited entry permit. That is, there is a set number of such permits and persons wishing to obtain one must purchase two permits from existing permit holders and retire one of the permits. Individuals with an unlimited transferable permit are not restricted in the amount of fish they can catch on a trip unless a trip limit has been established for a species. In 2010, there were 598 and 136 unlimited transferable permits and 225-lb non-transferable permits, respectively (**Table 3-2**). With the exception of tomtate and blue runner, recreational catches of all snapper grouper species are subject to aggregate bag limits. Additionally, several species are managed with minimum size limits and/or a seasonal closure.

The FMU defined by each Council FMP identifies the specific fishery (or that portion thereof) that is relevant to the FMP's management objectives. Decisions about the composition of FMUs are an integral part of the plan development process, as FMUs define the specific species that are to be the target of federal conservation and management. NMFS guidelines to define FMUs specify that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 CFR §600.320(d)(1)). NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)):

1. The importance of the fishery to the Nation and the regional economy;
2. whether an FMP can improve the condition of the stock;
3. the extent to which the fishery could be or already is adequately managed by states;
4. whether an FMP can further the resolution of competing interests and conflicts;
5. whether an FMP can produce more efficient utilization of the fishery;
6. whether an FMP can foster orderly growth of a developing fishery; and
7. costs of the FMP balanced against benefits.

This action considers these factors in evaluating whether all species originally included in the snapper grouper FMU in 1983 are currently in need of federal conservation and management. The South Atlantic Council intends to review whether species meet these factors every five years

(SAFE report) to determine whether they should be added or removed from the FMU and take action as appropriate.

The Snapper Grouper FMP, as amended, established a "complex" comprising 73 species. However, recent examination of 2005-2009 landings data reveals that more than half (43) of those species are harvested primarily (>50%) in state waters. During that time period, 100% of the harvest of 3 species occurred in state waters, greater than 95% of the harvest of 10 species occurred in state waters, and greater than 80% of the harvest of 15 species occurred in state waters (see **Table 4-4**). Furthermore, landings of most species in the complex are small; 53 species together comprise just 10% of the total snapper grouper landings because they are not directly targeted and are generally less desirable. These are the species the South Atlantic Council is considering for removal under this action.

All 73 species in the snapper grouper FMU would remain subject to current federal regulations under **Alternative 1 (No Action)**. Additionally, that alternative would make all 73 species subject to the ABC control rule the South Atlantic Council chooses to adopt in this amendment to generate ACLs for managed species. Moreover, adoption of **Alternative 1 (No Action)** would imply that each of the 73 species in the snapper grouper complex is in need of federal fishery conservation and management, including species for which little or no landings were recorded in federal waters between 2005-2009 (see **Tables 4-2** through **4-6**). In theory, specifying ACLs for those species and constraining federal fisheries to those ACLs would provide biological and ecological benefits; however, the landings data that would be used to define such ACLs are generally not sufficient to provide meaningful management benchmarks because those species are landed in such small quantities.

NMFS' National Standard guidelines state that the principle implicit in National Standard 7 (NS7) is that not every fishery needs regulation. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires Councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs. The overall objective of this action is to identify potential management efficiencies that could be achieved without compromising federal conservation and management objectives.

Alternatives 2, 5, and **9 (Preferreds)** would remove 13 species from the snapper grouper FMU, using criteria intended to identify species that meet NMFS guidelines regarding the need for federal fishery conservation and management. These criteria relate to the proportion of the fishery that occurs in state versus federal waters, the amount of fish harvested from federal waters, species desirability, and other factors. Any species removed from the FMU under these alternatives would no longer be subject to federal regulations. Current federal regulations for all species considered for removal are detailed in **Table 4-1**. **Alternatives 2, 5,** and **9 (Preferreds)** would not affect state regulations for these species, except in South Carolina. Regulations in state waters of South Carolina (http://www.dnr.sc.gov/regulations.html) are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. Therefore, any species that is removed from the snapper grouper FMU under this alternative would no longer be subject to state regulations in South Carolina waters unless that state acted to re-institute such regulations.

Table 4-1. Summary of current federal regulations for species proposed to be removed from the snapper grouper FMU under **Action 1**, **Alternatives 2, 5,** and **9 (Preferreds)**.

Species proposed for removal	Alternative(s)	Comm/Rec Min Size limit	Rec Bag limit/Comm trip limit	Comm/Rec Closed Season
Queen triggerfish	5	No minimum size limit	Included in 20 fish snapper grouper aggregate; No species-specific commercial trip limit.	No closed season
Crevalle jack	2			
Yellow jack	2			
French grunt	2			
Black margate	2			
Bluestriped grunt	2			
Spanish grunt	2			
Porkfish	2,5			
Sheepshead	2			
Grass porgy	2			
Tiger grouper	9			
Smallmouth grunt	9			
Puddingwife	2,5			

Alternatives 2 (Preferred), 3, and **4** would remove (with limited exceptions) species that were taken predominantly from state waters during 2005-2009. **Alternative 2 (Preferred)** specifies the most conservative threshold, proposing to remove 10 species for which 5% or less of the total harvest occurs in federal waters (**Table 4-2**). **Alternative 3** proposes to remove 11 species for which 10% or less of the total harvest occurs in federal waters (**Table 4-3**). **Alternative 4** proposes to remove 15 species for which 20% or less of the total harvest occurs in federal waters (**Table 4-4**). Many of the species in **Alternatives 2 (Preferred)-4** are harvested in more significant quantities than are species in **Alternatives 6-9 (Preferred)**, but such harvest occurs primarily in state waters outside the South Atlantic Council's management jurisdiction. Because such a small portion of the overall fishing activity for those species occurs in federal waters, any conservation and management measures applied to federal waters are not expected to have a noticeable effect on their populations.

Mutton snapper and hogfish are predominantly encountered and harvested in Florida state waters; however, in contrast to other species being identified for removal in **Alternatives 2, 5,** and **9 (Preferreds)**, the landings of these species, which are fairly large, are predominantly taken by the commercial sector. Therefore these species are omitted from **Alternative 4** despite meeting the removal criterion specified by that alternative because there was concern there may be an incentive for vessels registered in other states to target those commercially-desirable species in Florida waters if they are no longer federally managed. Similar concerns do not exist for other species in the South Atlantic Council's **Alternatives 2, 5,** and **9 (Preferreds),** because the species are predominantly taken by recreational fishermen who typically do not venture long distances for most fishing trips.

Table 4-2. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 4-3. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 4-4. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

COMMON NAME	2005 EEZ	2005 State	2006 EEZ	2006 State	2007 EEZ	2007 State	2008 EEZ	2008 State	2009 EEZ	2009 State	TOTAL EEZ	TOTAL State	% State	TOP STATE MRFSS	TOP STATE HBS
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**
Schoolmaster	115	868	0	5,623	1,904	4,722	1,492	3,836	10	6,159	**3,521**	**21,208**	**86%**	**FL**	**FL**
Margate	1,727	28,788	2,676	18,025	3,071	18,104	1,815	4,650	3,721	5,283	**13,010**	**74,850**	**85%**	**FL**	**FL**
Saucereye porgy	139	4,453	591	769	325	0	0	0	0	223	**1,055**	**5,445**	**84%**	**FL**	**FL**
Graysby	1,624	8,722	2,620	7,266	530	4,428	1,099	8,132	1,219	1,953	**7,091**	**30,500**	**81%**	**FL**	**SC**

Source: SEFSC ACL and SE HBS CRNF datasets.*

*Note: **MRFSS**, **TPWD**, and **Commercial** data are from SEFSC ACL datasets and **HBS** data are from the SE HBS CRNF files. Therefore, **all sectors** are being considered for the state vs. federal landings analysis. Note that the CRNF files state vs. federal determination was based upon the headboat's "Distance from Shore" field. This field is sometimes not completed, and the weights of fish landed may not be very accurate. Additionally, the CRNF files may represent an incomplete landings dataset due to non-compliance with reporting requirements. As such, the landings values from the HBS component of the state vs. federal analysis will likely be underestimates of the total lbs landed and should not be substituted for the HBS landings data found within the SEFSC ACL dataset (which does not contain a state vs. federal breakout for headboat). Note ACL recreational dataset landings estimates may differ from MRFSS website queries because 'For Hire' includes headboat and charter, and SEFSC has used improved weight substitution and charter boat estimation procedures that differ from those on the MRFSS website. Note 'Atlantic' for recreational data includes MRFSS: SE Atl. states (NC-FLE) and Headboat: Atlantic (NC-FL Keys areas 1-17). Note gag and black grouper landings have been adjusted for misidentification prior to 1990.

Tiger grouper, black snapper, smallmouth grunt, misty grouper, and cottonwick did not have any reported landings. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest and sale is prohibited as per Amendment 17B.

Table 4-5. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Queen triggerfish	5	0	3,503	3,503	Federal
Sheepshead	2	251,552	1,743,372	1,994,924	FL
Crevalle jack	2	208,540	551,131	759,671	FL
Black margate	2	0	86,428	86,428	FL
Bluestriped grunt	2	0	44,873	44,873	FL
Yellow jack	2	8	35,209	35,217	FL
Porkfish	2,5	0	20,756	20,756	FL
French grunt	2	0	1,142	1,142	FL
Grass porgy	2	0	791	791	FL
Puddingwife	2,5	0	418	418	FL
Spanish grunt	2	0	138	138	FL
Smallmouth grunt	9	0	0	0	N/A
Tiger grouper	9	0	0	0	N/A

Alternative 5 (Preferred) evaluates whether species managed under the Florida Marine Life Species Rule (queen triggerfish, porkfish, and puddingwife) are in need of federal conservation and management based on the adequacy of management by the state of Florida. During 2005-2009, 100% and 97% of puddingwife and porkfish landings, respectively, were taken from state waters, and these catches occurred predominantly in Florida fisheries (**Tables 4-4 to 4-6**). While most of the queen triggerfish harvest occurred in federal waters during 2005-2009 (**Tables 4-6** and **4-9**), that species is not targeted by commercial or recreational fishermen in federal waters or in quantities that would impact the population.

Removing the proposed 13 species from the Snapper Grouper FMU would not impact state management, except in South Carolina. As previously noted, regulations in South Carolina waters are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. This means, queen triggerfish, porkfish, and puddingwife would no longer be included in the 20-fish snapper grouper aggregate bag limit in South Carolina waters if they were removed from the FMU under this alternative unless that state acted to re-institute such regulations. However, these species are not generally harvested in South Carolina waters. The Florida Marine Life Rule regulations would continue to apply to species harvested in Florida state waters. The Florida Marine Life Species Rule requires use of non-lethal methods of harvest and that the fish, invertebrates, and plants so harvested, be maintained alive for the maximum possible conservation and economic benefits. As such, the biological impacts of removing these three species from the FMU are expected to be insignificant.

Table 4-6. State and federal combined average commercial and recreational landings (lbs whole weight) of species considered for removal from the snapper grouper FMU under **Alternative 5 (Preferred)** during 2005-2009.

Species	Commercial	Recreational
Porkfish	0	20,756
queen triggerfish	0	3,503
Puddingwife	0	418

Alternatives 6 and **7** would remove species from the FMU if their combined (state and federal) average annual landings for 2005-2009 (**Tables 4-7** and **4-8**) were below a specified threshold. Many of these species could be considered to be of minor importance to the Nation and regional economy, because they are not captured in sufficient quantities to support targeted fisheries. The sum of the average landings of the 28 species considered for removal in **Alternative 7** is 117,697 lbs, accounting for just 0.14% of the snapper grouper landings during 2005-2009. Nine of the species considered in **Alternatives 6** and **7** for removal have average landings less than 1,000 lbs per year, and two species have no landings (smallmouth grunt and tiger grouper).

Table 4-7. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086

Table 4-7. Continued. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	**AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS**
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 4-8. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	**AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS**
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423

Table 4-8. Continued. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511
Bar jack	10,726
Ocean triggerfish	10,962
Sand tilefish	11,168
Yellowfin grouper	12,930
Graysby	14,648
Sailors choice	19,239

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 4-9. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Yellowfin grouper	7	5,562	7,368	12,930	Federal
Scup	6,7	0	8,511	8,511	Federal
Queen snapper	6,7	4,804	282	5,086	Federal
Yellowmouth grouper	6,7	17	3,487	3,504	Federal
Queen triggerfish	5,6,7	0	3,503	3,503	Federal
Rock sea bass	6,7	609	1,716	2,325	FL
Misty grouper	6,7	1,833	0	1,834	Federal
Mahogany snapper	6,7	8	459	467	Federal
Longspine porgy	6,7	12	360	372	Federal
Black snapper	6,7	141	0	141	Federal
Sailors choice	3,4,7	0	19,239	19,239	FL
Graysby	4,6,7	520	14,129	14,648	FL
Sand tilefish	7	2,205	8,963	11,168	FL
Ocean triggerfish	7	0	10,962	10,962	FL
Bar jack	7	4,528	6,198	10,726	Federal

Table 4-9. Continued. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7**, **Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Dog snapper	6,7	528	5,930	6,458	FL
Schoolmaster	4,6,7	186	5,237	5,423	FL
Coney	6,7	8	2,445	2,453	Federal
Blackfin snapper	6,7	816	1,271	2,087	Federal
Saucereye porgy	4,6,7	0	1,975	1,975	FL
Bank sea bass	6,7	355	5,212	5,567	Federal
French grunt	2,3,4,6,7	0	1,142	1,142	FL
Grass porgy	2,3,6,7	0	791	791	FL
Puddingwife	2,3,4,5,6,7	0	418	418	FL
Spanish grunt	2,3,4,6,7	0	138	138	FL
Cottonwick	6,7	0	6	6	N/A
Smallmouth grunt	6,7	0	0	0	N/A
Tiger grouper	6,7	0	0	0	N/A

SOURCE: SEFSC ACL Datasets (2010).

Considering the 7 factors identified in the NMFS NS 7 guidelines for determining whether a species is in need of federal conservation and management, the species in **Alternatives 6** and **7** are possible candidates for removal from the FMU. In addition to the small magnitude of landings for species in **Alternatives 6** and **7**; most of the catch is from the recreational sector. Of the 28 species considered under **Alternative 7**, only three (yellowfin grouper, misty grouper, queen snapper) are landed primarily by the commercial sector, and landings of those species are relatively minor. Since most recreational data are survey based and these species are rarely encountered in the fishery, those data are extremely variable and uncertain.

Alternative 8 would remove an additional four species (tomtate, knobbed porgy, jolthead porgy, and whitebone porgy) from the snapper grouper FMU because they are not targeted or desired. Tomtate is sometimes retained for use as bait, but is the smallest of the grunts and is not highly regarded by fishermen. That species is not currently subject to any regulations and is not included in the 20-fish aggregate bag limit. Knobbed porgy, jolthead porgy, and whitebone porgy are included in the South Atlantic Council's 20-fish aggregate bag limit.

Alternative 9 (Preferred) would remove tiger grouper and smallmouth grunt from the snapper grouper FMU since there were zero landings for these species from 2005 to 2009. These species also met criteria established for classification as ecosystem component species (EC) in the NS1 Guidelines (see **Action 2**).

The Magnuson-Stevens Act requires that ACLs be set at a level that prevents overfishing. For species in **Alternative 9 (Preferred)**, which have very low landings, or no landings at all, setting appropriate ABCs and ACLs to ensure overfishing does not occur is very difficult. Further, it is unlikely sufficient data will ever be available to conduct an effective stock assessment on these species. Inclusion of these species in the FMP is unlikely to improve the condition of the stock, produce more efficient utilization of the snapper grouper fishery, or foster orderly growth of a developing fishery because catches of these species have been largely constrained by their availability to the fishery rather than by fishery regulations. Thus, retaining species identified in **Alternative 9 (Preferred)** in the snapper grouper FMU and managing them with ACLs and AMs would be costly and impractical.

Table 4-10. Average state and federal (combined) landings (lbs whole weight) from all sectors, for tomtate, knobbed porgy, jolthead porgy, and whitebone porgy, in **Alternative 8**, from 2005-2009.

COMMON NAME	AVERAGE LANDINGS (2005-2009)
Tomtate	66,671
Knobbed porgy	37,618
Jolthead porgy	40,966
Whitebone porgy	21,064

Alternatives 2, 5, and **9 (Preferreds)** would not affect state regulations for these species, with the exception of South Carolina. Regulations in state waters of South Carolina (http://www.dnr.sc.gov/regulations.html) are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. Therefore, any species that is no longer subject to federal regulations would no longer be subject to state regulations in South Carolina waters unless that state acted to re-institute such regulations. However, only two of the species identified for removal (sheepshead and crevalle jack) under the preferred alternatives are taken from South Carolina state waters. Additionally, while federal-state compatibility is often desirable from a management standpoint, managing state fisheries is not and was never an intended goal of the Snapper Grouper FMP. The stated intent of the FMP was to manage snapper grouper species within its "area of authority" (SAFMC 1983), which includes federal waters from North Carolina/Virginia border to the Atlantic side of the Florida Keys.

The South Atlantic Council has evaluated whether all species originally included in the snapper grouper FMU are currently in need of federal conservation and management according to the seven factors identified in 50 CFR §600.340(b)(2), and has determined 13 species identified in **Alternatives 2, 5**, and **9 (Preferreds)** should be removed from the FMU. Greater than 95% of the landings of ten species of these 13 species occur in state waters, and three species are already subject to management by the Florida Marine Life Rule. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE report) to determine whether they should be added back to the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU. The South Atlantic Council also evaluated whether the species included in the FMU could be considered as ecosystem component (EC) species, and determined six species met criteria established for classification as EC species in the NS1 Guidelines (see **Action 2**).

Part of the South Atlantic Council's stated rationale in the Snapper Grouper FMP (SAFMC 1983) for including species identified in **Alternatives 2, 5,** and **9 (Preferreds)** in the FMU was that they are part of a multi-species fishery and many of the species' ranges overlap. Therefore, while a species may predominantly occur in state waters, some interaction with species that occur mostly in federal waters could occur. Examination of logbook data from fishermen who possess a federal commercial snapper grouper permit reveals that species which occur commonly in federal waters are sometimes taken on the same trips as species that are predominant in state recreational landings. For example, examination of logbook data shows sheepshead, which most often occur in shallow state waters, are taken on a small percentage of trips with snapper grouper species including gag, red snapper, gray triggerfish, and red grouper, which more commonly occur in federal waters (**Table 4-11**). However, capture of sheepshead on the same trip as gag or red snapper does not necessarily mean they are caught together and occur in the same location. Fishermen may fish in multiple locations on a trip that involves fishing in both state and federal waters. Therefore, the actual interaction between sheepshead, which occur in shallow state waters, and other snapper grouper species, which occur more often in federal waters, is less likely than suggested by the information in **Table 4-11**, because they commonly occur at different depths.

Table 4-11. Taxa taken on trips during 2005-2009 when at least 1 pound of sheepshead was landed.

Common Name	% trips	% total
SHEEPSHEAD,ATLANTIC	100.00%	2.75%
SPANISH MACKEREL	37.94%	41.10%
FLOUNDER,ATLANTIC & GULF OF MEXICO,UNC	22.95%	5.39%
KING MACKEREL	20.61%	16.78%
BLUEFISH	18.74%	1.94%
SNAPPER,MANGROVE	15.22%	0.67%
BLUE RUNNER	13.82%	0.33%
GROUPER,GAG	13.82%	4.70%
SNAPPER,RED	13.58%	1.06%
COBIA	12.18%	1.10%
BUTTERFISH,UNC	10.30%	0.68%
TRIGGERFISH,GRAY	10.07%	0.29%
TUNA,LITTLE (TUNNY)	8.67%	1.29%
CREVALLE	7.96%	0.74%
MULLETS	7.49%	2.32%
BARRACUDA	6.56%	0.50%
GROUPER,RED	6.32%	0.23%
LOBSTER,SPINY	6.09%	1.84%
GOATFISHES	5.62%	1.67%
AMBERJACK,GREATER	5.39%	1.80%
SAND PERCH	5.15%	0.16%

Table 4-11. Continued. Taxa taken on trips during 2005-2009 when at least 1 pound of sheepshead was landed.

Common Name	% trips	% total
CROAKER,ATLANTIC,UNC	4.22%	0.08%
POMPANO	4.22%	0.15%
SPADEFISH	4.22%	0.15%
DRUM,BLACK	3.75%	0.06%
MOONFISH,ATLANTIC	3.75%	0.07%
BONITO,ATLANTIC	3.51%	0.54%
SEA BASSE,ATLANTIC,BLACK,UNC	3.51%	0.49%
TUNA,ALBACORE	3.51%	1.22%
SHARK,DOGFISH,SMOOTH	3.28%	2.84%
HOGFISH	2.81%	0.07%
FINFISHES,UNC FOR FOOD	2.58%	0.19%
KING WHITING	2.34%	0.04%
SHARK,ATLANTIC SHARPNOSE	2.34%	1.54%
SNAPPER,VERMILION	2.11%	0.05%
SPOT	2.11%	0.01%
SCAMP	1.87%	0.04%
PORGY,WHITEBONE	1.64%	0.02%
SEA TROUT,GRAY,UNC	1.64%	0.02%
SNAPPER,MUTTON	1.64%	0.04%
57 additional taxa		5.05%

The potential effects of **Alternatives 2, 5,** and **9 (Preferreds)** on bycatch are expected to be minimal in most cases because the species proposed for removal are not generally targeted or desired. Furthermore, most of the species in these alternatives are caught in shallow state waters where release mortality is low.

The biological effects (positive or negative) of **Alternatives 4** and **5 (Preferred)** are expected to be relatively minor. In addition, as the species listed in **Alternative 7** and **8** constitute about 1% of the total snapper grouper species, removal of these species from the FMU would not be expected to have significant biological effects. Therefore, there is very little difference in the biological effects of **Alternatives 2-8**. Among the alternatives considered, **Alternatives 4** and **7** could have the greatest negative biological effect because they would remove the most species from the FMU.

The Magnuson-Stevens Act requires federal action agencies which fund, permit, or carry out activities that may adversely affect essential fish habitat (EFH) to consult with NOAA Fisheries Service regarding the potential impacts of their actions on EFH and respond in writing to NOAA Fisheries Service recommendations. If the species in the preferred alternatives are removed from the FMU, the EFH identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, because the proposed action will not result in any individual habitat type or geographic area previously identified as EFH to lose that designation NMFS's authority to protect and conserve those habitats through the EFH consultation process is not eliminated. Although consultations under the Magnuson-Stevens Act and other authorities (e.g., Fish and Wildlife Coordination Act) will still occur having particular habitat types designated as EFH for multiple life stages of multiple species provides a relative indicator of the overall value of a particular habitat which serve to strengthen the basis of NOAA Fisheries Service habitat protection recommendations. In addition, the effect is also mitigated by the fact that NOAA Fisheries Service regularly identifies species managed by the states that may be associated with the EFH designated for a managed species to highlight the potential impact to the ecosystem or species complex using that particular habitat type.

Thus, if the species in the preferred alternatives are removed from the FMU the essential fish habitat (EFH) identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, taking into account the considerable overlap of the distribution and life history habitat requirements of the remaining species in the Snapper Grouper FMU, and other fisheries managed by the South Atlantic Council, no individual habitat type or geographic area previously identified as EFH would lose its EFH designation.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between Endangered Species Act (ESA)-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2, 5,** and **9 (Preferreds)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. **Alternatives 2, 5,** and **9 (Preferreds)** are likely to perpetuate the existing level and type of adverse effects occurring to sea turtles and smalltooth sawfish from interactions with the fishery. Removing species from the FMU that are primarily taken in state waters is unlikely to alter fishing behavior in a way that would cause new or reduce existing adverse effects to affected protected species.

4.1.1.2 Economic Effects

As previously noted, none of the 73 species currently in the snapper grouper FMU would be removed under **Alternative 1 (No Action)**. Conversely, the number of species to be removed under **Alternative 2 (Preferred), Alternative 3**, **Alternative 4, Alternative 5 (Preferred), Alternative 6, Alternative 7, Alternative 8**, and **Alternative 9 (Preferred)** are 10, 11, 15, 3, 22, 28, 4, and 2, respectively **(Table 4-12)**.

Some overlap exists across the alternatives with respect to the species being removed. Specifically, one species (porkfish) would be removed under **Alternative 4** as well as **Alternative 5 (Preferred)**; seven species (French grunt, grass porgy, graysby, sailors choice, saucereye porgy, schoolmaster, and Spanish grunt) would be removed under both **Alternative 4** and **Alternative 7**; one species (queen triggerfish) would be removed under both **Alternative 5 (Preferred)** and **Alternative 7**; two species (puddingwife and queen triggerfish) would be removed under **Alternative 4**, **Alternative 5 (Preferred)** as well as **Alternative 7**; two species would be removed under **Alternative 6** and **Alternative 9 (Preferred)**; and two species would be removed under

Alternative 2 (Preferred) and **Alternative 5 (Preferred)**. Because of this overlap, the total number of snapper grouper species removed from federal oversight across multiple alternatives cannot be determined simply by adding the number of species to be removed under those alternatives. Thus, the total number of species removed under all preferred alternatives (**Alternative 2 (Preferred)**, **Alternative 5 (Preferred),** and **Alternative 9 (Preferred))** is 13 rather than 15. Regardless, it would appear that **Alternative 7** and **Alternative 6** would most reduce federal management of snapper grouper species.

However, the species removed from federal management differ considerably across these alternatives and thus a better measure of the reduction in federal oversight of snapper grouper species is total landings of snapper grouper species removed under each alternative. The total landings in millions of lbs (whole weight) of snapper grouper species being removed from federal management under **Alternative 2 (Preferred), Alternative 3**, **Alternative 4**, **Alternative 5 (Preferred), Alternative 6, Alternative 7, Alternative 8** and **Alternative 9 (Preferred)** are: 2.944, 2.964, 3.007, 0.025, 0.052, 0.132, 0.166, and 0, respectively (**Table 4-12**). Thus, it would appear that federal management of snapper grouper species would be most reduced under **Alternative 4**, **Alternative 3**, and **Alternative 2 (Preferred)**.

Given the previously noted overlap of species across certain alternatives, the total landings of snapper grouper species removed from federal oversight across multiple alternatives cannot be determined simply by adding the landings under those alternatives. Thus, for example, the total landings of snapper grouper species removed from federal management across all preferred alternatives (**Alternative 2 (Preferred)**, **Alternative 5 (Preferred),** and **Alternative 9 (Preferred))** is 2.948 million lbs (whole weight) rather than 2.969 million lbs (whole weight). Although a fair degree of overlap exists across alternatives in terms of the number of species removed, the overlap in terms of landings is relatively small.

More importantly, nearly 100% of the combined landings under all preferred alternatives come from species removed under **Alternative 2 (Preferred)**. Further, most of the landings (93%) removed under **Alternative 2 (Preferred),** and thus under all preferred alternatives, are of sheepshead and crevalle jack. For reasons noted in the biological effects discussion, current federal regulations are likely not restricting the harvest of the species being removed under **Alternatives 2 (Preferred), 4, 5 (Preferred), 7, 8**, or **9 (Preferred)**. Most importantly, 95% or more of the sheepshead and crevalle jack landings come from state waters, and thus the effective landings of those species being removed from federal management is approximately 124,000 lbs (whole weight) as opposed to 2.754 million lbs. The same logic applies to other species removed under **Alternative 4**. Landings of mutton snapper from state waters account for a smaller percentage (69%) of the total mutton snapper landings relative to the snapper grouper species being removed from the FMU under **Alternatives 4, 5 (Preferred), 7, and 8.** However, the effective landings of mutton snapper being removed from federal management under these alternatives is about 174,000 lbs rather than almost 562,000 lbs (whole weight). The effective landings of the 13 snapper grouper species being removed from federal management across all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)** is considerably less than 2.948 million lbs and, most likely, around 225,000 lbs.

For the reasons provided in the biological effects section, the economic benefits associated with retaining management of the 13 snapper grouper species' effective landings would be relatively small. The impact of removing these landings from federal management under the preferred alternatives (**Preferred Alternatives 2, 5**, and **9**) would be reduced by other factors, such as the fact that individual states can still manage species directly if landings occur at ports within their respective jurisdictions.

Further, removing species effectively managed by the states from the snapper grouper FMP is expected to result in more efficient management of all snapper grouper species. Specifically, the states will obtain management authority over snapper grouper species which they have more direct control over and federal authorities (SAFMC and NOAA Fisheries Service) will retain management over snapper grouper species which, to some or a large extent, fall within their jurisdiction and are harvested in relatively significant numbers based on landings. In turn, federal resources (labor and capital) could be used to more effectively manage the remaining snapper grouper species in the FMU. In general, the allocation of management authority over all snapper grouper species and thus the associated costs will more closely mirror the distribution of the resource.

If species are not removed from federal management, as would be the case under **Alternative 1 (No Action)**, annual catch limits (ACLs), accountability measures (AMs), and annual catch targets (ACTs) would need to be implemented and enforced for all 73 species within the FMU (including those currently subject to little management) on a regular basis. The administrative costs associated with management of these species is not presently known given currently available information. By removing 13 of the 73 (approximately 18%) species currently in the FMU, the administrative costs of federally-managing snapper grouper species could be reduced under all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)**, and potentially in a proportional manner (i.e., federal administrative costs might be reduced by 18%). These reductions in administrative costs are expected to be the greatest under **Alternatives 4, 5, 7**, and **8** relative to any individual alternative or other combination of alternatives[3] since they remove the largest number of species.

Therefore, in general, the net economic effects of removing species from the snapper grouper FMU are expected to result in net benefits rather than losses. More specifically, net economic benefits are expected to be maximized under the combination of **Alternatives 4, 5, 7,** and **8** relative to any individual alternative or other combination of alternatives given that 39 species would be removed from federal management. Given that only 13 species are being removed from federal management, net economic benefits are expected to be considerably less under the combination of all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)**. Since the removal of species from the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

Table 4-12. Average landings (2005-2009) for species removed from the snapper grouper FMU under all alternatives for **Action 1**.

---

[3] Combining **Alternative 2 (Preferred)**, **Alternative 3**, or **Alternative 4** in any manner would not be appropriate since all of the snapper grouper species removed under **Alternative 2 (Preferred)** and **Alternative 3** are also removed under **Alternative 4** and would thus result in considerable double-counting.

Species	Alt. 1	**Pref. Alt. 2**	Alt. 3	Alt. 4	**Pref. Alt. 5**	Alt. 6	Alt. 7	Alt. 8	**Pref. Alt. 9**	**All Pref. Alts.**	Average Landings (2005-09)
Sheepshead		**X**	X	X						**X**	1,994,924
Crevalle jack		**X**	X	X						**X**	759,671
Black margate		**X**	X	X						**X**	86,428
Tomtate								X			66,671
Bluestriped grunt		**X**	X	X						**X**	44,873
Jolthead porgy								X			40,966
Knobbed porgy								X			37,618
Yellow jack		**X**	X	X						**X**	35,217
Margate				X							22,342
Whitebone porgy								X			21,064
Porkfish		**X**	X	X	**X**					**X**	20,756
Sailors choice			X	X			X				19,239
Graysby				X			X				14,648
Yellowfin grouper							X				12,930
Sand tilefish							X				11,168
Ocean triggerfish							X				10,962
Bar jack							X				10,726
Scup						X	X				8,511
Dog snapper						X	X				6,458
Bank sea bass						X	X				5,567
Schoolmaster				X		X	X				5,423
Queen snapper						X	X				5,086
Yellowmouth grouper						X	X				3,504
Queen Triggerfish					**X**	X	X			**X**	3,503
Coney						X	X				2,453
Rock sea bass						X	X				2,325
Blackfin snapper						X	X				2,087
Saucereye porgy				X		X	X				1,975
Misty grouper						X	X				1,834
French grunt		**X**	X	X		X	X			**X**	1,142
Grass porgy		**X**	X	X		X	X			**X**	791
Mahogany snapper						X	X				467
Puddingwife		**X**	X	X	**X**	X	X			**X**	418
Longspine porgy						X	X				372
Black snapper						X	X				141
Spanish grunt		**X**	X	X		X	X			**X**	138
Cottonwick						X	X				6
Smallmouth grunt						X	X		**X**	**X**	0

Species	Alt. 1	**Pref. Alt. 2**	Alt. 3	Alt. 4	**Pref. Alt. 5**	Alt. 6	Alt. 7	Alt. 8	**Pref. Alt. 9**	**All Pref. Alts.**	Average Landings (2005-09)
Tiger grouper						X	X		**X**	**X**	0
Number of Species Removed	0	**10**	11	15	**3**	22	28	4	**2**	**13**	
Landings of Removed Species (mil. lbs ww)	0	**2.944**	2.964	3.261	**.025**	.052	.132	.166	**0**	**2.948**	3.824

*State landings = 69% of total landings

4.1.1.3 Social Effects

The social impacts from removal of species from the snapper grouper FMP may be beneficial as it may make management decisions timelier and streamlined if fewer species are included in the management unit and do not require monitoring and assessment. For some species that are caught infrequently and in low numbers it may be more efficient to exclude them from management as the difficulty in tracking landings and monitoring could prove costly to implement by assigning ACLs to all. This may become crucial with the present economic climate as state and federal budgets are reduced and management needs become more focused on species that are both more economically and socially important. Under **Alternative 1 (No Action)** ACLs will need to be implemented for all species within the FMP making management more cumbersome. With **Alternatives 2 (Preferred), 3** and **4,** removal of those species with a majority of landings from state waters would likely ensure continued management as the state would still monitor the landings. The same is true with **Alternative 5 (Preferred)** as these species do fall under state management with the Florida Marine Life Species Rule, which does provide some protection. The state can implement management measures and therefore should provide protection for these species. **Alternatives 6 and 7** will have a similar effect of providing for more streamlined management, which should have an overall benefit to the social impacts as long as protection for those species removed is provided by the states or other authority. **Alternative 8**, like the other **Alternatives 2-7,** will assist in streamlining management but has similar risks if monitoring and subsequent management cannot effectively maintain a viable stock after removal from federal management. **Alternative 9 (Preferred)** will likely also contribute to more streamlined management as these species are rarely encountered. The overall social effects of removal should be beneficial as management may be less encumbered with oversight of species that are not encountered or targeted on a regular basis and may still be accounted for through state landings. If budgets are reduced in the future, the removal of these species may lessen the burden of monitoring and assessment so that key species can continue to be assessed with the best available science through quality data collection.

4.1.1.4 Administrative Effects

Alternative 1 (No Action) would result in increased administrative impacts associated with establishing ACLs and AMs. Under **Alternative 1 (No Action)**, all 73 snapper grouper species in the FMU would remain in the FMU and ACLs and AMs would be required (see **Actions 6, 7, 8, 10,**

11, 15, 16, and **17**). **Alternatives 2 (Preferred)-4** would remove some species from the FMU based on frequency of landings in state waters, with **Alternative 2 (Preferred)** removing 10 species. **Alternative 5 (Preferred)** would further remove three species that are managed under the Florida Marine Life Species Rule. **Alternatives 6** and **7** would remove some species based on total landings in federal waters. **Alternative 7** would result in the highest number (28) of species being removed from the FMU and would result in the lowest administrative burden associated with establishing ACLs, ACTs and AMs. **Alternative 8** would remove four additional species from the FMU. The combination of **Preferred Alternatives 2, 5,** and **9** would result in reducing the number (13) of species in the snapper grouper FMU requiring the establishment of ACLs, AMs, and possibly ACTs. These alternatives could slightly lessen the administrative burden on the agency with regards to implementing, monitoring and enforcing ACLs, and AMs for these species.

4.1.1.5 Council Conclusions

The NS1 guidelines state that Councils have the discretion to determine, on a case-by-case basis, whether changes in their stock classifications under current FMPs are needed. If the criteria originally used to include a species in an FMP are no longer valid, then Councils should reclassify the species through an FMP amendment. Furthermore, for all species considered to be "in the fishery"—those with associated landings and that do not qualify for designation as "ecosystem component" species — Councils must specify the maximum sustainable yield (MSY), optimum yield (OY), an acceptable biological catch (ABC) Control Rule and ABC, ACLs, and AMs.

The FMP for the snapper grouper fishery, as amended, established a "complex" comprising 73 species. Only a portion of these, however, makes up the bulk of the landings from federal waters for the complex. Many species are caught mainly in state waters or incidentally to other snapper grouper species while others are already under management at the state level. Hence the South Atlantic Council considered removing species that met certain criteria from the management unit. The South Atlantic Council focused on harvest from state versus federal waters as the predominant criterion for removal and whether an overlap existed with state management as well as whether or not species contained within the FMU were in need of federal management according to criteria specified in NS 7. At their June 2011 meeting, the South Atlantic Council indicated it would evaluate species removed from the FMU every five years (SAFE reports). If, upon evaluation, it was determined that a species which had been removed from the FMU was in need of management, the South Atlantic Council could add that species back into the FMU.

The Council originally selected as their preferred **Alternatives 4, 5, 7,** and **8** but subsequently made changes to their preferred alternatives (see below).

The South Atlantic Council's Scientific and Statistical Committee (SSC) did not provide a recommendation for this action.

The Snapper Grouper Advisory Panel (AP) discussed the South Atlantic Council's proposal to remove species in **Alternatives 4, 5, 7,** and **8**. The AP expressed concerns about species proposed for removal from the FMU that have known species identification issues. For instance, graysby and coney may be reported as hinds. The AP recommended that mutton snapper and queen snapper be retained in the FMU. The following concerns regarding removal of mutton snapper from the FMU were addressed:

- Recreational sale – AP members feel that a federal permit should be required to sell catch. If mutton snapper are removed from the FMP and are no longer under a federal permit requirement, more anglers will obtain recreational sale licenses.
- Targeting of mutton snapper could increase if they are removed from the FMP resulting in increased interactions with other snapper grouper species.
- Florida has established a protected area in the Florida Keys for mutton snapper. The AP questioned why the South Atlantic Council would remove them from management after so much work has been done to manage the species.
- The majority of mutton fishing is in federal waters off the Florida Keys. The AP stated that Florida should have to extend state regulations into federal waters to manage mutton snapper.

The AP expressed the following concerns regarding removal of queen snapper:

- Queen snapper are in the deepwater complex; they are caught in federal waters so there should be no need to remove them from the FMP.
- However, keeping species such as queen snapper within the management unit would detract stock assessments resources from other, more valuable, species.
- Removing queen snapper would increase interactions with other species such as speckled hind and snowy grouper.
- There is a large queen snapper fishery off Marathon, Florida.

At their March 2011 meeting, the South Atlantic Council voted to add mutton snapper to the list of species being considered for removal since Florida had expressed a willingness to manage this species and extend regulations into federal waters. However, prior to the June 2011 meeting, Florida expressed serious concerns over the state's ability to manage the species due to difficulty in enforcing regulations for vessels that are not registered in Florida. In light of this, the South Atlantic Council voted to retain mutton snapper in the FMU.

The Law Enforcement AP recommended confirming that a prohibition on filleting is in place to circumvent any potential species identification issues.

At their August 2011 meeting, after reviewing comments submitted by the public on the proposed actions and considering the recommendations from advisory panels, the South Atlantic Council reconsidered the removal of 39 species from the snapper grouper management unit. The Council re-evaluated whether or not species contained within the FMU were in need of federal management according to criteria specified in NS 7. The South Atlantic Council chose to deselect **Alternatives 4, 7, and 8** as their preferreds due to concerns including 1) potential for bycatch as a result of species removal, 2) uncertainty as to the level of state management and how a state would regulate catch in its waters that was landed in a neighboring state, and 3) concern that unregulated catch in federal waters could push some species above their overfishing limit.

The South Atlantic Council chose instead to select **Alternative 2** as a preferred, retain **Alternative 5** as a preferred and add a new alternative (also a preferred) to remove two species with zero reported landings in federal waters (**Alternative 9**). The South Atlantic Council reasoned that removing species with 95% of landings in state waters (**Preferred Alternative 2**) was reasonable since these species are harvested almost exclusively in state waters and federal management would likely have little effect on conservation. Finally, the Council chose to remove smallmouth grunt and tiger grouper from the FMU due to no documented landings of these species. There is evidence that these species occur in the South Atlantic, but only occasionally; therefore, the South Atlantic Council did not feel they were in need of federal management. Tiger grouper appears to be an insular species; that is, a species that occurs primarily around islands as opposed to continental areas that constitute the majority of the South Atlantic Council's jurisdiction. South Atlantic Council members stated that such insular species may occasionally occur in the Florida Keys but the population is located elsewhere hence management of these species is ineffectual and not really needed in the Council's area of authority.

The South Atlantic Council concluded that **Preferred Alternatives 2, 5,** and **9** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.2 Action 2: Designate Ecosystem Component (EC) Species

Alternative 1 (No Action). Do not designate EC species.

Alternative 2. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as EC species.

Alternative 3. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species.

Alternative 4. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 2,500 lbs, as EC species.

Alternative 5. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 5,000 lbs, as EC species.

Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS1 criteria, as EC species.

4.1.2.1 Biological Effects

The NS1 guidelines pertaining to ecosystem component species (74 FR 3178; Section 50 CFR 600.310 (d) (5) (i)) indicate a species should meet four criteria to be considered for classification as an EC species: (1) Be a non-target species or non-target stock; (2) not be determined to be subject to overfishing, approaching overfished, or overfished; (3) not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (4) not generally be retained for sale or personal use. The EC species would be retained in the snapper grouper FMU, but would not require ACLs and AMs and would not be subject to management measures such as bag limits and size limits.

To determine if a species could be considered as an ecosystem component species, the four criteria identified in the NS1 guidelines were scored a 1 (does not meet criteria) or 0 (meets criteria) for each of the four components (**Table 4-13**). Scoring of non-target species or stock was based on landings (commercial and recreational). If landings met the threshold of ≤ 10,000 lbs, a score of 0 was provided. Species with landings > 10,000 lbs were scored 1.

If a species had a stock assessment, and the assessment indicated a status of overfishing/overfished, a score of 1 was provided. If a species had no stock assessment, or if there was a stock assessment but the assessment indicated that the species was not overfished/overfishing, a score of 0 was provided.

The likelihood of becoming overfished or undergoing overfishing was based on a Productivity and Susceptibility Analysis (PSA) score provided by MRAG Americas, which suggests vulnerability to overfishing or becoming overfished (MRAG 2009). A score ranges from 1 to 3 for high to low productivity and 1-3 for low to high susceptibility. Productivity factors include life-history characteristics of the species such as age at maturity, size at maturity, and its role in the food web. Examples of susceptibility factors include release mortality, availability, and encounterability (MRAG 2009). If the total PSA score for a species provided by MRAG (2009) is less than 3, a stock is considered in **Table 4-13** to have a low probability of overfishing or becoming overfished.

"Not generally retained for sale of personal use" was based on landings, magnitude of discards not affected by regulations in relation to landings, and desirability. Assigning a score to this category was subjective. For example, it was assumed a grouper or snapper species occurring in South Atlantic waters would be retained even if landings were low because they are generally sought after by most commercial and recreational fishermen. Level of desirability depends on individuals fishing and availability of a species. Some species like bank sea bass are generally not retained because of their small size and availability of a higher quality co-occurring species. However, if regulations restrict harvest of all species except one species that was formerly discarded, that species would likely be retained. Further, it is likely that all species in the snapper grouper FMU are retained to some degree by some segments of the fishing population. In addition, part of the South Atlantic Council's rationale for including all 73 species in the snapper grouper FMU was that they are part of a multispecies fishery where species occur together, suggesting an ecosystem reason for originally including rarely taken species in the FMU.

Table 4-13. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.
A score of 0 indicates ecosystem criteria are met for the category. A total score of less than 2 suggests the species could be considered as an EC species. Thirteen species met this criterion, but seven overlapping species (highlighted in yellow) are excluded under the preferred alternatives in **Action 1**. Six EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Almaco jack	1	0	1	1	3
Atlantic spadefish	1	0	1	1	3
Banded rudderfish	1	0	1	1	3
Bank sea bass	0	0	1	0	1
Bar jack	1	0	1	0	2
Black grouper	1	0	1	1	3
Black margate	1	0	1	1	3
Black sea bass	1	1	1	1	4
Black snapper	0	0	1	1	2
Blackfin snapper	0	0	1	1	2
Blue runner	1	0	1	1	3
Blueline tilefish	1	0	1	1	3
Bluestriped grunt	1	0	0	0	1
Coney	0	0	1	1	2
Cottonwick	0	0	0	1	1
Crevalle jack	1	0	1	1	3
Cubera snapper	1	0	1	1	3
Dog snapper	0	0	1	1	2
French grunt	0	0	0	0	0
Gag	1	1	1	1	4
Grass porgy	0	0	1	0	1
Gray snapper	1	0	1	1	3
Gray triggerfish	1	0	0	1	2
Graysby	1	0	0	1	2
Greater amberjack	1	0	1	1	3
Hogfish	1	0	1	1	3
Jolthead porgy	1	0	1	1	3
Knobbed porgy	1	0	1	1	3
Lane snapper	1	0	0	1	2
Lesser amberjack	1	0	1	1	3

Table 4-13. Continued. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Longspine porgy	0	0	1	0	1
Mahogany snapper	0	0	1	1	2
Margate	1	0	1	0	2
Misty grouper	0	0	1	1	2
Mutton snapper	1	0	1	1	3
Ocean triggerfish	0	0	1	0	1
Porkfish	1	0	1	0	2
Puddingwife	0	0	1	0	1
Queen snapper	0	0	1	1	2
Queen triggerfish	0	0	1	0	1
Red grouper	1	1	1	1	4
Red hind	1	0	1	1	3
Red porgy	1	1	1	1	4
Red snapper	1	1	1	1	4
Rock hind	1	0	1	1	3
Rock sea bass	0	0	1	0	1
Sailors choice	1	0	1	0	2
Sand tilefish	1	0	1	0	2
Saucereye porgy	0	0	1	1	2
Scamp	1	0	1	0	2
Schoolmaster	0	0	1	0	1
Scup	1	0	0	1	2
Sheepshead	1	0	1	1	3
Silk snapper	1	0	1	1	3
Smallmouth grunt	0	0	0	1	1
Snowy grouper	1	1	1	1	4
Spanish grunt	0	0	1	1	2
Tiger grouper	0	0	1	0	1
Tilefish (Golden)	1	1	1	1	4
Tomtate	1	0	0	1	2
Vermilion snapper	1	1	1	1	4

Table 4-13. Continued. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
White grunt	1	0	0	1	2
Whitebone porgy	1	0	1	1	3
Yellow jack	1	0	1	0	2
Yellowedge grouper	1	0	1	1	3
Yellowfin grouper	1	0	1	1	3
Yellowmouth grouper	0	0	1	1	2
Yellowtail snapper	1	0	1	1	3
Wreckfish	1	0	1	1	3

In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 1 (No Action) would not designate any species in the snapper grouper FMU as EC species. **Alternative 2** would designate 16 snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as ecosystem component species (**Table 4-14**). This total includes tiger grouper and smallmouth grunt, which would be removed from the FMU under **Action 1**. Based on evaluation of the four ecosystem component criteria in **Table 4-13**, six species (including tiger grouper and smallmouth grunt) scored less than two. Landings of these species are small, but they could be retained by fishermen due to their quality as food fish. Coney, misty grouper, and yellowmouth grouper are retained by commercial fishermen and are also vulnerable to overfishing because they change sex and are relatively long lived. Dog snapper are mostly retained by the private recreational sector. Scup in the South Atlantic are often very small and discarded as “trash fish”. However, in the mid-Atlantic there is a FMP for this species and they are very important to commercial and recreational fishermen. Furthermore, **Table 4-14** does show some tendency for scup to be retained by fishermen on headboats. As a result, it was not clear if scup should be considered as a species that is generally not retained as it is important to fishermen in other parts of its range.

Table 4-14. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs as specified in **Alternative 2**.*** Yellow highlights indicate species removed in **Action 1**. Green highlights indicate species that qualified as EC species.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 10,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,427
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).
***Note: In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper, Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 3 would designate six snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species (**Table 4-15**). Three of the species considered in this alternative had zero to six pounds landed during 2005-2009, two of which would be removed from the FMU under **Action 1**. Four species scored less than 2 when the four NS1 criteria were evaluated in **Table 4-13**. Although mahogany snapper is extremely rare in landings, they would be expected to be retained if caught by a fisher due to their quality as a food fish. While it is likely that tiger grouper would be retained if caught by a fisher, there were no landings of this species during 2005-2009. Tiger grouper is commonly found in the Caribbean and there are reports of this species in the Tortugas; however, this species is rare to absent in the South Atlantic. The preferred alternative in **Action 1** is to remove tiger grouper and smallmouth grunt from the FMU because the South Atlantic Council does not feel they are in need of federal management since they are not caught in the South Atlantic. Black snapper have no discards, but there are few reported landings as well. While the criteria may be met for smallmouth grunt, black snapper would likely be retained by fishermen.

Table 4-15. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 1,000 lbs as specified in **Alternative 3**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 1,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467

[1] Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009). [2] In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper, Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 4 would designate ten snapper grouper species with state and federal (combined) landings less than, or equal to 2,500 lbs as ecosystem component species (**Table 4-16**). Based on evaluation of the four NS1 criteria in **Table 4-13**, five species specified within this alternative scored less than two. Coney is a small grouper that would be expected to be retained by commercial and recreational fishermen due to its high quality relative to other species as a food fish.

Table 4-16. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 2,500 lbs as specified in **Alternative 4**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 2,500 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453

See [1,2] in **Table 4-15**.

Alternative 5 would designate 11 snapper grouper species with state and federal (combined) landings less than, or equal to 5,000 lbs as ecosystem component species (**Table 4-17**). Based on evaluation of the four NS1 criteria in **Table 4-13**, five species specified within this alternative scored less than two. Although landings of coney, misty grouper, and yellowmouth grouper are small, they are retained and sold by commercial fishermen. They are also vulnerable to overfishing because they change sex and are relatively long lived. Black snapper are not commonly caught but are likely to be retained by commercial and recreational fishermen because, like mahogany snapper, they would be desired above many other species as a food fish. Thus, these species may not be considered for designation as ecosystem component species.

Table 4-17. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 5,000 lbs as specified in **Alternative 5**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 5,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Yellowmouth grouper	3,504

See [1,2] in **Table 4-15**.

Excluding tiger grouper and smallmouth grunt, **Alternative 6 (Preferred)** would designate six snapper grouper species that meet three out of four NS1 criteria, as ecosystem component species (**Table 4-18**). Most of these species are generally not retained because of their small size and availability of a higher quality co-occurring species. While it is likely that tiger grouper would be retained if caught by a fisher, there were no landings of this species during 2005-2009. Tiger grouper is commonly found in the Caribbean; however, this species is rare to absent in the South Atlantic. The preferred alternative in **Action 1** would remove tiger grouper and smallmouth grunt from the FMU.

Table 4-18. Snapper grouper species that met three out of four NS1 criteria as Ecosystem Component species, as specified in **Alternative 6 (Preferred)**.
Yellow highlights indicate species removed in **Action 1**. Green highlights indicate species that qualified as EC species.

COMMON NAME
Tiger grouper
Smallmouth grunt
Cottonwick
Longspine porgy
Bank sea bass
Rock sea bass
Ocean triggerfish
Schoolmaster

Most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed. Exceptions include the grouper (coney, misty grouper, yellowmouth grouper) and snapper species (dog snapper, mahogany snapper, blackfin snapper, and black snapper), which have limits on the number of individuals that can be retained by recreational fishermen.

Furthermore, coney and yellowmouth grouper are included in the four-month spawning season closure for shallow water grouper species. Therefore, designating grouper (coney, misty grouper, and yellowmouth grouper) and snapper (mahogany snapper, blackfin snapper, dog snapper, and black snapper) species through proposed actions in **Alternatives 2-5** could result in increased harvest (albeit small) of the species by commercial and recreational fishermen since they would no longer be subject to management. Therefore, the beneficial biological effects for these species would be greatest for **Alternative 1 (No Action)** and would be least for **Alternative 2**.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2-6 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. There will likely be little biological benefit to sea turtles and smalltooth sawfish from **Alternatives 2-6 (Preferred).** Since most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed, designating them as ECs is unlikely to alter fishing behavior in a way that would cause new or reduce existing adverse effects to sea turtles and smalltooth sawfish. Therefore, these alternatives are likely to perpetuate the existing level and type of adverse effects occurring to sea turtles and smalltooth sawfish from interactions with the fishery.

4.1.2.2 Economic Effects

Alternative 1 (No Action) would not designate any species as EC species. **Alternatives 2-6 (Preferred)** would designate certain species as EC species. **Alternative 2** identifies 16 species as EC species while **Alternatives 3, 4, 5,** and **6 (Preferred)** identify 6, 10, 11, and 8 species as potential EC species, respectively. With the exception of **Alternative 6 (Preferred)**, these counts are based only on landings. Under each alternative, two species (tiger grouper and smallmouth grunt) are taken out of consideration due to their removal from the FMU under **Alternative 9 (Preferred)** for **Action 1**. In addition, the NS1 criteria noted in **Section 4.1.2.1** serve as the sole basis for determining which species can be considered for designation as EC species under **Alternative 6 (Preferred)**. When these criteria are also taken into account under all of the alternatives, the effective number of species that can be considered for designation as EC species is 5, 2, 3, 3, and 6 for **Alternatives 2, 3, 4, 5,** and **6 (Preferred)**, respectively. Furthermore, because the species that can be considered for designation as EC species are the same under **Alternative 4** and **Alternative 5**, the economic effects under those two alternatives would be equivalent.

Based on 2005-09 average landings, the total landings of the species that would be designated as EC species are 13,697 lbs, 378 lbs, 2,703 lbs, 2,703 lbs, and 24,655 lbs, respectively, for **Alternatives 2, 3, 4, 5,** and **6 (Preferred)**. Designating species as EC could result in positive economic effects for commercial and recreational fishermen if catches of these species increase in the short-term. However, consistent with the NS1 criteria indicating that these are not target species and are rarely if ever retained for sale or personal use, it is unlikely that landings of these species will increase much if at all in the short-term. In theory, **Alternative 6 (Preferred)** has the potential to result in the greatest negative economic effects compared to **Alternative 1 (No Action)** if fishermen significantly alter their fishing behavior by targeting and landing these species in the long-term. However, such changes are not expected as a result of the management actions being taken in this Amendment or any other currently known factors, and thus the likelihood such changes will occur are remote.

The primary economic effects of designating species as EC species are nearly identical in nature to the effects of removing species from the FMU (**Action 1**). If species which are not removed under **Action 1** are also not designated as EC species, as would be the case under **Alternative 1 (No Action)**, annual catch limits (ACLs), accountability measures (AMs), and annual catch targets (ACTs) would need to be implemented and enforced for these species, including those currently subject to little or no management, on a regular basis. The administrative costs associated with management of these species is not presently known given currently available information. By designating 6 species currently in the FMU as EC species, the administrative costs of federally-managing snapper grouper species are expected to be reduced, and potentially in a proportional manner according to the number of species receiving that designation. These reductions in administrative costs are expected to be the greatest under **Alternative 6 (Preferred)** followed by **Alternative 2**, **Alternatives 4** and **5**, **Alternative 3**, with **Alternative 1 (No Action)** resulting in no reduction in administrative costs.

Therefore, in general, the net economic effects of designating species as EC species in the snapper grouper FMU are expected to result in net economic benefits rather than losses. More specifically, net economic benefits are expected to be maximized under **Alternative 6 (Preferred)** relative to the other alternatives. Since the designation of species as EC species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

4.1.2.3 Social Effects

Designating some EC species, much like the previous action, could have beneficial social impacts as it could foster timelier management decisions and make management more streamlined with fewer species to monitor and for which to develop management measures. **Alternative 1 (No Action)** would not designated any species as Ecosystem Component species and require management and the setting of limits and targets for species that are encountered infrequently. The costs of monitoring and implementing management could be expensive for the amount of biological protection that would be afforded. For **Alternatives 2, 3, 4, 5,** and **6 (Preferred)** designating these species as EC would likely have beneficial effects as management would be more streamlined and focused on those species that are more recreationally and commercially important, yet these species would be monitored through landings. The overall social effects should be positive for both recreational and commercial sectors as these species will not require unnecessary management thresholds that could trigger further management for species that are rarely encountered.

4.1.2.4 Administrative Effects

Species that are designated as EC species are not required to have an ACL or AMs. **Alternative 1 (No Action)** would not designate species as EC species and would not reduce the administrative impacts on the agency of establishing an ACL, ACTs and AMs under various other actions in this amendment. **Alternatives 2-6 (Preferred)** would all reduce the number of species in the FMU that require management by increasing amounts. **Alternative 2** results in the largest reduction of species from the FMU and would reduce the administrative burden the most. **Alternative 6 (Preferred)** would designate six EC species, which could slightly decrease the administrative burden on the agency.

4.1.2.5 Council's Conclusions

The South Atlantic Council initially sought designation for some species as "ecosystem components" based on the criteria described in the NS1 guidelines (**Appendix J**). Because all of the species that met the NS1 criteria to be designated "ecosystem component" species also had low harvest from federal waters and thus qualified for removal from the FMU under the South Atlantic Council's rationale, the South Atlantic Council initially chose not to consider this action further.

However, at the August 2011 meeting, the South Atlantic Council changed their preferred course of action for removing species from the management unit and re-considered designation of some species as ecosystem components. Furthermore, the South Atlantic Council received comments from the public in support of designating some snapper grouper species as ecosystem components instead of removing them from the management unit.

The Snapper Grouper Advisory Panel (AP) recommended **Alternative 1 (No Action)**. The Scientific and Statistical Committee (SSC) recommended making sure that there were no problems with species identification and that NS1 guidelines would hold. The Law Enforcement Advisory Panel (LEAP) had no recommendation on this action.

The South Atlantic Council concluded that **Preferred Alternative 6** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species

Alternative 1 (No Action). Do not establish multi-species groupings for the Snapper Grouper FMU.

Alternative 2. Establish species groups (**Table 4-19**) for the Snapper Grouper FMU using associations based on life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. Establish sub-complexes within species complexes. Complex and/or sub-complex ACLs will be a sum of the individual ACLs included in that complex (all sectors combined) and/or sub-complex. When a complex ACL is exceeded, all species in that complex, as well as those in sub-complexes will be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex will be subject to AMs.

Table 4-19. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Deepwater Complex	Deepwater Subcomplexes	Individual ACLs w/o Complex
Yellowedge grouper	Yellowedge grouper	Atlantic spadefish
Snowy grouper[1]	Snowy grouper[1]	Bar jack
Golden tilefish[1]	Golden tilefish[1]	Black sea bass[1]
Blueline tilefish	Blueline tilefish	Blue runner
Silk Snapper	Silk Snapper	Goliath grouper[1,3]
Misty grouper[2]	Misty grouper[2]	Gray triggerfish
Sand tilefish	Sand tilefish	Hogfish[1]
Queen snapper	Queen snapper	Nassau grouper[3]
Black snapper	Black snapper	Red snapper[1,3]
Blackfin snapper	Blackfin snapper	Speckled hind[3]
Jacks Complex	**Jacks Subcomplexes**	Vermilion snapper[1]
Greater amberjack[1]	Greater amberjack[1]	Warsaw grouper[3]
Almaco jack	Almaco jack	Wreckfish
Banded rudderfish	Banded rudderfish	
Lesser amberjack[2]	Lesser amberjack[2]	

Table 4-19. Continued. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Snappers Complex	Snappers Subcomplexes
Yellowtail snapper[1]	Yellowtail snapper[1]
Mutton snapper[1]	Mutton snapper[1]
Gray snapper	Gray snapper
Lane snapper	Lane snapper
Cubera snapper[2]	Cubera snapper[2]
Dog snapper	Dog snapper
Mahogany snapper	Mahogany snapper
Grunts Complex	**Grunts Subcomplex**
White grunt	White grunt
Sailors choice[2]	Sailors choice[2]
Tomtate	Tomtate
Margate	Margate
Shallow-Water Groupers Complex	**Shallow-Water Groupers Subcomplexes**
Gag[1,2]	Gag[1,2]
Red grouper[1]	Red grouper[1]
Black grouper[1]	Black grouper[1]
Scamp	Scamp
Red hind	Red hind
Rock hind	Rock hind
Yellowmouth grouper	Yellowmouth grouper
Yellowfin grouper	Yellowfin grouper
Coney	Coney
Graysby	Graysby
Porgies Complex	**Porgies Subcomplexes**
Red porgy[1]	Red porgy[1]
Jolthead porgy	Jolthead porgy
Knobbed porgy	Knobbed porgy
Saucereye porgy[2]	Saucereye porgy[2]
Scup	Scup
Whitebone porgy[2]	Whitebone porgy[2]

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Alternative 3. Establish species groups (**Table 4-20**) for the Snapper Grouper FMU based on similar life histories (indicator species in bold).

Table 4-20. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach.

SHALLOW WATER GROUPER	**JACK UNIT**
UNIT 1	**Greater amberjack**
Gag	Almaco jack
Red grouper	Banded rudderfish
Black grouper	Lesser amberjack
Scamp	Bar jack
Red hind	Blue runner
Rock hind	**GRUNT AND PORGY UNIT**
Yellowmouth grouper	**UNIT 1**
Yellowfin grouper	**White grunt**
Coney	Sailor's choice
Graysby	Tomtate
UNIT 2	Margate
Goliath grouper	
UNIT 3	**UNIT 2**
Nassau grouper	**Red porgy**
DEEP WATER GROUPER UNIT	Jolthead porgy
Snowy grouper	Knobbed porgy
Yellowedge grouper	Saucereye porgy
Speckled hind	Scup
Warsaw grouper	Whitebone porgy
Misty grouper	**SEA BASS UNIT**
TILEFISH UNIT	**Black sea bass**
Golden tilefish	**SHALLOW WATER SNAPPER AND**
	WRASSE UNIT
Blueline tilefish	**Yellowtail snapper**
Sand tilefish	**Mutton snapper**
WRECKFISH	Gray snapper
Wreckfish	Lane snapper
MID-SHELF SNAPPER UNIT	Cubera snapper
Vermilion snapper	Dog snapper
Red snapper	Mahogany snapper
Silk Snapper	Hogfish
Queen snapper	**TRIGGERFISH AND SPADEFISH UNIT**
Black snapper	**Gray triggerfish**
Blackfin snapper	Atlantic spadefish

Alternative 4 (Preferred). Establish single species ACLs and grouped species complexes for the establishment of ACLs (**Table 4-21**). Single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on the criteria below. Complexes for groups of species would be established for other species using

associations based on one or more of the following: life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. When a complex ACL is exceeded, all species in that complex will be subject to AMs. When an individual ACL is exceeded, the individual stock will be subject to AMs.

Table 4-21. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach.

Deepwater Complex	Individual ACLs
Yellowedge grouper	Atlantic spadefish
Blueline tilefish	Greater amberjack[1]
Silk Snapper	Blue runner
Misty grouper[2]	Bar jack
Sand tilefish	Gray triggerfish
Queen snapper	Snowy grouper[1]
Black snapper	Golden tilefish[1]
Blackfin snapper	Warsaw grouper[3]
Jacks Complex	Wreckfish
Almaco jack	Scamp
Banded rudderfish	Gag[1]
Lesser amberjack[2]	Red grouper[1]
Snappers Complex	Goliath grouper[1,3]
Gray snapper	Nassau grouper[3]
Lane snapper	Black sea bass[1]
Cubera snapper[2]	Black grouper[1]
Dog snapper	Speckled hind[3]
Mahogany snapper	Red porgy[1]
Grunts Complex	Hogfish[1]
White grunt	Yellowtail snapper[1]
Sailors choice[2]	Red snapper[1,3]
Tomtate	Vermilion snapper[1]
Margate	Mutton snapper[1]
Shallow-Water Groupers Complex	**Porgies Complex**
Red hind Rock hind Yellowmouth grouper Yellowfin grouper[2] Coney Graysby	Jolthead porgy Knobbed porgy Saucereye porgy[2] Scup Whitebone porgy[2]

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

4.1.3.1 Biological Effects

There are 73 species in the Snapper Grouper FMU. Thirteen species are proposed for removal in **Action 1**, six species are being proposed for designation as EC species (which do not require ACLs) in **Action 2**, and Amendments 17A and 17B established ACLs for ten species in 2010. **Alternative 1 (No Action)** would not establish species groups in the Snapper Grouper FMU, and would hence require individual ACLs for 44 species. Stock assessments are currently available for only 13 of these species, with no status determination values for the remaining species; however, definitions of overfishing and overfished were established for all snapper grouper species in Amendment 11 to the Snapper Grouper FMP (SAFMC 1998e). Many of these stocks suffer from issues with species identification and/or extreme fluctuations in relative landings through time due to rarity, or lack of targeted fishing effort. Thus, specifying individual ACLs based on median or average catch for these stocks might result in periodic overages that would require AM implementation, creating additional burdens on science and enforcement. Grouping unassessed stocks into complexes may help avoid implementing AMs for species whose landings fluctuate due to rarity or species identification issues. National Standard 3 (Section 301 of the Magnuson-Stevens Act) states that, "to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." A stock complex, as defined by the recently amended NS1 guidance (**Appendix J**), is "a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar" (74 FR 3178). Stocks may be grouped into complexes if: 1) they cannot be targeted independently of one another in a multispecies fishery; 2) there are not sufficient data to measure their status relative to established status determination criteria; or 3) when it is feasible for fishermen to distinguish individual stocks among their catch (50 CFR 600.310 (b) (8) in 74 FR 3178). Guidelines at 50 CFR 600.320 (d) define a management unit as "a fishery or that portion of a fishery identified in a FMP as relevant to the FMP's management objectives." Management units may be organized based on biological, geographic, economic, technical, social, or ecological considerations (50 CFR 600.320 (d) (1)).

Alternative 2 meets the above guidelines and establishes species groups using life history, fishery-dependent, and fishery-independent data for the 54 species remaining in the Snapper Grouper FMU. Detailed quantitative analyses included Productivity-Susceptibility Analysis (PSA) and life history characteristics, in addition to examining differences in vulnerability and other population dynamic parameters (see report in **Appendix O** for complete details on methodology). Multivariate statistical analyses were used to identify stock associations from life history, fishery-dependent, and fishery-independent data sources. Identified associations between stocks were used to develop stock complexes and sub-complexes (**Table 4-19**). Heavily targeted stocks and stocks with assessments would be managed at both the complex level and at the individual level, unless they had low levels of association with other stocks. Stocks that did not logically group into any complex would be managed only by an individual ACL. In **Alternative 2**, stocks within complexes would be managed by two ACLs; one at the complex level and another at the individual or sub-complex level. When a complex ACL is exceeded, all species in that complex would be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex would be subject to AMs. Sector-specific complex ACLs would be the sum of the sector-specific individual ACLs and sub-complex ACLs included in that complex.

Under **Alternative 2**, a deep-water complex ACL (DW Grouper and Tilefish Complex, **Table 4-19**) would be established for yellowedge grouper, blueline tilefish, silk snapper, snowy grouper, golden tilefish, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper. A sub-complex aggregate ACL would be established for blueline tilefish, silk snapper, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper. Individual ACLs would be established for yellowedge grouper, snowy grouper, and golden tilefish. Golden tilefish and snowy grouper have Southeast Data Assessment and Review (SEDAR) assessments and would have individual ACLs as well as a complex-level ACL. Misty grouper is the most vulnerable species (PSA analysis).

A shallow-water grouper complex ACL (Shallow-Water Grouper Complex, **Table 4-19**) would be established for scamp, gag, red grouper, black grouper, red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby. Individual ACLs would be established for gag, red grouper and black grouper. A subcomplex would be specified for scamp, red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby. Gag, red grouper, and black grouper have SEDAR assessments. Gag is also the most vulnerable species (PSA analysis).

A Jacks complex ACL (Jacks Complex, **Table 4-19**) would be established for almaco jack, banded rudderfish, lesser amberjack, and greater amberjack. A sub-complex ACL would be established for almaco jack, banded rudderfish, and lesser amberjack (most vulnerable species, PSA) (**Table 4-19**). Greater amberjack has a SEDAR stock assessment and would also have an individual ACL.

A snapper complex ACL (Snappers Complex, **Table 4-19**) would be established for gray snapper, lane snapper, cubera snapper, yellowtail snapper, dog snapper, mahogany snapper and mutton snapper. A sub-complex ACL would be established for gray snapper, lane snapper, cubera snapper, dog snapper, and mahogany snapper. Yellowtail snapper and mutton snapper have SEDAR assessments and would also have individual ACLs. Cubera snapper is the most vulnerable species (PSA analysis).

A Grunts Complex ACL would be established for white grunt, sailor's choice, tomtate, and margate (Grunts Complex, **Table 4-19**). There are no SEDAR assessments for any stocks in this complex. Sailors choice is the most vulnerable species (PSA analysis).

A Porgies Complex ACL would be established for red porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy (Porgies Complex, **Table 4-19**). Red porgy has SEDAR assessments, and would have an individual ACL, while jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy would have a sub-complex ACL.

Finally, individual ACLs would be utilized for Atlantic spadefish, bar jack, black sea bass, blue runner, goliath grouper, gray triggerfish, hogfish, Nassau grouper, red snapper, speckled hind, vermilion snapper, warsaw grouper, and wreckfish (**Table 4-19**, Individual ACLs). Red snapper, vermilion snapper, red porgy, goliath grouper, black sea bass, and hogfish have SEDAR stock assessments. Speckled hind, warsaw grouper, red snapper, goliath grouper, and Nassau grouper are prohibited species. Atlantic spadefish and blue runner did not group well with any species having similar life histories.

The approach in **Alternative 2** would provide multiple handles of control in the AMs that would help prevent overfishing of all species in the complex. If a single-species ACL were slightly exceeded, AMs would be implemented for that stock without necessarily impacting the stocks in the sub-complex, allowing the fishery to obtain OY for the other stocks. If the sub-complex ACLs were exceeded, AMs would be implemented for that sub-complex without necessarily impacting the individual ACLs, which often contain the most productive stocks. Finally, if the ACL for the targeted stock were grossly exceeded (causing the complex ACL to also be exceeded) AMs would be implemented for the whole complex. This multi-faceted approach promotes attaining OY for assessed stocks while providing two mechanisms to prevent overfishing of the unassessed stocks, which are often less productive and more vulnerable. Grouping less productive, vulnerable, and/or data-poor stocks into sub-complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. The use of an ACL for an overall complex containing one or more productive stocks plus other less productive stocks from the sub-complex helps protect the sub-complex stocks from overfishing because even if their sub-complex ACL is not exceeded according to the existent data collection program, undetected overfishing of these stocks may be taking place during overharvesting of a productive stock with which they are often incidentally or deliberately harvested or misidentified. However, this approach is complicated and also carries a heavy administrative burden with regards to quota monitoring.

Alternative 3 represents an approach towards species groupings that was explored during the development of Snapper Grouper Amendment 13B (SAFMC unpublished), and modified to incorporate species added back into the amendment after the South Atlantic Council changed the preferred alternative to remove species in **Action 1**. Management groups proposed are: Shallow Water Grouper Units 1, 2 and 3; Deep Water Grouper Unit, Tilefish Unit; Wreckfish Unit; Mid-shelf Snapper Unit; Jack Unit; Grunt and Porgy Units 1 and 2; Sea Bass Unit; Shallow-water Snapper and Wrasse Unit; and Triggerfish and Spadefish Unit **(Table 4-20)**.

Generally, each unit was composed of species that were usually targeted, or captured, collectively due to similarities in susceptibility to fishing gear, occupying similar habitats, and/or possessing similar life history strategies and/or depth preferences. The indicator species specified for each unit is highlighted in bold font. The South Atlantic Council's SSC did not endorse this approach as "best available science" (SSC/SAFMC, 2005), because it felt that the scientific rationale presented was inadequate to justify the groupings for their intended purpose. The SSC also felt that groupings by life-history attributes or taxonomy alone did not address aggregations of species that are caught together by each gear type used in the fishery. Comparing the species groups between **Alternative 2** and **Alternative 3**, shows differences such as: Speckled hind is included in the deep-water species group in **Alternative 3**, whereas it has an individual ACL in **Alternative 2**. **Alternative 3** also used indicator species in its groupings, whereas, the method used in **Alternative 2** followed the guidance of Landres et al. (1988) and Niemi et al. (1997), of not using indicator species unless supported by strong evidence from the system in question. Furthermore, Bird et al. (2007) recommend that even closely related species may have dissimilarities in their population structures and dispersal patterns that lead to different responses to exploitation.

Alternative 4 (Preferred) meets the 50 CFR 600.320(d)(1) guidelines and establishes species groups using life history, fishery-dependent, and fishery-independent data for all 54 species remaining in the FMU. Detailed quantitative analyses included PSA and life history characteristics, in addition to examining differences in vulnerability and other population dynamic parameters (see report in **Appendix O** for complete details on methodology). Multivariate statistical analyses were used to identify stock associations from life history, fishery-dependent, and fishery-independent data sources. Identified associations between stocks were used to develop complexes for unassessed stocks (**Table 4-21**). Heavily targeted stocks, stocks with assessments, stocks with fishery closures (ACL =0), and stocks that did not fall into any complexes would be managed only by individual ACLs. When the stock with an individual ACL is exceeded, that individual species would be subject to AMs. When a complex ACL is exceeded, all species in that complex will be subject to AMs. Sector specific complex ACLs will be a sum of the sector-specific ACLs for individual stocks included in that complex.

Under **Alternative 4 (Preferred)**, a Deep-water Complex ACL (Deep-water Complex, **Table 4-21**) would be established for yellowedge grouper, blueline tilefish, silk snapper, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper.

A Jacks Complex ACL (Jacks Complex, **Table 4-21**) would be established for almaco jack, banded rudderfish, and lesser amberjack (most vulnerable species, PSA).

A Snappers Complex ACL (Snappers Complex, **Table 4-21**) would be established for gray snapper, lane snapper, cubera snapper (most vulnerable species, PSA), dog snapper, and mahogany snapper.

A Grunts Complex ACL would be established for white grunt, sailor's choice (most vulnerable species, PSA), tomtate, and margate (Grunts Complex, **Table 4-21**). There are no SEDAR assessments for any stocks in this complex.

A Porgies Complex ACL (Porgies Complex, **Table 4-21**) would be established for jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy (most vulnerable species, PSA).

Finally, individual ACLs would be specified for species with SEDAR assessments (red porgy, greater amberjack, golden tilefish, snowy grouper, black sea bass, gag, red grouper, black grouper, yellowtail snapper, red snapper, vermilion snapper, mutton snapper, and hogfish). Goliath grouper, warsaw grouper, speckled hind, red snapper, and Nassau grouper are prohibited species. Wreckfish has an established individual quota, which is being modified in **Action 10** of this document. Scamp, bar jack, and gray triggerfish are unassessed and would require an individual ACL. Atlantic spadefish and blue runner did not group well with any species having similar life histories and would also need individual ACLs.

A similar approach to that proposed under **Alternative 2** in the Gulf of Mexico Fishery Management Council's (Gulf of Mexico) Generic ACL/AM Amendment was endorsed by the Southeast Fisheries Science Center as "best available science", and the Gulf of Mexico SSC did not oppose it. The Gulf of Mexico Council's SSC also subsequently endorsed an approach similar to **Alternative 4 (Preferred)** as being the best scientifically available approach to stock complexes for ACL management. Similar to **Alternative 2**, the approach in **Alternative 4 (Preferred)** helps prevent overfishing of all species in stock complexes and allows individual ACL management of assessed or prohibited species. If an individual (single-stock) ACL were exceeded, AMs would be implemented for that individual stock. If a stock complex ACL was exceeded, AMs would be implemented for that complex. This approach streamlines and simplifies ACL management, and provides an incentive to move stocks up the SSC's ABC tiers by promoting individual ACLs for species with completed assessments. Additionally, **Alternative 4 (Preferred)** promotes attaining OY for assessed stocks while providing a mechanism to prevent overfishing of the less productive or more vulnerable, unassessed stocks. Grouping less productive, vulnerable, and/or data-poor stocks into complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. This approach is relatively simple and also carries a minimal administrative burden with regards to quota monitoring as compared to the other alternatives. The approach towards assignment of species to complexes in **Alternative 4 (Preferred)** also explicitly considered discard information when available (**Appendix O**).

The Magnuson-Stevens Act requires regional fishery management councils to implement ACLs and AMs for all stocks under federal management by 2011, to ensure overfishing does not occur. **Alternative 1 (No Action)** would not accomplish this. **Alternatives 2, 3,** and **4 (Preferred)** would help in accomplishing Magnuson-Stevens Act goal of ensuring overfishing does not occur, with **Alternative 2** and **Alternative 4 (Preferred)** having the highest potential of yielding the best biological effect.

The South Atlantic Council intends to evaluate landings and other available information on all species periodically through SAFE reports. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in complexes. If the South Atlantic Council determines that landings of any species within a complex changed significantly, more appropriate species groupings could be established.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2, 3,** and **4 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefit to sea turtles and smalltooth sawfish from **Alternatives 2, 3,** and **4 (Preferred)** is unclear. If these alternatives perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.3.2 Economic Effects

The analysis of economic effects for **Action 3** assumes all preferred alternatives under **Action 1** (**Preferred Alternatives 2, 5,** and **9**) are selected and **Preferred Alternative 6** is selected under

Action 2. Therefore, **Action 3** would only apply to the 54 snapper grouper species remaining in the FMU that are also not designated as EC species.

While all alternatives would avoid overfishing to some extent, **Alternative 1 (No Action)** would result in individual ACLs being placed on all 54 species in the snapper grouper FMU and thus is the most likely to prevent overfishing of these species relative to **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred).** By grouping species according to a particular methodology, **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred)** increase the likelihood of overfishing for species not covered by an individual ACL. The magnitude of that probability and associated risk varies according to the different methodologies proposed under **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred)**.

Thus, for example, **Alternative 2** would be the next most likely to prevent overfishing of species within the snapper grouper FMU as it would establish 35 ACLs: 6 complex ACLs (Deepwater, Shallow Water Grouper, Jacks, Snappers, Grunts, and Porgies), 6 sub-complex ACLs (Blueline tilefish, Silk snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, and Blackfin snapper; Almaco jack, Banded rudderfish, and Lesser amberjack; Gray snapper, Lane snapper, Cubera snapper, Dog snapper, and Mahogany snapper; White grunt, Sailors choice, Tomtate, and Margate; Gag, Scamp, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, and Graysby; and Jolthead porgy, Knobbed porgy, Saucereye porgy, Scup, and, Whitebone porgy) and 23 individual ACLs (bar jack, snowy grouper, golden tilefish, scamp, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, red snapper, red porgy, blue runner, gray triggerfish, vermilion snapper, goliath grouper, Atlantic spadefish, wreckfish, hogfish, Nassau grouper, warsaw grouper, speckled hind, and black sea bass). All 14 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, hogfish, red porgy, black sea bass, goliath grouper,[4] gag, snowy grouper, vermilion snapper, greater amberjack, and yellowtail snapper), 3 prohibited species (Nassau grouper, warsaw grouper, and speckled hind) and 5 unassessed species (scamp, blue runner, gray triggerfish, Atlantic spadefish, wreckfish) would have an individual ACL. As under **Alternative 1 (No Action)**, the probability of overfishing and associated risk would be minimized for these 23 species. The probability of overfishing and associated risk for the 31 unassessed species covered by sub-complex ACLs (all species covered by sub-complex ACLs with the exception of gag) would be higher than under **Alternative 1 (No Action)**, but less than if they were covered only by a complex ACL. Six of these 31 unassessed species (misty grouper, lesser amberjack, cubera snapper, Sailors choice, saucereye porgy, and whitebone porgy) are considered most vulnerable species according to the PSA analysis. One unassessed species only covered by a complex ACL (yellowedge grouper) would be subject to the highest probability of overfishing and associated risk relative to **Alternative 1 (No Action)**, though it is not considered a most vulnerable species according to the PSA analysis.

Alternative 4 (Preferred) would be the next most likely to prevent overfishing of species within the snapper grouper FMU as it would establish 29 ACLs: 6 complex ACLs (Deepwater, Shallow Water Grouper, Jacks, Snappers, Grunts, and Porgies) and 23 individual ACLs (bar jack, snowy grouper, golden tilefish, scamp, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, red snapper, red porgy, blue runner, gray triggerfish, vermilion snapper, goliath grouper, Atlantic spadefish, wreckfish, hogfish, Nassau grouper, warsaw grouper, speckled

[4] Goliath grouper is a prohibited as well as an assessed species.

hind, and black sea bass). As such, all 14 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, hogfish, red porgy, black sea bass, Goliath grouper,[5] gag, snowy grouper, vermilion snapper, greater amberjack, and yellowtail snapper), 3 prohibited species (Nassau grouper, warsaw grouper, and speckled hind) and 6 unassessed species (bar jack, scamp, blue runner, gray triggerfish, Atlantic spadefish, wreckfish) would have an individual ACL. As under **Alternative 1 (No Action)** and **Alternative 2**, the probability of overfishing and associated risk would be minimized for these 23 species. The probability of overfishing and associated risk for the 26 unassessed species (Yellowedge grouper, Blueline tilefish, Silk Snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, Blackfin snapper, Almaco jack, Banded rudderfish, Lesser amberjack, Gray snapper, Lane snapper, Cubera snapper, Dog snapper, Mahogany snapper, White grunt, Sailors choice, Tomtate, Margate, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, and Graysby) covered by complex ACLs would be higher than under **Alternative 1 (No Action)**. Six of these 26 unassessed species (misty grouper, lesser amberjack, cubera snapper, Sailors choice, yellowfin grouper, and whitebone porgy) are considered most vulnerable species according to the PSA analysis. The 26 unassessed species covered by a complex ACL under **Alternative 4 (Preferred)** are effectively grouped in the same manner as the 31 unassessed species covered by a sub-complex ACL and 1 unassessed species covered by a complex ACL under **Alternative 2.** Thus, for these 26 species, the probability of overfishing and associated risk is effectively equivalent under **Alternative 2** and **Alternative 4 (Preferred)**.

Alternative 3 is the least likely to prevent overfishing of species within the snapper grouper FMU as it would establish 12 ACLs: 6 complex (unit) ACLs (Shallow water grouper unit 1, Deep-water grouper and tilefish, Mid-shelf snapper unit, Jack unit, Shallow water snapper/tilefish/wrasse unit, and Triggerfish/spadefish unit) and 6 individual ACLs (goliath grouper, Nassau grouper, wreckfish, red porgy, white grunt, and black sea bass). As such, only 3 of the 13 assessed species (red porgy, black sea bass, and Goliath grouper[6]), 1 prohibited species (Nassau grouper) and 2 unassessed species (wreckfish and white grunt) would have an individual ACL. As under **Alternative 1 (No Action)**, the probability of overfishing and associated risk would be minimized for these 6 species. However, an additional 8 assessed species would be indicator species for their respective complexes/units (gag, red grouper, and black grouper for Shallow water grouper unit 1, snowy grouper for Deep-water grouper and tilefish, vermilion snapper for Mid-shelf snapper unit, greater amberjack for Jack unit, and yellowtail snapper and mutton snapper for Shallow water snapper/tilefish/wrasse unit). In effect, these 8 assessed indicator species would be treated the same as species covered by an individual ACL. Thus, as under **Alternative 1 (No Action)**, **Alternative 2**, and **Alternative 4 (Preferred)**, the probability of overfishing and associated risk would be minimized for the 14 species covered by an individual ACL or considered an indicator species.

Conversely, 6 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, and hogfish) and 2 prohibited species (warsaw grouper and speckled hind) would only be covered by a complex/unit ACL under **Alternative 3**. Thus, the probability of overfishing and associated risk would be higher for these 6 assessed and 2 prohibited species under **Alternative 3** relative to **Alternative 1 (No Action)**, **Alternative 2**, and **Alternative 4 (Preferred)**. The 6 assessed species are economically important, or at least somewhat economically important, to the commercial and/or recreational sectors of the snapper grouper fishery. Moreover, not establishing

[5] Goliath grouper is a prohibited as well as an assessed species.
[6] Goliath grouper is a prohibited as well as an assessed species.

an individual ACL for golden tilefish, warsaw grouper, and speckled hind would be inconsistent with actions taken in Amendment 17B to the Fishery Management Plan for the South Atlantic Region (Amendment 17B), not establishing an individual ACL for red snapper would be inconsistent with actions taken in Amendment 17A, not establishing an individual ACL for red grouper would be inconsistent with actions expected to be taken in Amendment 24, not establishing an individual ACL for mutton snapper would be inconsistent with **Alternative 2 (Preferred)** under **Action 5** in this Amendment, and not establishing an individual ACL for black grouper would be inconsistent with **Alternative 2 (Preferred)** under **Action 14** in this Amendment.

The probability of overfishing and associated risk for the 32 unassessed species (Bar jack, Blueline tilefish, Silk snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, Blackfin snapper, Almaco jack, Banded rudderfish, Lesser amberjack, Gray snapper, Lane snapper, Cubera snapper, Dog snapper, Mahogany snapper, White grunt, Sailors choice, Tomtate, Margate, Scamp, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, Graysby, Jolthead porgy, Knobbed porgy, Saucereye porgy, Scup, and Whitebone porgy) covered by complex ACLs would be higher under **Alternative 3** relative to **Alternative 1 (No Action)**. Further, 5 of these 32 unassessed species (bar jack, scamp, blue runner, gray triggerfish, and Atlantic spadefish) are covered by individual ACLs under **Alternative 2** and **Alternative 4 (Preferred)**. Thus, the probability of overfishing and associated risk for these 5 unassessed species would be higher under **Alternative 3** relative to **Alternative 2** and **Alternative 4 (Preferred)**.

Thus, with respect to expected long-term economic benefits derived from protecting snapper grouper species in the FMU from overfishing, **Alternative 1 (No Action)** is expected to generate the greatest long-term economic benefits, followed by **Alternative 2** and **Alternative 4 (Preferred)**, which are expected to generate equivalent long-term economic benefits, while **Alternative 3** would yield the least long-term economic benefits. Since the grouping of species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these expected economic benefits are the result of indirect rather than direct economic effects.

However, these expected economic benefits must be evaluated relative to the expected economic costs in order to estimate the net economic benefits associated with each of these alternatives. In general, the expected economic costs are a function of expected administrative costs associated with implementing, monitoring, and enforcing ACLs, AMs, and ACTs as well as the probability of triggering AM actions in the future (e.g., fishery closures reductions in ACLs, reductions in fishing seasons, etc.).

Administrative costs arise from fishery management and the required scientific research to support management. Administrative costs would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. Relative to **Alternative 1 (No Action)**, the reduction in ACLs and thus expected administrative costs is 78% under **Alternative 3**, 46% under **Alternative 4 (Preferred)**, and 35% under **Alternative 2**. Since the methodology under **Alternative 2** is considered more scientifically complex, and thus more costly in terms of research costs, relative to **Alternative 4 (Preferred)**, the difference in administrative costs is even greater than the difference in the number of ACLs suggests. On the other hand, the probability of triggering an AM action in the future is inversely related to the number of ACLs, all else being equal. Thus, the probability of triggering an AM action in the future would be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. AM actions in the future are expected to generate adverse indirect economic effects on fishery participants. Thus, total expected economic costs are expected to be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**.

Although quantitative estimates of the expected net economic benefits cannot be generated for these alternatives, a qualitative assessment based on the available information can be conducted. An analysis of the information discussed above suggests that expected net economic benefits would be greatest under **Alternative 4 (Preferred)**, followed by **Alternative 2**, **Alternative 3**, and **Alternative 1 (No Action)**. However, this conclusion must be cautioned by the fact that it is unknown how fishing behavior will be altered under the different species grouping methodologies and potential AMs in the future.

4.1.3.3 Social Effects

It is difficult to determine what the social effects would be from species groupings as many of the impacts would come from the thresholds for ACLs that are determined for each species group as a result. While this solution helps resolve the problem of placing ACLs on all species, especially those that do not have stock assessments, it may place further burdens on different fishing sectors according to their fishing practices for a particular species. **Alternative 1 (No Action)** would likely result in ACLs being placed on every species, which could induce a cumbersome management regime. By grouping species according to the methodology in **Alternative 2**, the burden of placing ACLs on all species is removed, although there will continue to be monitoring issues that arise from the monitoring of species groups as well. By basing the groupings on life history and associations with harvesting behavior, these groupings should help account for different fishing behaviors and tie that behavior to more realistic fishing thresholds. However, it is not known how each grouping will be affected by fishing behavior over time and whether or not harvest levels will change as a result and trigger accountability measures in response to ACL thresholds being met. The same is true for **Alternative 3** in that the grouping by species life history does tend to lump those species together that might be harvested together, however there are differences in harvesting behaviors that are not accounted for but were in **Alternative 2**. With **Alternative 4 (Preferred)** there are similar components of other alternatives in that species groupings will allow for regulations that account for behavior and life history and some catch history, yet continues the species-specific ACLs with which fishermen are more familiar. If thresholds are set lower than actual harvest rates, then there will be negative social impacts as species complexes are closed, forcing fishermen to switch to other species, use catch and release only, or not fish at all. Catch and release could increase discard mortality and not fishing at all could have negative impacts on local economies. It is anticipated that the preferred alternative will have positive social benefits through practical grouping that is less cumbersome than single species ACLs but will still allow monitoring. However, as mentioned earlier, the formation of ACLs for grouped species may induce some changes in fishing behavior if unanticipated closures occur as a result of these thresholds being exceeded.

4.1.3.4 Administrative Effects

The establishment of species groupings will aid in the establishment of ACLs, ACTs, and AMs for species for which there is not a lot of information. The development of species groupings requires complex data analysis and manipulation, which requires staff time. However, if the number of species in the snapper grouper FMU can be reduced by incorporating species complexes and groupings, the administrative impacts of establishing, monitoring, and implementing ACLs, ACTs, and AMs will be reduced.

4.1.3.5 Council Conclusions

The NS1 guidelines provide guidance to Councils on the establishment of stock complexes and situations in which they are appropriate for management. Grouping species into complexes reduces the administrative burden with regards to monitoring ACLs while meeting the mandates of the Magnuson-Stevens Act to achieve OY while preventing overfishing. The alternatives under this action explored various approaches to species groupings for the snapper grouper complex. The South Atlantic Council's preferred alternative streamlines and simplifies ACL management by promoting individual ACLs for species with completed assessments. The approach is relatively simple and also carries a minimal administrative burden as compared to the other alternatives. The idea behind creating species groupings is that they create a "buffer" for species that have landings that fluctuate through time or where there are identification issues or just to simplify the management approach.

The SSC provided the following input with regards to species groupings:

- Difficult to achieve OY while preventing overfishing.
- Fishermen will likely have to forgo catch on some species and will likely overfish others.
- Additional uncertainty will have to be added to both the scientific buffer (to account for uncertainty in the groupings themselves) as well as the implementation buffer (to account for increased uncertainty in how the catches will respond to management).
- It is not known how uncertain the groupings are and how well we will be able to detect when the groupings need to be changed.
- It is not known if groupings allow for a better understanding or will impede understanding of the socio-economic impacts of management actions.
- The statistical underpinnings of the approach are questionable given the temporally correlated and seasonally-impacted data.

Benefits of the approach:

- It provides a better understanding of how catches are correlated across species and may help with understanding how the management of one species may affect the catch of another.
- The results are easily comprehended by laypeople.

Ultimately, the SSC recommended against the use of complexes in general unless used to aid with issues of species identification. The SSC felt that the single-species approach outlined through the draft ABC control rule provided the best solution for unassessed stocks.

The Snapper Grouper Advisory Panel (AP) recommended that the South Atlantic Council take no action to establish species groupings.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species

Alternative 1 (No Action). Do not establish an ABC Control Rule for species in the Snapper Grouper FMU.

Alternative 2. Where applicable, establish an ABC Control Rule where ABC equals OFL.

Alternative 3. For unassessed species: establish an ABC Control Rule where ABC equals a percentage of OFL or a percentage of the median landings 1999-2008, as appropriate.

Subalternative 3a. ABC=65% (OFL or median landings 1999-2008)
Subalternative 3b. ABC=75% (OFL or median landings 1999-2008)
Subalternative 3c. ABC=85% (OFL or median landings 1999-2008)
Subalternative 3d. ABC=95% (OFL or median landings 1999-2008)

Alternative 4. For assessed species: establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Subalternative 4a. ABC=yield at 65%MFMT
Subalternative 4b. ABC=yield at 75%MFMT
Subalternative 4c. ABC=yield at 85%MFMT

Alternative 5. For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. For unassessed species: adopt the South Atlantic Council SSC's Control Rule in **Table 4-22** but establish an interim ABC = median landings 1999-2008 and OFL = unknown until the SSC's control rule can be fully applied.

Alternative 6. For assessed species: establish ABCs based on the South Atlantic's SSC's ABC control rule. For unassessed species: Adopt the Gulf of Mexico Council SSC's ABC Control Rule for unassessed species as described in **Table 4-23**. The indicated default ABC buffer levels for Tier 3a and 3b are to be used unless specified otherwise by the Gulf of Mexico Council on a stock by stock basis.

Alternative 7 (Preferred). For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. Recommended ABC values are shown in **Table**

4-25. For unassessed species: When the ABC control rule portion for unassessed species is complete, establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. Until the ABC Control Rule is complete, establish ABCs based upon the approach in **Table 4-24** and OFL = unknown. Recommended ABC values are shown in **Table 4-27**.

Table 4-22. The South Atlantic Council's SSC's ABC Control Rule.
Note: The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. See **Appendix Q** for details on the methodology.

<table>
<tr><th colspan="2">Level 1 – Assessed Stocks</th></tr>
<tr><th>Tier</th><th>Tier Classification and Methodology to Compute ABC</th></tr>
<tr><td>1. Assessment Information (10%)</td><td>1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)
2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%)
3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%)
4. Reliable catch history. (7.5%)
5. Scarce or unreliable catch records. (10%)</td></tr>
<tr><td>2. Uncertainty Characterization (10%)</td><td>1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%)
2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%)
3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%)
4. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%)
5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)</td></tr>
<tr><td>3. Stock Status (10%)</td><td>1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%)
2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%)
3. Stock is either overfished or overfishing. (5%)
4. Stock is both overfished and overfishing. (7.5%)
5. Either status criterion is unknown. (10%)</td></tr>
<tr><td>4. Productivity and Susceptibility – Risk Analysis (10%)</td><td>1. Low risk. High productivity, low vulnerability, low susceptibility. (0%)
2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)
3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)</td></tr>
<tr><th colspan="2">Level 2 - Unassessed Stocks. Reliable landings and life history information available</th></tr>
<tr><td colspan="2">OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA).
ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.</td></tr>
<tr><th colspan="2">Level 3 - Unassessed Stocks. Inadequate data to support DBSRA</th></tr>
<tr><td colspan="2">ABC derived directly, from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.</td></tr>
<tr><th colspan="2">Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA</th></tr>
<tr><td colspan="2">OFL and ABC derived on a case-by-case basis. ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC.</td></tr>
</table>

Table 4-23. The Gulf of Mexico Council's SSC's Acceptable Biological Catch Control Rule for unassessed species. Note: The South Atlantic Council is only considering Tiers 3a and 3b in **Alternative 6**.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. e. Risk of exceeding OFL = 45% f. Risk of exceeding OFL = 35% g. Risk of exceeding OFL = 25% (default level for unassigned stocks) h. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: i. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) j. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) k. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) l. ABC = mean of the landings (risk of exceeding OFL = 2.3%)

Table 4-23. Continued. The Gulf of Mexico Council's SSC's Acceptable Biological Catch Control Rule for unassessed species.

Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: m. ABC = 100% of OFL n. ABC = 85% of OFL o. ABC = 75% of OFL (default level for unassigned stocks) p. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.

Table 4-24. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the Control Rule (**Table 4-22**).

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend) YES: GO to 2
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Table 4-25. ABCs (landed catch) for assessed snapper grouper species based on recommendation from the S. Atlantic Council's SSC.

Species[1]	ABC
Black sea bass	847,000 lbs ww
Gag	949,000 lbs ww
Snowy grouper	102,960 lbs ww
Red porgy	395,304 lbs ww
Vermilion snapper	1,109,000 lbs ww
Greater amberjack	1,968,000 lbs ww
Yellowtail snapper[2]	2,173,875 lbs ww
Mutton snapper[2]	926,600 lbs ww
Black grouper[2,3]	245,595 lbs ww
Red grouper[4]	622,000 lbs ww

[1] The SSC chose not to specify an ABC for golden tilefish in June 2009 because the age of the 2004 assessment and lack of a current estimate of abundance. In April 2010, however, the SSC provided an ABC recommendation of 311,000 lbs. A new ABC will be provided for golden tilefish through SEDAR 25 in December 2011. The Council will take action to adopt the new ABC for golden tilefish in Amendment 18B, currently under development.
[2] Values for ABC for black grouper, yellowtail snapper and mutton snapper are for South Atlantic only (see Actions 13 18 and 19 for jurisdictional separation of ABC between the South Atlantic and Gulf of Mexico)
[3] ABC recommended by the Gulf Council's SSC
[4] ABC recommended by South Atlantic's SSC, but may change as per preferred jurisdictional allocation in Amendment 24.

4.1.4.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for species in the snapper grouper FMU. Although there are currently no ABC control rules, there are status quo ABC values for some snapper grouper species based on recommendations from the South Atlantic Council's SSC. Status quo ABC values of 0 lbs landed catch for speckled hind and warsaw grouper are contained in Amendment 17B (SAFMC 2010b), and are based on recommendations from the South Atlantic Council's SSC. For overfished species (red snapper, snowy grouper, black sea bass, and red porgy), the SSC has recommended ABCs equal to the value specified in the rebuilding plan, which are included in Amendment 15A (SAFMC 2008a), 17A (SAFMC 2010a), and 17B (SAFMC 2010b) (**Table 4-25**).

Values for ABC have also been identified by the South Atlantic Council's SSC for greater amberjack, mutton snapper, black grouper, red grouper, vermilion snapper, gag, and yellowtail snapper based on SEDAR assessments. The ABCs have been identified for black grouper and red grouper based on the recently completed SEDAR 19 (2010); however, these ABCs apply to both the Gulf of Mexico Fishery Management Council (Gulf Council) and South Atlantic Council's areas of jurisdiction. The ABC for black grouper is addressed in **Action 13** of this document and ABC for red grouper is specified in Amendment 24, which is under development (**Table 4-25**). **Actions 18** and **19** separate the SSC's recommended ABC for yellowtail snapper and mutton snapper into the jurisdictional areas of the South Atlantic Council and Gulf Council. Overfishing levels (OFL) and ABCs were specified for vermilion snapper and gag in Amendment 16 (SAFMC 2009a) and 17B (SAFMC 2010b). The SSC did not provide an ABC value for golden tilefish when they discussed ABC control rules because of the age of the assessment and because of the lack of a current estimate of abundance. Completion of a SEDAR assessment for Golden tilefish is expected in fall 2011 and the preferred ABC control rule in this document will be applied to golden tilefish to obtain an ABC value when the assessment and amendment are completed in 2011. The combined commercial and recreational ACL for golden tilefish is 331,000 lbs ww, and sector specific ACLs are provided in Amendment 17B (SAFMC 2010b). However, ABCs have not been specified for many other snapper grouper species. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for assessed and unassessed species or species groups where needed. Under **Alternative 2**, ABC would be equal to OFL. The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than that of **Alternatives 3-6**, which would account for scientific and management uncertainty. **Alternative 3** would set the ABC for unassessed species as a percentage of the OFL or the median landings from 1999-2008 where **Subalternative 3a** would be the most conservative subalternative where ABC = 65%OFL and **Subalternative 3d** would be the least conservative subalternative where ABC = 95%OFL (**Table 4-26**). Therefore, **Alternative 3** would be expected to have a greater biological benefit among **Alternatives 1 (No Action)**, **2**, and **3.** However, the South Atlantic Council's SSC has indicated that OFL cannot be determined for most unassessed species based on their recommended ABC control rule. Therefore, given the SSC's recommendation, **Alternatives 2** and **3** could only be applied to species that have an OFL from a stock assessment.

Table 4-26. OFL and ABC values for unassessed species which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2**, **3** and **5**.
The table excludes species that would be removed from the FMU (**Action 1**).

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Yellowedge grouper	30,221	n/a	19,643	22,665	25,687	28,710
Blueline tilefish	146,134	n/a	94,987	109,600	124,214	138,827
Silk Snapper	27,519	n/a	17,887	20,639	23,391	26,143
Misty grouper	2,346	n/a	1,525	1,760	1,994	2,229
Sand tilefish	6,353	n/a	4,130	4,765	5,400	6,036
Queen snapper	7,584	n/a	4,930	5,688	6,446	7,205
Black snapper	229	n/a	149	171	194	217
Blackfin snapper	2,154	n/a	1,400	1,615	1,830	2,046
Almaco jack	229,236	n/a	149,004	171,927	194,851	217,775
Banded rudderfish	119,916	n/a	77,945	89,937	101,928	113,920
Lesser amberjack	7,490	n/a	4,869	5,618	6,367	7,116

Table 4-26. Continued. OFL and ABC values for unassessed species which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2**, **3** and **5**.

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Gray snapper	769,475	n/a	500,159	577,107	654,054	731,002
Lane snapper	114,395	n/a	74,357	85,797	97,236	108,676
Cubera snapper	22,362	n/a	14,535	16,771	19,007	21,244
Dog snapper	2,586	n/a	1,681	1,940	2,198	2,457
Mahogany snapper	53	n/a	34	40	45	50
White grunt*	635,899	n/a	413,335	476,925	540,514	604,104
Sailors choice	18,458	n/a	11,998	13,844	15,689	17,535
Tomtate	64,454	n/a	41,895	48,341	54,786	61,231
Margate	25,412	n/a	16,518	19,059	21,600	24,142
Red hind	24,406	n/a	15,864	18,304	20,745	23,185
Rock hind	32,792	n/a	21,315	24,594	27,873	31,152
Yellowmouth grouper	2,147	n/a	1,396	1,610	1,825	2,040
Yellowfin grouper	4,414	n/a	2,869	3,310	3,752	4,193
Coney	1,975	n/a	1,284	1,481	1,678	1,876
Graysby	16,265	n/a	10,573	12,199	13,826	15,452
Jolthead porgy	32,829	n/a	21,339	24,622	27,905	31,188
Knobbed porgy	45,912	n/a	29,843	34,434	39,025	43,616
Saucereye porgy	2,952	n/a	1,919	2,214	2,509	2,805
Scup	6,579	n/a	4,276	4,934	5,592	6,250
Whitebone porgy	24,715	n/a	16,065	18,537	21,008	23,480
Atlantic spadefish	231,056	n/a	150,187	173,292	196,398	219,503
Blue runner	1,007,120	n/a	654,628	755,340	856,052	956,764
Bar jack	10,009	n/a	6,506	7,507	8,508	9,509
Gray triggerfish*	529,309	n/a	344,051	396,981	449,912	502,843
Scamp	492,572	n/a	320,172	369,429	418,686	467,944
Hogfish	133,136	n/a	86,539	99,852	113,166	126,479
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 4-27. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.
The table excludes species that would be removed from the FMU (**Action 1**). OFL is unknown.

Species Common Name	**Alt. 7 (Preferred)** **ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)**
Yellowedge grouper	30,221[1]
Blueline tilefish	592,602[4]
Silk Snapper	27,519[1]
Misty grouper	2,863[3]
Sand tilefish	8,823[3]
Queen snapper	9,344[3]
Black snapper	382[2,3]
Blackfin snapper	4,154[3]
Almaco jack	291,922[2]
Banded rudderfish	152,999[2]
Lesser amberjack	10,568[2]
Gray snapper	894,019[2]
Lane snapper	153,466[2]
Cubera snapper	31,772[2]
Dog snapper	7,523[3]
Mahogany snapper	160[3]
White grunt*	635,899[1]
Sailors choice	35,266[3]
Tomtate	70,948[3]
Margate	34,662[2,3]
Red hind	25,885[2]
Rock hind	37,569[2]
Yellowmouth grouper	4,661[3]
Yellowfin grouper	9,258[3]
Coney	2,589[3]
Graysby	17,856[3]
Jolthead porgy	42,533[3]
Knobbed porgy	61,194[3]
Saucereye porgy	4,205[3]
Scup	8,999[3]
Whitebone porgy	30,684[3]
Atlantic spadefish	282,841[2]
Blue runner	1,289,941[2]
Bar jack	20,520[3]
Gray triggerfish*	672,565[2]
Nassau grouper	0
Goliath grouper	0
Scamp	492,572[1]
Hogfish	147,638[2]

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]ABC based on median landings (1999-2008) as per

South Atlantic SSC; [2]ABC based on 3rd highest landings (1999-2008) as per South Atlantic SSC; [3]ABC proxy value based on the South Atlantic SSC's ABC control rule, to be discussed by the South Atlantic SSC at a later date; and [4]ABC based on modified approach as per South Atlantic SSC.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Alternative 4 and its subalternatives would set ABC to a percentage of the yield at maximum fishing mortality threshold (MFMT) for assessed species. **Subalternative 4a**, the most conservative subalternative under **Alternative 4**, would set ABC = yield at 65%MFMT, which is equivalent to about 93.6%OFL. **Subalternative 4b** would set ABC = yield at 75%MFMT, which is equivalent to 97.1%OFL. **Subalternative 4c** would be the least conservative alternative under **Alternative 4** and would set ABC = yield at 85%MFMT, which is equivalent to about 98.9%OFL. Stock assessments have provided values for the yield at 65%, 75%, and 85% of MFMT for many of these species when the stock is at the biomass associated with the MSY (B_{MSY}); however, values are not available for these species at current biomass levels.

For assessed species, **Alternative 5** would consider the probability of overfishing in determining ABC. **Alternative 5** would establish ABCs based on the SSC's ABC control rule for assessed species, which has four dimensions included in the control rule framework: Assessment information; characterization of uncertainty; stock status; and productivity/susceptibility of the stock. Each dimension would contain tiers that can be evaluated for each stock to determine a numerical score. The uncertainty buffer, or difference between OFL and ABC, would be expressed in terms of a reduction in the "probability of overfishing", or "P*". The adjustment score provided by the tiers and dimensions represents the amount by which P* is reduced to obtain the critical value for P*. Therefore, the key product of the control rule is the sum of scores for all dimensions that is used as an adjustment factor calculate the critical value for P*. The scoring provides a maximum P* adjustment of 40% and a minimum of 0% that results in critical values for P* ranging from 10% to 50%. These critical values are then used to determine the actual ABC from projection tables that provide the level of annual yield that corresponds to a particular P*.

Setting ABC equal to OFL implies a P* equal to 50%, where 50% represents the chance of overfishing occurring. Reducing P* will reduce ABC and provide a reduction in the probability of overfishing occurring. The relationship between the amount of reduction in P* and the resulting reduction in ABC is determined by the shape of the distribution of yield about the management parameters. For a given reduction in P*, broad distributions (suggesting higher uncertainty) will result in larger reductions in ABC whereas narrower distributions (suggesting lower uncertainty) will result in smaller reductions in ABC.

For unassessed species, the South Atlantic Council would adopt the South Atlantic Council SSC's ABC control rule but establish an interim ABC=median landings from 1999-2008 (**Table 4-26**) until the SSC's control rule can be fully applied. It is noted the South Atlantic Council's SSC changed their ABC control rule recommendation for unassessed species at their April 2011 meeting. The SSC's ABC control rule recommendation for unassessed species is addressed in **Alternative 7 (Preferred)**. The following text is from the August 16-17, 2010 SSC meeting where ABC control rules for unassessed species was discussed.

There was initial discussion on definition of "unassessed stocks" and "data poor" stocks. These terms are not synonyms as unassessed stocks can span data poor to data rich spectrum. Data poor *and data rich are relative terms that are useful within a region/council and breakdown when used between councils due to changes in data quality and quantity by region. The South Atlantic SSC currently has four members that are part of an ad hoc committee that worked to address the data situations where only reliable catch series (ORCS) data are available for a given species. Steve Cadrin, Luiz Barbieri, Andy Cooper, and Jim Berkson have all been participating on this committee since last fall. Jim Berkson gave an update on their progress and provided the SSC with the proposed approach being developed by ad hoc committee*

Proposed approach for ORCS considers the following tiers:
***Level 1 tier** - data exist to assess stock. Enough information for some form of assessment (e.g. surplus production model), but because of lack of resources, stock has not been assessed. Recommendation is to do stock assessment.*
***Level 2 tier** - depletion based stock reduction analysis (DBSRA) – (developed by Dick and MacCall) Can be done if you have your entire catch history for a fishery. Requires some level of "informed expert judgment".*
***Level 3 tier** - depletion-corrected average catch (DCAC) (MacCall 2009. Done when you have only a limited # of years of catch data for a fishery. Requires a higher level of "informed expert judgment" than Level 2 tier.*
***Level 4 tier**- ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC*

Dr. Berkson discussed Restrepo's method as a potential tool to estimate ABCs for Level 4 tier stocks. Two main components of the approach are often overlooked: - time period considered is based on experts' judgment of when the stock was, or is, stable. - The scalar that is multiplied with landings is based on expert opinion of stock status (e.g., B/Bmsy ratio; use 0.75 if stock biomass is likely at or above Bmsy).

There was concern within the SSC about Restrepo's method because of the assumption that landings during the stable period represent OFL. John Boreman noted that this approach was developed in a time that 50% probability of overfishing was OK, now we have to stop overfishing and our reference is different. Steve Cadrin provided an example from New England red crab where long-term average landings were determined to more closely resemble ABC than OFL. There was general agreement among SSC members that the landings stream during a period when a stock is considered stable represent ABC and not OFL; in this scenario, OFL is an unknown value above ABC that cannot be provided to the council under this tier.

NOAA general counsel, Mike McLemore, was concerned that no OFL would be provided. Discussion between the SSC and Mr. McLemore focused on what the SSC was responsible for providing to the Council under NS1. It became clear that the recommending an ABC was the main goal, and providing this recommended value without an estimate of OFL was acceptable in situations where only catch series data were available, provided the SSC "explains its reasoning and judgment "-M. McLemore.

Alternative 5, which would adopt the SSC's ABC control rule for assessed species, would establish a buffer between the OFL and ABC based on a probability of overfishing occurring specific to the stock being assessed. The SSC's P* approach has been applied to all recent SEDAR stock assessments for snapper grouper species that have been determined to not be overfished. For overfished species, the SSC stated at their April 2010 meeting that "… a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan." For unassessed species, no OFL would be specified. Instead, an ABC would be specified based on the quality and availability of data for the different species. Since the ABC would be specific to the stock, the ABC from **Alternative 5** could be greater or less than the ABC that would result from **Alternatives 2-4**. Therefore, the associated biological effects could be greater or less, but they would be considered to be appropriate for the stock.

Similar to **Alternative 5**, **Alternative 6** would specify an ABC control rule based on the South Atlantic Council's SSC control rule for assessed species. However, for unassessed species, the Gulf of Mexico Council SSC's ABC control rule would be used (**Table 4-23**). **Alternative 6** would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule. According to **Table 4-23**, the ABC control rule described for Tier 3a would be used in situations where landings are small relative to stock biomass and recent historical landings are without trend. Tier 3a would be used for species where no assessment is available, but landings data exist, and the probability of exceeding the OFL in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the OFL and ABC.

For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council's SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b.

The Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in a higher allowable catch than an ABC control rule based on median landings 1999-2008 (**Table 4-26**). Therefore, the biological effect of **Alternative 6** would likely be less than **Alternative 5**.

Alternative 7 (Preferred) would establish ABCs for assessed species, based on the South Atlantic Council's SSC ABC control rule **(Table 4-22)**. For unassessed species, ABCs would be based on the approach in **Table 4-24**. The South Atlantic Council's SSC intends to re-evaluate the unassessed species' portions of their ABC control rule (including values for those species the Council voted *not* to remove from the FMU on August, 9, 2011) in the near future to assess whether modifications are necessary. In April 2011, the SSC recommended ABC values for unassessed species, which are higher for all species compared with those in **Alternatives 1 (No Action)** through **5**, except for those in **Alternative 6** (**Table 4-28a** and **4-28b)**. The biological effects of **Alternative 7 (Preferred)** may be similar to **Alternative 5**, since the South Atlantic Council's SSC took into account many different sources of uncertainty in their ABC recommendations. As mentioned, the South Atlantic Council's SSC will periodically evaluate the performance of their ABC control rule and determine when and how it needs to be modified.

Table 4-28a. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3a from **Table 4-23**.

Species Common Name	OFL (Mean + 2 SD)	Mean + 0.5 SD	Mean + 1 SD (Default)	Mean + 1.5 SD
Yellowedge grouper	52,025	35,458	40,980	46,503
Blueline tilefish	747,365	392,193	510,584	628,975
Silk Snapper	69,988	42,887	51,921	60,954
Misty grouper	4,518	2,813	3,381	3,950
Sand tilefish	18,775	10,576	13,309	16,042
Queen snapper	17,090	10,095	12,427	14,759
Black snapper	604	309	407	506
Blackfin snapper	6,113	3,626	4,455	5,284
Almaco jack	366,092	261,828	296,583	331,338
Banded rudderfish	212,007	147,439	168,962	190,485
Lesser amberjack	17,566	11,114	13,264	15,415
Gray snapper	1,104,046	875,775	951,865	1,027,955
Lane snapper	184,619	140,153	154,975	169,797
Cubera snapper	54,401	30,935	38,757	46,579
Dog snapper	15,697	7,763	10,408	13,053
Mahogany snapper	3,020	1,192	1,802	2,411
White grunt*	773,769	675,044	707,952	740,860
Sailors choice	49,021	28,946	35,638	42,329
Tomtate	100,360	74,989	83,446	91,903
Margate	59,750	35,930	43,870	51,810
Red hind	30,162	24,771	26,568	28,365
Rock hind	47,791	35,886	39,854	43,823
Yellowmouth grouper	9,704	4,722	6,383	8,044
Yellowfin grouper	33,789	15,197	21,395	27,592
Coney	3,956	2,259	2,825	3,390
Graysby	29,763	19,075	22,638	26,200
Jolthead porgy	63,190	43,307	49,934	56,562
Knobbed porgy	76,545	56,714	63,325	69,935
Saucereye porgy	5,937	3,821	4,526	5,232
Scup	14,904	8,572	10,682	12,793
Whitebone porgy	39,634	28,016	31,889	35,761
Atlantic spadefish	577,785	347,101	423,996	500,890
Blue runner	1,534,169	1,116,354	1,255,626	1,394,897
Bar jack	27,908	16,316	20,180	24,044
Gray triggerfish*	873,883	641,940	719,255	796,569
Scamp	642,258	522,282	562,274	602,266
Hogfish	208,964	152,939	171,614	190,289
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 4-28b. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3b from **Table 4-23**.

Species Common Name	OFL (Mean)	85% OFL	75% OFL (Default)	65% OFL
Yellowedge grouper	29,936	25,445	22,452	19,458
Blueline tilefish	273,802	232,732	205,352	177,971
Silk Snapper	33,854	28,776	25,390	22,005
Misty grouper	2,244	1,908	1,683	1,459
Sand tilefish	7,844	6,667	5,883	5,098
Queen snapper	7,763	6,599	5,822	5,046
Black snapper	211	179	158	137
Blackfin snapper	2,798	2,378	2,098	1,818
Almaco jack	227,074	193,013	170,305	147,598
Banded rudderfish	125,917	107,029	94,438	81,846
Lesser amberjack	8,963	7,618	6,722	5,826
Gray snapper	799,685	679,732	599,764	519,795
Lane snapper	125,331	106,531	93,998	81,465
Cubera snapper	23,113	19,646	17,335	15,023
Dog snapper	5,119	4,351	3,839	3,327
Mahogany snapper	583	496	438	379
White grunt*	642,136	545,816	481,602	417,388
Sailors choice	22,255	18,916	16,691	14,466
Tomtate	66,533	56,553	49,900	43,246
Margate	27,990	23,791	20,992	18,193
Red hind	22,974	19,528	17,231	14,933
Rock hind	31,918	27,130	23,938	20,746
Yellowmouth grouper	3,062	2,603	2,296	1,990
Yellowfin grouper	9,000	7,650	6,750	5,850
Coney	1,694	1,440	1,270	1,101
Graysby	15,513	13,186	11,635	10,083
Jolthead porgy	36,679	31,177	27,509	23,841
Knobbed porgy	50,104	42,588	37,578	32,568
Saucereye porgy	3,115	2,648	2,336	2,025
Scup	6,461	5,492	4,846	4,200
Whitebone porgy	24,144	20,522	18,108	15,693
Atlantic spadefish	270,206	229,675	202,655	175,634
Blue runner	977,083	830,520	732,812	635,104
Bar jack	12,452	10,584	9,339	8,094
Gray triggerfish*	564,626	479,932	423,470	367,007
Scamp	482,290	409,946	361,717	313,488
Hogfish	134,264	114,125	100,698	87,272
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.
Note: ABC = 0 landings for Speckled hind and Warsaw grouper.

Establishing an ABC control rule for snapper grouper species would not directly affect the protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.1.4.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 4** are indirect.

In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects. In most cases, **Alternative 1 (No Action)** is expected to cause the least disruption to operations in the snapper grouper fishery. Specifically, **Alternative 1 (No Action)** would allow current harvest levels to continue and thus the greatest landings and ex-vessel revenue to the commercial sector and greatest consumer and producer surplus to the recreational sector relative to the other alternatives. In turn, **Alternative 1 (No Action)** is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects. However, legally, **Alternative 1 (No Action)** is not a feasible alternative. Conversely, **Subalternative 3a** would restrict harvest levels the most, cause the most disruption to operations in the snapper grouper fishery, generate the lowest landings and ex-vessel revenue to the commercial sector and lowest consumer and producer surplus to the recreational sector, and thus is expected to result in the greatest short-term adverse economic effects and the greatest potential long-term positive economic effects relative to the other alternatives.

Under **Alternative 2,** the ABC would be set equal to the OFL and therefore is not as risk averse as the other alternatives, with the exception of **Alternative 1 (No Action)**. As such, in theory, it is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects relative to **Alternatives 3-7**. However, since the OFL is unknown for the unassessed species that do not already have ABCs established by the South Atlantic Council's SSC, it is not a functional alternative.

Of the various **Alternative 3** subalternatives, **Subalternative 3d** is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects. Like **Alternative 3**, **Alternative 4** also accounts for scientific uncertainty and is expected to result in greater short-term adverse economic effects and the smaller potential long-term positive economic effects relative to **Alternative 1 (No Action)** and **Alternative 2**. However, since MFMT values at current biomass levels are not available for the unassessed species that do not already have ABCs, it is difficult to determine whether **Alternative 4** would have greater or lesser short-term adverse economic effects and potential long-term positive economic effects relative to the other alternatives.

Alternative 5 is expected to generate lesser short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 3** and **Alternative 6** (Tier 3b) but greater short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 6** (Tier 3a), and **Alternative 7 (Preferred).** Under **Alternative 6**, using the default ABC buffer level for Tier 3a (mean + 1 SD) is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects of all the functional and legally feasible alternatives considered with the exception of **Alternative 7 (Preferred)**. Under **Alternative 6**, using the default ABC buffer level for Tier 3b (75% OFL) would generate almost the same short-term adverse economic effects and potential long-term positive economic effects as **Subalternative 3b**, which are greater than those under **Subalternative 3a** but less than those under **Subalternative 3c**, **Subalternative 3d**, **Alternative 5 , Alternative 6** (Tier 3a), and **Alternative 7 (Preferred)**.

Comparing the expected economic effects of **Alternative 5**, **Alternative 6** (Tier 3a), and **Alternative 7 (Preferred)** is not as straightforward and differs depending on the species considered. For yellowedge grouper, silk snapper, scamp, and white grunt, the ABC is equivalent under **Alternative 5** and **Alternative 7 (Preferred)**, because the South Atlantic Council's SSC did not change their ABC recommendations for these species, but less than what it would be under **Alternative 6** (Tier 3a). Conversely, for the other unassessed species without ABCs, which represent the majority in terms of number of species and total landings, the ABCs under **Alternative 7 (Preferred)** are greater than they would be under **Alternative 5** and **Alternative 6** (Tier 3a) and thus **Alternative 7 (Preferred)** is expected to generate less short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 5** and **Alternative 6** (Tier 3a). However, for all species, the ABCs are greater under **Alternative 6** (Tier 3a) relative to **Alternative 5** and thus **Alternative 6** (Tier 3a) is expected to generate less short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 5** .

To summarize, the ranking of alternatives with respect to generating the least short-term adverse economic effects and potential long-term positive economic effects is as follows: **Alternative 1 (No Action), Alternative 2, Alternative 7 (Preferred)**, **Alternative 6** (Tier 3a), **Alternative 5** , **Subalternative 3d**, **Subalternative 3c**, **Subalternative 3b** and **Alternative 6** (Tier 3b), and **Subalternative 3a**. **Alternative 4** is excluded from this overall ranking of alternatives for previously explained reasons. These conclusions must be used with caution as the cumulative economic effects of reduced harvests from all these species is difficult to determine. If the ACL is restrictive as a result of the selected ABC and the harvest of all species is subsequently reduced, the effects on fishing behavior will differ across vessels depending on their physical and operational characteristics. Such behavioral changes cannot be predicted using the currently available science.

4.1.4.3 Social Effects

Setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the ABC and any subsequent reduction through other alternatives setting ACLs and ACTs/AMs. **Alternative 1 (No Action)** does not establish an ABC control rule and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. **Alternative 3** would be the most restrictive and moving from **Subalternative 3a to 3c** establishes a less restrictive threshold. Using a percentage of the MFMT in **Alternative 4** would be less restrictive than **Alternative 3** and only slightly more restrictive than **Alternative 2**. In **Alternative 5**, the use of the SSC control rule for assessed species and median landings for unassessed species will have similar impacts as previous alternatives but may have fewer negative social effects as thresholds are near recent harvest levels using median landings. In **Alternative 6,** the use of the Gulf of Mexico Council's ABC control rule offers higher landing levels under Tier 3a while Tier 3b is closer to the thresholds in **Alternative 5**. With the revised approach in **Alternative 7 (Preferred)** thresholds are often higher than **Alternative 5** for most species (although some would see a lower threshold). In most cases, the social effects would likely be tied to the buffer imposed in setting ACL and whether or not that buffer imposed a reduction in current harvest levels.

One of the difficulties in understanding what the social effects would be is that the cumulative effect of reduced harvest from the combination of all these different species is difficult to ascertain. If a restrictive ABC level is chosen and harvests for all species are reduced, how those reductions will affect fishing behavior will depend upon individual fishing behaviors and sector makeup. These effects can differ dramatically from one region to another or from state to state depending upon the species that are predominant in that area and the composition of the respective fishing sector. For the Deepwater Complex many of the social effects would accrue to fishing communities in North Carolina where a larger proportion of landings are made (see **Table 3-28**). For the Jacks Complex, landings are more evenly spread throughout the South Atlantic states and therefore any reduction in harvest would have a more dispersed impact (see **Table 3-36**). Species included in the Grunts Complex are landed predominantly in South Carolina and communities there would likely see more effects of any changes (see **Table 3-40**). The communities identified within each state in **Section 3.8.3.3** that have a high local quotient for their respective species would likely be the communities affected the most by any harvest reductions.

4.1.4.4 Administrative Effects

The establishment of an ABC Control Rule is a purely administrative process. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.1.4.5 Council Conclusions

The SSC's final ABC Control Rule document (**Appendix Q**) states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although *the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P* that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.

The "decision tree" was incorporated into an alternative for the South Atlantic Council's consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the South Atlantic Council's SSC's ABC control rule and is prepared to make adjustments as needed in the future. In particular, the South Atlantic Council is aware of various approaches proposed for situations in which only catch data are available. NOAA released a Technical Memorandum in May 2011— *Calculating Acceptable Biological Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* — that presents various methodologies. The South Atlantic Council's SSC intends to review the information included in this document and revise their Control Rule as needed. Once the SSC finalizes Level 4 of their Control Rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the SSC finalizes their ABC control rule.

The Snapper Grouper Advisory Panel (AP) recommended setting ABC = 85% OFL for snapper grouper species in the Comprehensive ACL Amendment. However, the South Atlantic Council's SSC since stated that OFL values are unknown for all unassessed species. Hence the South Atlantic

Council did not consider this alternative a viable approach. The Snapper Grouper AP also recommended that trends in landings be examined on a species-by-species basis to set ABCs.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that **Alternative 7** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do not Currently have Allocations

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Alternative 1 (No Action). Retain the current allocations (**Table 4-29**). Do not specify allocations for those species where no allocations have been specified.

Table 4-29. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively.

	Allocations	
	Commercial	**Recreational**
Black sea bass	43%	57%
Gag	51%	49%
Golden tilefish	97%	3%
Red porgy	50%	50%
Snowy grouper	95%	5%
Vermilion snapper	68%	32%
Red grouper (proposed in 24)	44%	56%

Alternative 2 (Preferred). Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified (current values are shown in **Table 4-30**.)

Alternative 3. Specify allocations for species that do not currently have allocations among three sectors, commercial, recreational, and for-hire, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The

commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 5. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-1998. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 6. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1999-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 7. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 2006-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

4.1.5.1 Biological Effects

Alternative 1 (No Action) would retain the allocations that are currently in place for black sea bass, gag, golden tilefish, red porgy, snowy grouper, and vermilion snapper (**Table 4-29**), but would not specify commercial or recreational allocations for the remaining species or species groups in the Snapper Grouper FMP. If allocations were not specified then it would not be possible to identify the ACL for each of the sectors. Only a single ACL could be established for both sectors and options for an AM would be limited.

Table 4-30. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**. Allocations will be established for red grouper in Amendment 24. Allocations for wreckfish and black grouper are addressed in **Actions 9** and **14**, respectively.

Species or Species Complex	**Preferred Alternative 2**		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Deepwater Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Yellowedge grouper	96.19%	3.81%	96.19%	3.14%	0.67%	94.00%	6.00%	98.48%	1.52%	88.28%	11.72%	99.64%	0.36%
Blueline tilefish	47.39%	52.61%	47.39%	16.94%	35.67%	73.25%	26.75%	94.69%	5.31%	57.03%	42.97%	38.11%	61.89%
Silk Snapper	73.14%	26.86%	73.14%	2.02%	24.84%	74.17%	25.83%	67.34%	32.66%	84.95%	15.05%	71.34%	28.66%
Misty grouper	70.91%	29.09%	70.91%	28.69%	0.39%	47.26%	52.74%	15.11%	84.89%	98.33%	1.67%	99.97%	0.03%
Sand tilefish	16.22%	83.78%	16.22%	52.77%	31.00%	16.82%	83.18%	8.59%	91.41%	23.62%	76.38%	15.86%	84.14%
Queen snapper	93.12%	6.88%	93.12%	0.69%	6.19%	87.95%	12.05%	78.18%	21.82%	97.76%	2.24%	100.00%	0.00%
Black snapper	91.52%	8.48%	91.52%	8.37%	0.11%	86.46%	13.54%	82.36%	17.64%	100.00%	0.00%	100.00%	0.00%
Blackfin snapper	31.68%	68.32%	31.68%	37.90%	30.42%	34.56%	65.44%	21.09%	78.91%	46.51%	53.49%	29.33%	70.67%
Jacks Complex													
Almaco jack	51.53%	48.47%	51.53%	14.87%	33.60%	51.06%	48.94%	40.18%	59.82%	47.08%	52.92%	51.77%	48.23%
Banded rudderfish	25.25%	74.75%	25.25%	14.11%	60.64%	28.08%	71.92%	25.21%	74.79%	26.33%	73.67%	23.20%	76.80%
Lesser amberjack	46.62%	53.38%	46.62%	17.28%	36.10%	67.06%	32.94%	79.68%	20.32%	52.75%	47.25%	28.79%	71.21%
Snappers Complex													
Gray snapper	20.00%	80.00%	20.00%	46.87%	33.13%	29.59%	70.41%	39.85%	60.15%	18.72%	81.28%	11.87%	88.13%
Lane snapper	12.21%	87.79%	12.21%	54.14%	33.64%	16.95%	83.05%	21.90%	78.10%	10.32%	89.68%	6.15%	93.85%
Cubera snapper	19.75%	80.25%	19.75%	44.45%	35.80%	16.25%	83.75%	16.12%	83.88%	16.58%	83.42%	25.55%	74.45%
Dog snapper	9.41%	90.59%	9.41%	75.83%	14.76%	15.72%	84.28%	27.37%	72.63%	11.13%	88.87%	6.66%	93.34%
Mahogany snapper	5.05%	94.95%	5.05%	84.71%	10.25%	10.95%	89.05%	47.80%	52.20%	6.43%	93.57%	2.17%	97.83%
Grunts Complex													
White grunt	32.67	67.33%	32.67	27.00	40.33%	35.79	64.21%	37.01	62.99%	33.68%	66.32%	29.22%	70.78%

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
	%		%	%		%		%					
Sailors choice	0.00%	100.00 %	0.00%	62.66 %	37.34%	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %
Tomtate	0.00%	100.00 %	0.00%	30.80 %	69.20%	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %
Margate	19.83 %	80.17%	19.83 %	29.01 %	51.16%	21.73 %	78.27%	28.83 %	71.17%	13.78%	86.22%	17.57%	82.43%
Shallow-Water Groupers Complex													
Red hind	73.28 %	26.72%	73.28 %	16.88 %	9.84%	76.03 %	23.97%	77.55 %	22.45%	73.71%	26.29%	70.28%	29.72%
Rock hind	62.54 %	37.46%	62.54 %	11.97 %	25.49%	55.19 %	44.81%	40.43 %	59.57%	65.33%	34.67%	67.17%	32.83%
Yellowmouth grouper	1.35%	98.65%	1.35%	52.97 %	45.69%	2.86%	97.14%	2.62%	97.38%	2.95%	97.05%	0.69%	99.31%
Yellowfin grouper	40.78 %	59.22%	40.78 %	54.48 %	4.75%	46.16 %	53.84%	42.62 %	57.38%	53.00%	47.00%	37.57%	62.43%
Coney	23.26 %	76.74%	23.26 %	64.79 %	11.95%	49.31 %	50.69%	70.56 %	29.44%	1.29%	98.71%	0.25%	99.75%
Graysby	14.48 %	85.52%	14.48 %	34.06 %	51.46%	32.29 %	67.71%	55.76 %	44.24%	18.77%	81.23%	2.64%	97.36%

Table 4-30. Continued. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4, 5, 6,** and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**.

Species or Species Complex	**Preferred Alternative 2**		**Alternative 3**			**Alternative 4**		**Alternative 5**		**Alternative 6**		**Alternative 7**	
Porgies Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Jolthead porgy	4.05%	95.95%	4.05%	55.82%	40.13%	3.77%	96.23%	2.24%	97.76%	5.84%	94.16%	4.29%	95.71%
Knobbed porgy	54.12%	45.88%	54.12%	5.59%	40.30%	51.58%	48.42%	50.02%	49.98%	55.16%	44.84%	58.89%	41.11%
Saucereye porgy	0.01%	99.99%	0.01%	43.41%	56.58%	0.01%	99.99%	0.01%	99.99%	0.00%	100.00%	0.00%	100.00%
Scup	0.00%	100.00%	0.00%	19.70%	80.30%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%
Whitebone porgy	0.96%	99.04%	0.96%	51.36%	47.69%	1.70%	98.30%	2.54%	97.46%	0.01%	99.99%	0.01%	99.99%
Individual ACLs													
Atlantic spadefish	12.90%	87.10%	12.90%	43.98%	43.13%	15.06%	84.94%	14.46%	85.54%	15.74%	84.26%	10.87%	89.13%
Greater amberjack	40.66%	59.34%	Data not available by mode			42.79%	57.21%	42.53%	57.47%	43.32%	56.68%	37.35%	62.65%
Blue runner	14.60%	85.40%	14.60%	29.24%	56.16%	15.51%	84.49%	15.30%	84.70%	15.67%	84.33%	14.00%	86.00%
Bar jack	32.58%	67.42%	32.58%	21.25%	46.17%	17.42%	82.58%	6.88%	93.12%	35.53%	64.47%	59.42%	40.58%
Gray triggerfish	45.39%	54.61%	45.39%	27.74%	26.87%	47.46%	52.54%	48.80%	51.20%	45.55%	54.45%	43.63%	56.37%
Warsaw grouper	17.79%	82.21%	17.79%	53.23%	28.97%	21.17%	78.83%	23.75%	76.25%	10.62%	89.38%	5.73%	94.27%
Mutton snapper[1]	17.02%	82.98%	Data not available by mode			25.75%	74.25%	30.07%	69.93%	19.24%	80.76%	9.84%	25.75%
Scamp	69.36%	30.64%	69.36%	9.86%	20.78%	71.78%	28.22%	77.06%	22.94%	65.52%	34.48%	67.14%	32.86%
Goliath grouper	43.77%	56.23%	43.77%	44.36%	11.86%	51.80%	48.20%	53.32%	46.68%	0.00%	100.00%	0.00%	100.00%
Nassau grouper	9.52%	90.48%	9.52%	68.69%	21.79%	9.52%	90.48%	10.04%	89.96%	0.01%	99.99%	n/a	n/a
Speckled hind	65.59%	34.41%	65.59%	5.82%	28.59%	73.97%	26.03%	76.60%	23.40%	60.08%	39.92%	40.95%	59.05%
Hogfish	33.03%	66.97%	33.03%	62.16%	4.81%	37.56%	62.44%	42.31%	57.69%	30.43%	69.57%	28.30%	71.70%
Yellowtail snapper[1]	52.56%	47.44%	Data not available by mode			53.53%	46.47%	47.22%	52.78%	64.46%	35.54%	51.38%	48.62%
Red snapper	28.07%	71.93%	28.07%	41.90%	30.04%	33.35%	66.65%	40.34%	59.66%	26.38%	73.62%	24.07%	75.93%

Note: Greater amberjack were not identified to species in the commercial data prior to 1992; thus, commercial landings from SEDAR-15 and recreational landings from the ACL dataset were deemed 'best available' per the SEFSC. For the other amberjacks (banded rudderfish, almaco jack, lesser amberjack), no commercial landings data were available for 1986-1991; thus, the commercial average was computed from 1992-2008. All unclassified grunt landings were assigned to white grunt. All unclassified triggerfish landings were assigned to gray triggerfish.

[1] Post-stratifies MRFSS data for Monroe County to the South Atlantic.

Alternatives 2 (Preferred)-5 would divide the ABC specified in **Action 4** (which equals the ACL as specified in **Action 6**) between the recreational and commercial sectors (**Table 4-30**). There is little difference in the biological effects among the five alternatives, since the total ABCs/ACLs are expected to be harvested.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information (average landings) from 1986-2008 and 2006-2008, and therefore consider past and present participation. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components (**Table 4-30**). The commercial allocation under **Alternatives 2 (Preferred)** and **Alternative 3** would be identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for private recreational and for-hire recreational sectors under **Alternative 3** than for private recreational and for-hire recreational combined under **Alternative 2 (Preferred).** Furthermore, estimates of recreational landings could be less certain for rarely encountered species or species groups when recreational data are divided into sectors.

Alternative 4, which would set allocations based on data from 1986 to 2008, is almost identical to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008, and therefore would be considered to have similar biological effects. **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than allocation alternatives that include more recent landings information. Allocation **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than alternatives that include data from earlier years (**Table 4-30**).

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-7** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-7** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery, the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.5.2 Economic Effects

Alternative 1 (No Action) would maintain the allocations that are currently in place for certain species but would not specify commercial or recreational allocations for the remaining species or species groups in the snapper grouper FMP.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information (average landings) from 1986-2008 and 2006-2008. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components. The commercial allocation under **Alternative 2 (Preferred)** and **Alternative 3** would be identical.

Alternative 4, which would set allocations based on data from 1986 to 2008, is also similar to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008. **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than other allocation alternatives that base their allocation formula on more recent landings information. **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than other alternatives, which base their allocation formula on data from earlier years.

To summarize, **Alternatives 2 (Preferred)** through **7** would specify allocation shares for the commercial and recreational sector based on historical landings information. **Alternatives 2 (Preferred)**, **3**, and **4** base their allocation formula on a longer time series, and thus relatively more historical data, whereas **Alternatives 5**, **6**, and **7** base their allocation formula on a shorter time series and thus more recent data. Broadly speaking, since recreational participation has increased in recent years, **Alternatives 5**, **6**, and **7** tend to place a higher weight towards the recreational sector relative to **Alternatives 2 (Preferred)**, **3**, and **4 (Table 4-30).** The actual allocation will differ by species. **Alternatives 5**, **6**, and **7** will likely generate less disruption to the snapper grouper fishery relative to **Alternatives 2 (Preferred)**, **3**, and **4** since these more closely capture the status quo.

Tables 4-31a and **4-31b** show the maximum changes in anticipated landings and gross revenue to the commercial sector and consumer surplus to the recreational sector under the various alternatives relative to **Alternative 1 (No Action)**. These annual figures assume that the fleets are willing and able to harvest the entire ACL.[7] Producer surplus from the commercial sector is the appropriate welfare measure for the commercial sector. Producer surplus is the amount of money commercial fishermen receive for the fish they sell over and above what it costs them to harvest it. However, estimates of producer surplus are not currently available. Estimates of gross revenue losses overestimate the losses of producer surplus because they do not account for harvesting costs. Consumer surplus and producer surplus are the appropriate welfare measures for the recreational sector, though the latter only applies to the for-hire component of the recreational sector. Consumer surplus is the amount of money anglers would be willing-to-pay for the fish they harvest over and above the costs of harvesting those fish. Producer surplus is typically approximated by net operating revenue (NOR) and represents the difference between the money for-hire operators receive on fishing trips and the cost of taking those trips. Since the allocation of fish between the private recreational and for-hire components of the recreational sector is unknown, NOR estimates cannot be provided.

[7] Gross revenue was estimated by multiplying the dockside price times the commercial allocation. Consumer surplus was estimated by multiplying the appropriate willingness-to-pay estimate times the recreational allocation.

As noted above, the statistics offered in **Tables 4-31a** and **31b** should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple allocation weights. For example, as commercial allocations become more binding, then a number of commercial operations may change their catch mix. Similarly, as recreational allocations become more binding, participation rates may also change. Presently, the actual behavioral response is unknown. In addition, the resulting net benefits will depend on the regulatory framework in place (e.g., individual transferable quota, limited entry, trip limits in the commercial sector or bag limits, size limits, or seasonal closures in the recreational sector) and compliance with ACLs, which is also unknown.

Table 4-31a. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5.**

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	**Rec benefits minus Alt 1 benefits (consumer surplus, $)**	**Comm benefits minus Alt 1 benefits (gross revenue, $)**	**Private benefits minus Alt 1 benefits (consumer surplus, $)**	**For-Hire benefits minus Alt 1 benefits (consumer surplus, $)**	**Comm benefits minus Alt 1 benefits (gross revenue, $)**	**Rec benefits minus Alt 1 benefits (consumer surplus, $)**
DW Complex							
Yellowedge grouper	18,654	(72,190)	18,654	(66,343)	(5,847)	16,555	(64,067)
Blueline tilefish	(24,193)	190,253	(24,193)	36,021	154,232	214,840	(1,689,481)
Silk Snapper	(1,358)	5,588	(1,358)	4,137	1,452	(520)	2,140
Misty grouper	(2,389)	10,212	(2,389)	10,080	131	(4,332)	18,521
Sand tilefish	2,047	(3,506)	2,047	1,950	(5,457)	2,122	(3,635)
Queen snapper	(354)	1,375	(354)	(4,948)	6,323	(1,711)	6,654
Black snapper	370	(2,188)	370	(1,515)	(673)	335	(1,977)
Blackfin snapper	(744)	3,376	(744)	(3,071)	6,447	(456)	2,068
Jacks Complex							
Almaco jack	(13,176)	36,216	(13,176)	1,651	34,566	(14,419)	39,633
Banded rudderfish	(5,248)	17,832	(5,248)	(1,293)	19,125	(2,127)	7,228
Lesser amberjack	(379)	987	(379)	862	125	1,651	(4,297)
Snappers Complex							
Gray snapper	91,573	(485,673)	91,573	(337,390)	(148,283)	268,242	(1,422,661)
Lane snapper	20,196	(96,355)	20,196	(119,294)	22,939	36,839	(175,758)
Cubera snapper	(3,590)	20,862	(3,590)	20,579	283	(5,680)	33,010
Dog snapper	113	(1,010)	113	(5,684)	4,674	692	(6,204)
Mahogany snapper	20	(58)	20	230	(288)	55	(161)
Porgies Complex							
Jolthead porgy	(885)	1,788	(885)	8,502	(6,714)	(1,026)	2,074
Knobbed porgy	(208)	519	(208)	(10,234)	10,753	(1,729)	4,316
Saucereye porgy	0	(1)	0	(1,327)	1,326	0	(1)
Scup	0	0	0	3,169	(3,169)	0	0
Whitebone porgy	105	(692)	105	(10,447)	9,755	190	(1,255)

Table 4-31a. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)
Grunts Complex							
White grunt	29,332	(61,329)	29,332	(59,225)	(2,104)	52,545	(109,863)
Margate	1,246	(3,247)	1,246	(358)	(2,889)	1,866	(4,863)
Sailors choice	0	0	0	9,303	(9,303)	0	0
Tomtate	0	39	0	(26,960)	26,999	0	39
SW Groupers Complex							
Red hind	(608)	2,656	(608)	(3,150)	5,807	1,388	(6,059)
Rock hind	(5,191)	16,583	(5,191)	(4,657)	21,240	(15,787)	50,435
Coney	1,508	(7,285)	1,508	(7,293)	8	3,221	(15,560)
Graysby	6,754	(23,950)	6,754	(17,320)	(6,630)	17,758	(62,975)
Yellowmouth grouper	(6,758)	23,828	(6,758)	846	22,983	(6,513)	22,963
Yellowfin grouper	9,586	(45,768)	9,586	(2,849)	(42,920)	10,867	(51,884)
Individual ACLs							
Atlantic spadefish	1,349	(8,048)	1,349	(15,548)	7,500	3,861	(23,037)
Greater amberjack	4,579	(11,201)	Data not available by mode	Data not available by mode	Data not available by mode	46,441	(113,607)
Blue runner	(33,076)	87,004	(33,076)	(26,153)	113,157	(22,149)	58,259
Bar jack	(2,037)	4,845	(2,037)	3,713	1,132	(5,241)	12,466
Gray triggerfish	20,820	(36,907)	20,820	(81,767)	44,860	40,090	(71,067)
Warsaw grouper	0	0	0	0	0	0	0
Mutton snapper	21,735	(97,721)	Data not available by mode	Data not available by mode	Data not available by mode	105,512	(474,392)
Scamp	4,606	(15,314)	4,606	(160,569)	145,255	48,725	(161,991)
Goliath grouper	0	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0	0
Speckled hind	0	0	0	0	0	0	0

Table 4-31a. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)
Hogfish	25,114	(97,645)	25,114	(126,947)	29,302	43,879	(170,607)
Yellowtail snapper	(913,557)	3,838,879	Data not available by mode	Data not available by mode	Data not available by mode	(859,159)	3,610,293
Red snapper	0	0	0	0	0	0	0

Table 4-31b. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5.**

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
DW Complex						
Yellowedge grouper	20,843	(80,660)	11,076	(42,865)	21,955	(84,966)
Blueline tilefish	413,064	(3,248,298)	64,937	(510,661)	(110,021)	865,195
Silk Snapper	(6,118)	25,187	8,325	(34,273)	(2,841)	11,694
Misty grouper	(6,973)	29,813	(136)	579	(1)	3
Sand tilefish	1,083	(1,856)	2,980	(5,106)	2,002	(3,429)
Queen snapper	(4,277)	16,634	867	(3,371)	1,454	(5,654)
Black snapper	306	(1,806)	430	(2,542)	430	(2,542)
Blackfin snapper	(1,805)	8,184	740	(3,357)	(980)	4,444

Table 4-31b. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
Jacks Complex						
Almaco jack	(42,667)	117,276	(24,737)	67,994	(12,576)	34,566
Banded rudderfish	(5,297)	17,996	(4,061)	13,797	(7,506)	25,502
Lesser amberjack	2,905	(7,559)	229	(597)	(2,150)	5,596
Snappers Complex						
Gray snapper	457,065	(2,424,114)	68,031	(360,812)	(58,141)	308,362
Lane snapper	54,240	(258,779)	13,533	(64,565)	(1,123)	5,356
Cubera snapper	(5,759)	33,470	(5,481)	31,850	(126)	733
Dog snapper	1,761	(15,778)	271	(2,429)	(140)	1,252
Mahogany snapper	276	(806)	28	(82)	3	(8)
Porgies Complex						
Jolthead porgy	(1,814)	3,668	38	(76)	(761)	1,538
Knobbed porgy	(2,666)	6,654	418	(1,045)	2,656	(6,630)
Saucereye porgy	0	(1)	0	0	0	0
Scup	0	0	0	0	0	0
Whitebone porgy	285	(1,882)	(2)	14	(3)	20
Grunts Complex						
White grunt	61,593	(128,780)	36,880	(77,111)	3,687	(7,709)
Margate	4,180	(10,893)	(726)	1,892	510	(1,329)
Sailors choice	0	0	0	0	0	0
Tomtate	0	39	0	39	0	39

Table 4-31b. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
SW Groupers Complex						
Red hind	2,493	(10,884)	(301)	1,312	(2,789)	12,178
Rock hind	(37,079)	118,458	(1,159)	3,701	1,491	(4,763)
Coney	4,619	(22,312)	64	(310)	(5)	23
Graysby	32,255	(114,383)	9,404	(33,349)	(562)	1,995
Yellowmouth grouper	(6,552)	23,101	(6,499)	22,914	(6,865)	24,204
Yellowfin grouper	10,024	(47,856)	12,493	(59,648)	8,822	(42,118)
Individual ACLs						
Atlantic spadefish	3,159	(18,849)	4,648	(27,734)	(1,006)	6,000
Greater amberjack	41,472	(101,452)	57,015	(139,474)	(60,618)	148,287
Blue runner	(24,665)	64,879	(20,183)	53,089	(40,325)	106,069
Bar jack	(7,469)	17,765	(1,414)	3,363	3,636	(8,650)
Gray triggerfish	52,469	(93,010)	22,362	(39,641)	4,487	(7,955)
Warsaw grouper	0	0	0	0	0	0
Mutton snapper	147,016	(660,998)	43,063	(193,615)	(47,284)	212,595
Scamp	144,689	(481,031)	(65,168)	216,656	(35,754)	118,865
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0
Speckled hind	0	0	0	0	0	0
Hogfish	63,590	(247,242)	14,326	(55,699)	5,458	(21,219)
Yellowtail snapper	(1,215,757)	5,108,758	(241,057)	1,012,949	(980,621)	4,120,689

4.1.5.3 Social Effects

By establishing sector allocations there could likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating a particular ACL into two or three sectors has the perception of creating scarcity in that limits have been imposed on each individual sector. Each subsequent division will drive perceptions of scarcity and likely change the fishing behavior of those within a particular sector. Because there has been an initial allocation between the commercial and recreational sectors for some snapper grouper species, **Alternative 1 (No Action)** may have few negative social effects. With **Alternative 2 (Preferred)**, the use of the more recent data provides more benefit to the recreational sector with a slight increase in allocation, as the recreational sector has increased participation over time as reflected in recent harvesting trends which are factored into the equation with this alternative which uses data from two time periods trying to capture both historical and current participation. Using the same time series, the difference with **Alternative 3** is the splitting of the recreational sector into two allocations, which may provide the charter and headboat sectors with more stability and the possibility to plan with a known quantity of fish. However, as mentioned previously, there can be many different social effects that result as further allocations are divided and perceptions are formed. There has been significant resistance to further splitting the recreational sector and allocating to the private and charter sectors with protests occurring at many levels. Comments on the amendment have also trended toward no sector separation within the recreational component. The other alternatives are variations of the same with the allocations according to different time series used. Again, the more recent time periods favor the recreational sector as in **Alternatives 4, 6,** and **7** for most species; although for some there is little change. **Alternative 4** tends to allocate more to the commercial sector as it uses only the longest time series alone. **Alternative 5** tends to provide more allocation to the commercial sector using the oldest time series. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. As discussed in **Action 3**, communities within those states where harvest of a particular species or complex is more predominant, will also be affected by any subsequent shift in allocation.

4.1.5.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2 (Preferred)** through **7** would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

4.1.5.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, they still find themselves arguing over the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Alternative 2** as their preferred approach to establish allocations for species in the snapper grouper complex.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred allocation alternative.

The SSC did not have any recommendations on sector allocations.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded balancing long-term catch history with recent catch history is the most fair and equitable way to allocate snapper grouper species. Hence, **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

Alternative 1 (No Action). Retain existing ACLs and OYs for snapper grouper species or species groups. Do not specify ACLs for species that already have them.

Table 4-32. Annual Catch Limits and OY information in place for snapper grouper species.

Species	ACLs In Place	OY Information in Place
Black grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	To be established in Action 14 of Comprehensive ACL Amendment.
Black sea bass	309,000 lbs gw comm. (364,620 lbs ww) 409,000 lbs gw (rec.)	Yield @ 75% MFMT (Amendment 15A) 2,324,196 lbs gw (2,742,551 lbs ww) when stock is at B_{MSY}
Gag	352,940 lbs gw comm. (416,469 lbs ww) 340,060 lbs gw rec. (401,271 lbs ww) IN ADDITION Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,636 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Yield @ 75% MFMT (Amendment 16) 1,238,000 lbs gw (1,460,840 lbs ww) when stock is at B_{MSY}
Golden tilefish	282,819 lbs comm. (316,757 lbs ww) 1,578 fish rec.	Yield @ 75% MFMT (Amendment 15B) 291,566 lbs gw (326,554 lbs ww)
Red grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Will be specified in Amendment 24
Snowy grouper	82,900 lbs gw comm. (97,822 lbs ww) 523 fish rec.	Yield @ 75% MFMT (Amendment 15A) 255,747 lbs gw (301,781 lbs ww) when stock is at B_{MSY}
Speckled hind	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Vermilion snapper	315,523 lb gw (350,231 lbs ww) Jan-June; comm. 302,523 lbs gw (335,801,lbs ww) July-Dec; comm. 307,315 lbs gw (341,120 lbs ww) recreational	Yield @ 75% MFMT (Amendment 16) 2,306,731 lbs gw (2,560,471 lbs ww) When stock at B_{MSY}, biomass and MSY values determined unreliable from assessment. (Value from Vermilion Snapper Update Assessment 2007)
Warsaw grouper	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Red snapper	0 (landings only) comm. and rec.	Yield @ 98% MFMT (Amendment 17A) 2,184,685 lbs gw (2,425,000 lbs ww) when stock is at B_{MSY}

Table 4-32. Continued. Annual Catch Limits and OY information in place for snapper grouper species.

Species	ACLs In Place	OY Information in Place
Red porgy	190,050 lbs gw comm. (197,652 lbs ww) Recreational ACL specified in Action 6 Table 4-34 of Comprehensive ACL Amendment	Yield @ 75% MFMT (Amendment 15A) 584,711 lbs gw (608,099 ww) when stock is at B_{MSY}
Greater amberjack	1,169,931 lbs gw comm.(1,216,782 lbs ww) Recreational ACL specified in Action 6 Table 4-34 of Comprehensive ACL Amendment	Specified in Action 6, Table 4-34 of Comprehensive ACL Amendment

Alternative 2 (Preferred). Establish ACLs for species as needed where ACL = OY = ABC (Current values by species are shown in **Table 4-33**. Individual ACLs are summed to get the complex ACLs and allocated to get the sector ACLs shown in **Table 4-34**.)

Alternative 3. Establish ACLs for species as needed where ACL = OY = 90% of the ABC.

Alternative 4. Establish ACLs for species as needed where ACL = OY = 80% of the ABC.

Table 4-33. ACLs and OYs for species based on preferred **Alternative 2** and **Alternatives 3** and **4**. The numbers below reflect the preferred ABC values as per **Table 4-27**.

Species Common Name	**ACL=OY=100% of ABC** **Preferred Alternative 2**	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Yellowedge grouper	**30,221**	27,199	24,177
Blueline tilefish	**592,602**	533,342	474,082
Silk Snapper	**27,519**	24,767	22,015
Misty grouper	**2,863**	2,577	2,290
Sand tilefish	**8,823**	7,941	7,058
Queen snapper	**9,344**	8,409	7,475
Black snapper	**382**	344	306
Blackfin snapper	**4,154**	3,739	3,323
Almaco jack	**291,922**	262,730	233,538
Banded rudderfish	**152,999**	137,699	122,399
Lesser amberjack	**10,568**	9,511	8,454
Gray snapper	**894,019**	804,617	715,215
Lane snapper	**153,466**	138,119	122,773
Cubera snapper	**31,772**	28,595	25,418

Table 4-33. Continued. ACLs and OYs for species based on preferred **Alternative 2** and **Alternatives 3** and **4**.

Species Common Name	**ACL=OY=100% of ABC** **Preferred Alternative 2**	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Dog snapper	**7,523**	6,770	6,018
Mahogany snapper	**160**	144	128
White grunt*	**635,899**	572,309	508,719
Sailors choice	**35,266**	31,739	28,213
Tomtate	**70,948**	63,853	56,758
Margate	**34,662**	31,196	27,730
Red hind	**25,885**	23,297	20,708
Rock hind	**37,569**	33,812	30,055
Yellowmouth grouper	**4,661**	4,195	3,729
Yellowfin grouper	**9,258**	8,333	7,407
Coney	**2,589**	2,330	2,071
Graysby	**17,856**	16,070	14,284
Jolthead porgy	**42,533**	38,279	34,026
Knobbed porgy	**61,194**	55,074	48,955
Saucereye porgy	**4,205**	3,785	3,364
Scup	**8,999**	8,099	7,199
Whitebone porgy	**30,684**	27,615	24,547
Atlantic spadefish	**282,841**	254,557	226,273
Black grouper[1,2]	**245,595**	221,036	196,476
Blue runner	**1,289,941**	1,160,947	1,031,953
Bar jack	**20,520**	18,468	16,416
Gray triggerfish*	**672,565**	605,309	538,052
Scamp	**492,572**	443,315	394,058
Hogfish	**147,638**	132,874	118,110
Yellowtail snapper[1]	**2,173,875**	1,956,488	1,739,100
Greater amberjack	**1,968,000**	1,771,200	1,574,400
Mutton snapper[1]	**926,600**	833,940	741,280
Red porgy	**395,304**	355,774	316,243

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Recommended ABC for 2012. See **Table 4-48** for ABC projections for 2013-2015. ACL = 0 landings for Speckled hind and Warsaw grouper. ACL = 0 for Goliath and Nassau grouper.

Table 4-34. Annual catch limits and optimum yield (lbs whole weight) by sectors as set in this amendment.
ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACLs for black grouper, yellowtail snapper, and mutton snapper based on applying ABCs in **Actions 13, 18**, and **19**, respectively, to preferred allocation alternative in **Action 5**. The ACL for wreckfish is specified in **Action 10** and allocations are identified in **Action 11**. The ACL for red grouper will be re-examined in Amendment 24.

Deepwater Complex	**Comm.**	**Rec.**
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	343,869	332,039
Jacks Complex	**Comm.**	**Rec.**
Almaco jack Banded rudderfish Lesser amberjack	193,999	261,490
Snappers Complex	**Comm.**	**Rec.**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	204,552	882,388
Porgies Complex	**Comm.**	**Rec.**
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	35,129	112,485
Grunts Complex	**Comm.**	**Rec.**
White grunt* Margate Sailor's choice Tomtate	214,624	562,151

Shallow-Water Groupers Complex	**Comm.**	**Rec.**
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	49,488	48,329
Individual ACLs	**Comm.**	**Rec.**
Atlantic Spadefish	36,476	246,365
Bar Jack	6,686	13,834
Black grouper[1,2]	90,575	155,020
Blue Runner	188,329	1,101,612
Goliath Grouper	0	0
Gray Triggerfish*	305,262	367,303
Greater Amberjack[3]	800,163	1,167,837
Hogfish	48,772	98,866
Mutton Snapper[1]	157,743	768,857
Nassau Grouper	0	0
Red porgy[3]	197,652	197,652
Scamp	341,636	150,936
Wreckfish	237,500	12,500
Yellowtail Snapper[1]	1,142,589	1,031,286
Speckled hind	0 landings	0 landings
Warsaw grouper	0 landings	0 landings

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Based on 2012 ABC recommendation. See **Table 4-48** for 2013-2015. [3] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment.

4.1.6.1 Biological Effects

The Magnuson-Stevens Act requires that by 2010, FMPs for fisheries determined by the Secretary of Commerce (Secretary) to be subject to overfishing establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (2010b) specified ACLs for species subject to overfishing (**Table 4-32**). NMFS guidelines define the following terms:

- Overfishing limit (OFL) means "the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish."

- Acceptable biological catch (ABC) means "a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and should be specified based on the ABC control rule."

- ACL means "the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures." Setting the ACL provides an opportunity to divide the total ACL into sector-specific ACLs.

- Annual catch target (ACT) means "an amount of annual catch of a stock or stock complex that is the management target of the fishery. NMFS guidelines indicate that specifying an ACT is optional and up to the discretion of the Council. A stock or stock complex's ACT should usually be less than its ACL and results from the application of the ACT control rule. If sector-ACLs have been established, each one should have a corresponding sector-ACT."

- Catch is the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

- Accountability measures (AMs) means "management controls that prevent ACLs or sector-ACLs from being exceeded (in-season AMs), where possible, and correct or mitigate overages if they occur."

- Optimum yield (OY) is defined as "(A) the amount of fish which will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery."

Alternative 1 (No Action) would retain the current regulations established for snapper grouper species, which include ACLs for species experiencing overfishing (**Table 4-32**). The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species, which triggers some sort of AM to ensure overfishing does not occur. Therefore commercial ACLs are in place for red porgy and greater amberjack in the form of commercial quotas along with ACLs for species experiencing overfishing (**Table 4-32**). However, recreational ACLs have not been specified for these species. Furthermore, ACLs are not specified for other species or species groups in the snapper grouper fishery management unit. Since the Magnuson-Stevens Act requires ACLs for all fisheries in FMPs by 2011, except fisheries for species with annual life cycles, **Alternative 1 (No Action)** would not meet these requirements.

Alternatives 2 (Preferred)-4 would set OY equal to the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the MSY and OFL is unknown for stocks which have not undergone stock assessments, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting OY equal to ACL would provide greater assurance that OY is achieved, overfishing is prevented, and the long-term average biomass is near or above B_{MSY}.

Alternative 2 (Preferred) would set the ACL/OY equal to the ABC. The ACL would be divided into sector-specific ACLs based on the South Atlantic Council's preferred allocation alternative in **Action 5** (**Table 4-30**).

Alternatives 2 (Preferred)-4 would set the ACL/OY for species not previously considered in Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) (**Table 4-34**). Amendment 24 is considering an ACL for red grouper. ACLs for wreckfish and black grouper are addressed in **Actions 10 and 15**, respectively.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL/OY and ABC, with

Alternative 4 setting the most conservative ACL at 80% of the ABC. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above B_{MSY}. However, the South Atlantic Council's SSC ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicated ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The preferred alternative in **Action 8** would establish an ACT for the recreational sector.

Table 4-34 illustrates ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). **Action 3** would establish complex ACLs, which would be based on the sum of the individual ACLs included in that complex. When a complex ACL is exceeded, all species in that complex would be subject to AMs.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-4** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.6.2 Economic Effects

The establishment of ACLs is intended to reduce the risk of overfishing for those snapper grouper species that do not currently have them. For those stocks requiring biological protection, ACLs constrain existing catch levels to increase the long-run abundance of these stocks.

By constraining current harvest levels, ACLs may lead to short-run reductions in gross revenue for the commercial sector, but may also generate higher long-run gross revenue as annual allowable harvest levels are raised due to the recovery of overfished stocks and/or to the reduction of the risk of overfishing. As the long-run abundance of these stocks increases, the potential for economic benefits and the likelihood of achieving OY is improved. However, the magnitude of the actual economic benefits as well as whether and when OY is achieved will depend on the regulatory framework in place (e.g., individual transferable quota versus limited entry in commercial sector or bag limits versus season length in the recreational sector) and the continued compliance with the ACLs.

Alternative 1 (No Action) is expected to result in the greatest short-term gross revenue and consumer surplus to the commercial and recreational sectors, respectively, but will also likely generate the smallest long-term gross revenue and consumer surplus to the commercial and recreational sectors, respectively, since this alternative maintains harvests levels at their average 2005-2009 levels. These current harvest levels may prevent some of the stocks from achieving higher long-run abundance levels. This alternative runs the greatest risk for overfishing.

Alternatives 2 (Preferred), **3**, and **4** would establish ACLs for those snapper grouper species that do not currently have an ACL. With the exception of yellowtail snapper, all of the proposed ACLs would be set below the 2005-2009 average harvest levels.

Tables 4-35 through **4-37** show the anticipated forgone gross revenue to the commercial fleet and forgone consumer surplus to the recreational fleet relative to **Alternative 1 (No Action)**. These annual figures presume that the commercial and recreational fleets can harvest the entire ACL. The statistics offered in these tables should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple snapper grouper ACLs, particularly those for overfished and/or less productive species. For example, if commercial fishing firms could readily re-organize their product mix, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if commercial fishing firms had the flexibility to modify the composition of their catches, then they could reduce their overall snapper grouper landings, switch to other fishing gears, or exit the fishery altogether depending on how restrictive the ACLs are. Thus, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. Similarly, the recreational consumer surplus estimates offered in **Tables 4-35** through **4-37** should be considered upper bounds because it is unlikely that, as the number of lbs caught decreases, recreational participation and consumer surplus would decrease at the same rate. Again, the resulting benefits will be a function of the actual behavioral response, which is presently unknown.

Contrary to **Alternative 2 (Preferred)**, **Alternatives 3** and **4** would create a buffer between the ACL and the ABC. **Alternatives 3** (90% of the ABC) and **4** (80% of the ABC) provide greater insurance against the risk of overfishing than **Alternative 2 (Preferred)** and thus are more conservative. **Alternatives 3** and **4** presumably will achieve higher long-run stock abundances than **Alternative 2 (Preferred)**, which could allow for higher ACLs in the long-run. Thus, **Alternatives 3** and **4** are anticipated to generate larger long-run economic benefits (i.e., higher gross revenue for the commercial sector and higher consumer surplus in the recreational sector) relative to **Alternative 2 (Preferred)**.

Table 4-35. ACLs for snapper grouper species where ACL=OY=ABC, **Alternative 2 (Preferred)** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	30,221	29,070	1,151	92,152	14,118	5,924	33,060	(55,273)
Blueline tilefish	592,602	280,842	311,760	438,114	3,824,576	99,303	53,276	799,259
Silk Snapper	27,519	20,129	7,390	59,983	90,663	5,591	11,104	22,872
Misty grouper	2,863	2,030	833	5,827	10,219	1,029	565	10,214
Sand tilefish	8,823	1,431	7,392	2,047	18,110	(1,635)	2,047	(7,511)
Queen snapper	9,344	8,700	643	24,448	7,029	4,258	10,949	3,952
Black snapper	382	350	32	647	354	(1,705)	(864)	(13,536)
Blackfin snapper	4,154	1,316	2,838	3,171	31,021	2,067	1,204	17,131
Almaco jack	291,922	150,439	141,483	133,891	346,104	42,784	8,378	81,633
Banded rudderfish	152,999	38,633	114,366	27,816	279,769	35,070	2,330	77,872
Lesser amberjack	10,568	4,927	5,641	4,631	13,800	456	(163)	1,540
Gray snapper	894,019	178,818	715,201	368,365	7,813,943	154,063	139,272	944,571
Lane snapper	153,466	18,744	134,722	42,924	1,471,907	58,348	28,837	499,900
Cubera snapper	31,772	6,274	25,498	11,795	278,578	13,046	2,727	126,680
Dog snapper	7,523	708	6,815	863	74,489	1,064	219	9,672
Mahogany snapper	160	8	152	30	1,661	(307)	0	(3,354)
White grunt	635,899	207,751	428,148	243,068	1,047,366	(8,954)	26,323	(76,941)
Sailors choice	35,266	-	35,266	-	86,401	16,027	0	39,266
Tomtate	70,948	-	70,948	-	173,557	4,277	0	10,498
Margate	34,662	6,873	27,789	6,460	68,083	12,320	3,099	22,107
Red hind	25,885	18,969	6,916	53,303	84,844	5,154	10,125	19,019
Rock hind	37,569	23,494	14,075	90,216	172,671	3,115	2,719	29,523
Yellowmouth grouper	4,661	63	4,598	219	56,417	(8,269)	(19,137)	(33,991)
Yellowfin grouper	9,258	3,776	5,483	9,703	67,276	5,754	9,659	24,492
Coney	2,589	602	1,987	1,529	24,376	136	1,509	(5,623)
Graysby	17,856	2,585	15,270	8,945	187,366	3,207	7,147	14,008

Table 4-35. Continued. ACLs for snapper grouper species where ACL=OY=ABC, **Alternative 2 (Preferred)** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Jolthead porgy	42,533	1,720	40,812	2,082	99,837	1,566	(775)	5,398
Knobbed porgy	61,194	33,115	28,079	32,453	68,688	23,576	12,375	26,782
Saucereye porgy	4,205	0	4,205	-	10,302	2,230	0	5,464
Scup	8,999	-	8,999	-	22,047	488	0	1,195
Whitebone porgy	30,684	293	30,390	108	74,343	9,620	106	22,832
Atlantic spadefish	282,841	36,476	246,365	14,955	602,674	(2,067)	1,249	(12,511)
Blue runner	1,289,941	188,329	1,101,612	175,146	2,694,837	290,815	13,867	674,936
Bar jack	20,520	6,686	13,834	6,886	33,894	9,794	2,222	18,710
Gray triggerfish	672,565	305,262	367,303	421,261	898,523	(63,626)	(17,062)	(125,400)
Scamp	492,572	341,636	150,936	1,260,636	1,851,642	30,444	82,236	100,074
Hogfish	147,638	48,772	98,866	137,049	1,080,164	4,500	28,525	(61,748)
Yellowtail snapper	2,173,875	1,142,657	1,031,218	2,970,908	11,266,592	970,957	821,432	7,156,453
Greater amberjack	1,968,000	866,792	1,101,208	866,792	2,693,849	375,484	223,001	373,013
Mutton snapper	926,600	157,743	768,857	383,314	8,400,166	365,051	181,889	3,170,581
Red porgy	395,304	197,652	197,652	304,384	484,247	154,762	116,297	194,148
DW Complex	675,908	343,869	332,039	608,378	3,925,956	675,908	95,297	720,863
Jacks	455,489	193,999	261,490	166,501	639,674	455,489	10,708	161,045
Snappers	1,086,940	204,552	882,388	421,571	9,640,582	1,086,940	168,648	1,577,472
Porgies	147,614	35,129	112,485	35,261	275,234	147,614	12,327	113,200
Grunts	776,774	214,624	562,151	250,155	1,375,313	776,774	30,048	(5,164)
SW Groupers	97,817	49,488	48,329	169,843	592,955	97,817	17,950	47,434

Table 4-36. ACLs for snapper grouper species where ACL=OY=90%ABC, **Alternative 3** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	27,199	26,163	1,036	82,937	12,706	2,901	23,845	(56,685)
Blueline tilefish	533,342	252,758	280,584	394,303	3,442,118	40,043	9,465	416,801
Silk Snapper	24,767	18,116	6,651	53,985	81,596	2,839	5,106	13,806
Misty grouper	2,577	1,827	750	5,244	9,197	743	(18)	9,192
Sand tilefish	7,941	1,288	6,653	1,842	16,299	(2,517)	1,842	(9,322)
Queen snapper	8,409	7,830	579	22,004	6,326	3,323	8,504	3,249
Black snapper	344	315	29	582	319	(1,743)	(928)	(13,572)
Blackfin snapper	3,739	1,184	2,554	2,854	27,919	1,651	887	14,029
Almaco jack	262,730	135,395	127,334	120,502	311,494	13,591	(5,011)	47,023
Banded rudderfish	137,699	34,770	102,929	25,034	251,792	19,770	(451)	49,895
Lesser amberjack	9,511	4,434	5,077	4,168	12,420	(601)	(626)	160
Gray snapper	804,617	160,936	643,681	331,528	7,032,549	64,661	102,435	163,176
Lane snapper	138,119	16,870	121,250	38,631	1,324,716	43,001	24,545	352,709
Cubera snapper	28,595	5,647	22,948	10,616	250,720	9,868	1,548	98,822
Dog snapper	6,770	637	6,134	777	67,040	312	133	2,223
Mahogany snapper	144	7	137	27	1,494	(323)	(3)	(3,520)
White grunt	572,309	186,976	385,334	218,761	942,629	(72,544)	2,016	(181,678)
Sailors choice	31,739	-	31,739	-	77,761	12,500	0	30,626
Tomtate	63,853	-	63,853	-	156,201	(2,818)	0	(6,858)
Margate	31,196	6,186	25,010	5,814	61,275	8,854	2,453	15,298
Red hind	23,297	17,072	6,224	47,973	76,359	2,565	4,795	10,535
Rock hind	33,812	21,144	12,668	81,194	155,404	(642)	(6,303)	12,256
Yellowmouth grouper	4,195	57	4,138	197	50,775	(8,735)	(19,158)	(39,632)
Yellowfin grouper	8,333	3,398	4,935	8,733	60,548	4,829	8,689	17,764
Coney	2,330	542	1,788	1,376	21,939	(123)	1,356	(8,060)

Table 4-36. Continued. ACLs for snapper grouper species where ACL=OY=90%ABC, **Alternative 3** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Graysby	16,070	2,327	13,743	8,051	168,630	1,422	6,253	(4,728)
Jolthead porgy	38,279	1,548	36,731	1,874	89,854	(2,687)	(983)	(4,585)
Knobbed porgy	55,074	29,804	25,271	29,207	61,819	17,456	9,130	19,913
Saucereye porgy	3,785	0	3,784	-	9,272	1,810	0	4,434
Scup	8,099	-	8,099	-	19,842	(412)	0	(1,009)
Whitebone porgy	27,615	264	27,351	98	66,909	6,551	95	15,398
Atlantic spadefish	254,557	32,829	221,728	13,460	542,406	(30,351)	(246)	(72,778)
Blue runner	1,160,947	169,497	991,450	157,632	2,425,353	161,821	(3,648)	405,453
Bar jack	18,468	6,017	12,451	6,197	30,504	7,742	1,533	15,320
Gray triggerfish	605,309	274,735	330,573	379,135	808,670	(130,882)	(59,188)	(215,253)
Scamp	443,315	307,472	135,843	1,134,572	1,666,478	(18,814)	(43,828)	(85,090)
Hogfish	132,874	43,895	88,980	123,344	972,148	(10,264)	14,821	(169,764)
Yellowtail snapper	1,956,488	1,028,391	928,096	2,673,817	10,139,933	753,570	524,341	6,029,794
Greater amberjack	1,771,200	780,113	991,087	780,113	2,424,464	178,684	136,322	103,628
Mutton snapper	833,940	141,968	691,972	344,983	7,560,150	272,391	143,557	2,330,564
Red porgy	355,774	177,887	177,887	273,946	435,823	115,232	85,859	145,723
DW Complex	608,317	309,482	298,835	547,540	3,533,360	608,317	34,459	328,267
Jacks	409,940	174,599	235,341	149,851	575,706	409,940	(5,942)	97,077
Snappers	978,246	184,097	794,149	379,414	8,676,524	978,246	126,491	613,414
Porgies	132,852	31,616	101,236	31,735	247,711	132,852	8,800	85,677
Grunts	699,097	193,161	505,936	225,139	1,237,782	699,097	5,033	(142,695)
SW Groupers	88,036	44,540	43,496	152,858	533,660	88,036	966	(11,861)

Table 4-37. ACLs for snapper grouper species where ACL=OY=80%ABC, **Alternative 4** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	24,177	23,256	921	73,722	11,295	(121)	14,630	(58,097)
Blueline tilefish	474,082	224,674	249,408	350,491	3,059,661	(19,218)	(34,347)	34,344
Silk Snapper	22,015	16,103	5,912	47,987	72,530	87	(892)	4,739
Misty grouper	2,290	1,624	666	4,661	8,175	457	(601)	8,170
Sand tilefish	7,058	1,145	5,913	1,637	14,488	(3,399)	1,637	(11,133)
Queen snapper	7,475	6,960	514	19,559	5,623	2,389	6,059	2,546
Black snapper	306	280	26	517	283	(1,782)	(993)	(13,607)
Blackfin snapper	3,323	1,053	2,271	2,537	24,817	1,236	570	10,927
Almaco jack	233,538	120,351	113,186	107,113	276,884	(15,601)	(18,400)	12,412
Banded rudderfish	122,399	30,907	91,493	22,253	223,816	4,470	(3,233)	21,918
Lesser amberjack	8,454	3,941	4,513	3,705	11,040	(1,658)	(1,089)	(1,220)
Gray snapper	715,215	143,054	572,161	294,692	6,251,155	(24,741)	65,599	(618,218)
Lane snapper	122,773	14,995	107,778	34,339	1,177,526	27,655	20,252	205,519
Cubera snapper	25,418	5,019	20,398	9,436	222,863	6,691	368	70,964
Dog snapper	6,018	566	5,452	691	59,591	(440)	46	(5,226)
Mahogany snapper	128	6	122	24	1,328	(339)	(6)	(3,686)
White grunt	508,719	166,201	342,519	194,455	837,892	(136,134)	(22,291)	(286,414)
Sailors choice	28,213	-	28,213	-	69,121	8,974	0	21,986
Tomtate	56,758	-	56,758	-	138,846	(9,913)	0	(24,213)
Margate	27,730	5,498	22,231	5,168	54,467	5,388	1,807	8,490
Red hind	20,708	15,175	5,533	42,642	67,875	(23)	(536)	2,051
Rock hind	30,055	18,795	11,260	72,173	138,137	(4,399)	(15,325)	(5,011)
Yellowmouth grouper	3,729	50	3,678	175	45,134	(9,201)	(19,180)	(45,274)
Yellowfin grouper	7,407	3,020	4,386	7,762	53,821	3,903	7,718	11,036
Coney	2,071	482	1,589	1,223	19,501	(382)	1,203	(10,498)

Table 4-37. Continued. ACLs for snapper grouper species where ACL=OY=80%ABC, **Alternative 4** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Graysby	14,284	2,068	12,216	7,156	149,893	(364)	5,358	(23,465)
Jolthead porgy	34,026	1,376	32,650	1,665	79,870	(6,940)	(1,192)	(14,569)
Knobbed porgy	48,955	26,492	22,463	25,962	54,951	11,337	5,885	13,045
Saucereye porgy	3,364	0	3,364	-	8,242	1,389	0	3,403
Scup	7,199	-	7,199	-	17,637	(1,312)	0	(3,214)
Whitebone porgy	24,547	235	24,312	87	59,475	3,483	84	7,963
Atlantic spadefish	226,273	29,181	197,092	11,964	482,139	(58,635)	(1,742)	(133,045)
Blue runner	1,031,953	150,664	881,289	140,117	2,155,870	32,827	(21,162)	135,969
Bar jack	16,416	5,348	11,067	5,509	27,115	5,690	845	11,931
Gray triggerfish	538,052	244,209	293,843	337,009	718,818	(198,139)	(101,315)	(305,105)
Scamp	394,058	273,309	120,749	1,008,509	1,481,314	(68,071)	(169,892)	(270,255)
Hogfish	118,110	39,017	79,093	109,639	864,132	(25,028)	1,116	(277,781)
Yellowtail snapper	1,739,100	914,126	824,974	2,376,727	9,013,273	536,182	227,250	4,903,135
Greater amberjack	1,574,400	693,434	880,966	693,434	2,155,079	(18,116)	49,643	(165,757)
Mutton snapper	741,280	126,194	615,086	306,652	6,720,133	179,731	105,226	1,490,548
Red porgy	316,243	158,122	158,122	243,507	387,398	75,701	55,421	97,299
DW Complex	540,726	275,095	265,631	486,702	3,140,765	540,726	(26,379)	(64,328)
Jacks	364,391	155,200	209,192	133,201	511,739	364,391	(22,592)	33,110
Snappers	869,552	163,641	705,910	337,256	7,712,465	869,552	84,334	(350,644)
Porgies	118,091	28,103	89,988	28,209	220,187	118,091	5,274	58,153
Grunts	621,419	171,699	449,721	200,124	1,100,250	621,419	(19,983)	(280,227)
SW Groupers	78,254	39,591	38,663	135,874	474,364	78,254	(16,018)	(71,157)

4.1.6.3 Social Effects

Establishing an ACL for individual species or species groups that presently do not have them will have social effects similar to those under **Action 3**. As discussed previously, choosing a more restrictive ACL such as **Alternative 4** would likely have more negative effects in the short-term than would **Alternative 3** or **Alternative 2 (Preferred).** The overall effects would also be tied to other actions and how they combine to affect a particular sector. But it is likely that **Alternatives 3 and 4** could have negative social effects as reductions in current harvest levels may occur. Those reductions could trigger species switching behavior which could further trigger AMs in other fisheries. At this time, we do not have the capability to conduct an analysis to predict how that behavior would change. Under **Alternative 1 (No Action)** there may likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the later alternatives and would not further compound any negative effects of reduced harvest from other alternatives.

4.1.6.4 Administrative Effects

Specifying an ACL or sector ACLs and OY alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act for some species, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.6.5 Council Conclusions

The OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ACL would provide greater insurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. The ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. Annual catch limits (ACLs), in coordination with AMs, must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 7** and **8**). Similarly, the South Atlantic

Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the Council's preferred alternative.

The SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU

Alternative 1 (No Action). Do not specify new commercial AMs for the following species:

Yellowedge grouper	Blueline tilefish	Silk snapper	Almaco jack	Banded rudderfish	Lesser amberjack
Gray snapper	Lane snapper	Cubera snapper	White grunt	Atlantic spadefish	Greater amberjack
Red hind	Rock hind	Scamp	Hogfish	Yellowtail snapper	Blue runner
Gray triggerfish	Mutton snapper	Misty grouper	Queen snapper	Sand tilefish	Black snapper
Yellowmouth grouper	Yellowfin grouper	Coney	Graysby	Bar jack	Dog snapper
Mahogany snapper	Sailors choice	Tomtate	Margate		

Alternative 2. Specify individual Annual Catch Targets (ACT) for the species above.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Subalternative 2b. The individual ACT equals 90% of the individual ACL. The complex ACT equals 90% of the complex ACL.

Subalternative 2c. The individual ACT equals 80% of the individual ACL. The complex ACT equals 80% of the complex ACL.

Alternative 3 (Preferred). For the species above, if an ACL (i.e., individual or complex) is met or is projected to be met, all subsequent purchase and sale is prohibited and harvest and/or possession is limited to the bag limit for the species covered by that ACL. For example, if a complex ACL is met or projected to be met, all purchase and sale of all the species in the complex is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). For the species above, if an ACL (i.e., individual or complex) is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

4.1.7.1 Biological Effects

Magnuson-Stevens Act NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Councils revise their FMPs they use the same terms as set forth in the NS1 guidelines. Current snapper grouper regulations include some species-specific size limits, seasonal closures, bag limits, trip limits, quotas, and certain prohibited gear types. For many snapper grouper species an AM is in place that closes the commercial sector when a commercial quota is projected to be met. However, for many other species and species groups included in this amendment, there are no previously specified measures that could be considered AMs. Therefore, AMs for snapper grouper species and/or species groups outlined in previous actions must be specified pursuant to Magnuson-Stevens Act requirements.

There are several types of AMs that may be applied in the snapper grouper fishery. In-season AMs are those that are triggered during the fishing season, typically before an ACL is exceeded or when it is projected to be met. Some examples of in-season AMs include quota closures, trip or bag limit changes, gear restrictions, or catch shares. Post-season AMs would be triggered if the ACL is exceeded and would typically be implemented the following fishing season. Post-season AMs could include seasonal closures, reduced trip or bag limits, or shortening of the fishing season implemented in the subsequent year. Ideally, a combination of in-season and post-season AMs would be used to first prevent the ACL or ACT from being exceeded, and then provide a mechanism to correct for an overage if one should occur. Implementing a post-season AM in addition to an in-season AM would reduce the risk of overfishing since there would be two layers of protection against unsustainable harvest rates. It is important to note that the new framework procedure for setting ACLs in the snapper grouper fishery in Amendment 17B (SAFMC 2010b), would allow for timely adjustments to be made to AMs if the South Atlantic Council and NOAA Fisheries Service determine a change is needed.

The efficacy of in-season AMs is largely reliant upon in-season monitoring of landings, which may be especially difficult for the recreational sector. The MRFSS and the newly implemented MRIP uses random survey methods and may not capture data on species that are infrequently encountered. Therefore, in-season tracking of snapper grouper landings in the recreational sector would be based on the MRFSS program and state landings reports. An additional obstacle to tracking recreational harvest in-season is that there is a lag time between when the fish are landed and when those landings are reported in the landings database. This lag time means that projections of when the ACL is expected to be met would need to be employed. Landings projections are not always 100% accurate, thus using such estimates could lead to an in-season AM being triggered prematurely, or not soon enough causing an ACL overage.

The South Atlantic Council could choose one or more post-season AMs to supplement any of the in-season AMs. This would be the most administratively burdensome scenario; however, if an ACL overage were to occur after an in-season AM has been implemented, a post-season AM would be available to the Regional Administrator (RA) as a means to correct an overage and prevent overfishing. Post-season AMs would allow all landings for a particular season to be reported before any harvest restriction measures would take effect. This method of accountability alone may correct for one year’s or several years’ overages; however, it does little to prevent an overage from occurring again unless it is chosen in conjunction with an in-season AM.

The NS1 guidelines recommend the use of ACTs in systems of AMs so that an ACL is not exceeded. For fisheries without in-season management control to prevent the ACL from being exceeded, AMs may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. If an ACT is specified as part of the AMs for snapper grouper, an ACT control rule that accounts for management uncertainty may be utilized for setting the ACT. The objective for establishing an ACT and related AMs is that the ACL not be exceeded.

Accountability measures are also designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector annual catch target is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to account for overages.

Since the ACT is typically set lower and would be reached sooner than the ACL for any given species, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages, which could benefit the biological and socioeconomic environments.

The updated framework procedure included in Amendment 17B (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NOAA Fisheries Service determine they are necessary.

The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. It is anticipated that this performance standard will be applied to all species and all systems of ACLs and AMs established in this amendment in accordance with NS1 guidelines.

Because there are currently management measures in place that could be considered AMs for only some of the snapper grouper species in this amendment, **Alternative 1 (No Action)** would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

Alternative 2 invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provide a disincentive to target snapper grouper species once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** in that it would correct for an ACL overage post-season if one were to occur during the fishing season. Because the ACL for unassessed species is equal to the ABC, which would cap landings at a level to ensure overfishing did not occur (**Table 4-33**), it is possible the season for those species could be shortened under **Alternative 3 (Preferred)** since the ACL could be projected to be met earlier in the season than under the status quo conditions for species where there would be no restriction on the amount of commercial harvest. For assessed species, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for those species or species groups would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the amount taken in excess the year before, and may shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.7.2 Economic Effects

Action 7 considers alternatives that would establish accountability measures (AMs) for the snapper grouper species harvested by the commercial sector that currently lack such measures. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the commercial sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an AM for the commercial sector of the snapper grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long-run since the absence of an AM could either increase the risk of overfishing or result in overfished snapper grouper stocks, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT. Specifically, **Subalternative 2a (Preferred)** sets no ACT and thus creates no buffer between the ACT and the ACL, **Subalternative 2b** sets the ACT at 90% of the ACL and thus creates a 10% buffer, while **Subalternative 2c** sets the ACT at 80% of the ACL and thereby creates a 20% buffer.

Table 4-38 shows the anticipated changes in annual landings and gross revenue of the proposed three subalternatives under **Alternative 2** assuming the commercial fleet can harvest the entire ACT. This table shows that the anticipated forgone landings and gross revenue increase as the ACTs become more conservative. The estimates in **Table 4-38** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the fleet from harvesting all of the ACTs. If fishing firms can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if fishing firms have limited flexibility to modify the composition of their catches as ACTs become more binding, then fishermen may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional management measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place. Management regimes that favor harvesting privileges, like catch shares, are relatively more likely to generate larger net economic benefits in the long-run relative to a regulated open or limited access regime.

Alternative 3 (Preferred) may generate lower short-run gross revenue in the commercial sector, but will still be bound by the estimated gross revenue changes in **Table 4-35**, since this alternative theoretically prevents the commercial sector from harvesting snapper grouper species in quantities exceeding their respective ACLs. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if the species is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-38. Commercial ACTs as a proportion of the ACLs under **Subalternatives 2b** and **2c** relative to **Subalternative 2a** for **Action 7**.

Species and/or Species Complex	Alternative 2b (ACT=90% of comm ACL)		Alternative 2c (80% of comm ACL)	
	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)
Atlantic Spadefish	(3,648)	(1,496)	(7,295)	(2,991)
Bar Jack	(669)	(689)	(1,337)	(1,377)
Black grouper	(15,964)	(50,924)	(31,927)	(101,848)
Blue Runner	(18,833)	(17,515)	(37,666)	(35,029)
Goliath Grouper	0	0	0	0
Gray Triggerfish	(30,526)	(42,126)	(61,052)	(84,252)
Greater Amberjack	(86,679)	(86,679)	(173,358)	(173,358)
Hogfish	(4,877)	(13,705)	(9,754)	(27,410)
Mutton Snapper	(15,774)	(38,331)	(31,549)	(76,663)
Nassau Grouper	0	0	0	0
Red porgy	(19,765)	(30,438)	(39,530)	(60,877)
Scamp	(34,164)	(126,064)	(68,327)	(252,127)
Wreckfish	(23,750)	(54,863)	(47,500)	(109,725)
Yellowtail Snapper	(114,266)	(297,091)	(228,531)	(594,182)
Deep-Water				
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	(34,387)	(60,838)	(68,774)	(121,676)
Jacks				
Almaco Jack Banded Rudderfish Lesser Amberjack	(19,400)	(16,650)	(38,800)	(33,300)
Snappers				
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	(20,455)	(42,157)	(40,910)	(84,314)
Porgies				
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	(3,513)	(3,526)	(7,026)	(7,052)

Table 4-38. Continued. Commercial ACTs as a proportion of the ACLs under **Subalternatives 2b** and **2c** relative to **Subalternative 2a** for **Action 7**.

Species and/or Species Groups	Alternative 2b (ACT=90% of comm ACL)		Alternative 2c (80% of comm ACL)	
	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)
Grunts				
White grunt Margate Sailor's choice Tomtate	(21,462)	(25,015)	(42,925)	(50,031)
Shallow-Water Groupers				
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	(4,949)	(16,984)	(9,898)	(33,969)

4.1.7.3 Social Effects

The setting of AMs or ACTs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest, either during the current season or the next. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. **Alternative 1 (No Action)** would have few short-term social impacts as it would not impose further restrictions on commercial harvest, but could have long-term negative social effects if a particular species is jeopardized through continued harvest. With **Alternative 2** and its subalternatives a buffer could be imposed which would reduce the harvest threshold further from the ACL. **Subalternative 2a** (**Preferred)** would not impose that buffer and is less restrictive than **Subalternative 2b** or **2c**. Therefore there is an increasing possibility of negative short-term social effects going from **Subalternatives 2a (Preferred)** to **2c**. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Although these are common responses to closures, it is not known how commercial fishermen may respond if closures are anticipated for several different species or groups. There could be a domino effect as one closure forces them to switch to another species which closes as thresholds are met with the added fishing pressure.

When comparing the payback that is implemented in **Alternative 4** (**Preferred)**, it would further assist with rebuilding where **Alternative 3** (**Preferred)** alone would not. However, when combined with **Alternative 3** (**Preferred)** there is an in-season accountability measure that provides some protection from continued overages during the fishing season. Therefore, with **Alternatives 3 (Preferred)** and **4 (Preferred)** combined there should be sufficient protection with some beneficial social effects through the payback provisions because they do allow accountability when specified for a particular sector. While payback does incur short-term negative social impacts, the long-term benefits of stock protection should contribute to the overall benefits as stock status should remain at sustainable levels.

4.1.7.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

4.1.7.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial snapper grouper fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT. Quota monitoring in the commercial fishery and the AMs that the South Atlantic Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provide a disincentive to target snapper grouper species once the ACL has been reached. After the ACL has been met or is projected to be met (either for an individual species or for a species complex as established under **Action 3** of this amendment), then all harvest would be limited to the recreational bag limit. **Alternative 4 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision. However, the latter would only apply if the species was overfished. The South Atlantic Council chose to make this distinction to be consistent with how they chose to address paybacks in other FMPs (i.e., Coastal Migratory Pelagic species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Snapper Grouper Advisory Panel (AP) expressed their support for the South Atlantic Council's preferred approach to set AMs for the commercial sector.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2a (Preferred)** and **Alternatives 3** and **4 (Preferreds)** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU

I. Types of Recreational AMs Under Consideration

1) ACTs
2) In-season AMs to prevent the ACL from being exceeded (i.e., closing fishery)
3) Post-season AMs
   - Payback provisions applied in a year following an ACL overage
   - Actions to prevent the ACL from being exceeded in the year following an ACL overage (i.e., shortening the following season, changing a bag limit).

II. Council Decision Process for Choosing Recreational AMs

The South Atlantic Council is employing a four-pronged approach to assessing the AM alternatives for the recreational sector (**Figure 4-1**). First, the South Atlantic Council determines whether or not to specify an ACT. The ACT alone would not trigger any corrective action but would be the target harvest level. Second, the South Atlantic Council determines what years of landings would be used to determine whether or not an ACL overage has occurred. Next, the South Atlantic Council determines whether in-season action would be taken if the ACL is met or projected to be met. Lastly, the South Atlantic Council decides whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each step of the decision process creates the recreational AM. The resultant AM would be applied separately to species that have been assigned ACLs as part of a species complex, and to snapper grouper species that have been assigned individual ACLs (See **Tables 4-39** and **4-40**).

Step 1. Determine if an ACT will be specified.
Step 2. Specify an AM trigger, by determining whether data from a single year, a three-year running mean (average), or a modified mean would be used to determine if an ACL has been exceeded.
Step 3. Determine whether an in-season action would be taken to prevent an ACL from being exceeded.
Step 4. Determine whether post-season action would be taken to correct for an ACL overage, or to prevent future ACL overages from occurring.

Figure 4-1. Decision process for choosing preferred AM alternatives for the recreational sector of the snapper grouper fishery.

Table 4-39. Species that are part of Species Complex ACLs that require recreational AMs

Deepwater Complex	Jacks Complex	Snappers Complex	Grunts Complex	Porgies Complex	Shallow-water Grouper Complex
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

*AMs for these species would be applied on a species complex basis.

Table 4-40. Species that have been assigned individual ACLs and require recreational AMs

Snapper Grouper Species With Individual ACLs
Atlantic spadefish
Greater amberjack
Scamp
Red porgy
Hogfish
Yellowtail snapper
Blue runner
Gray triggerfish
Mutton snapper
Bar jack

*AMs for species in this table would be applied on an individual basis.

III. Recreational AM Alternatives

Alternative 1 (No Action). Do not specify new recreational AMs for the following species:

Deep-water Complex	**Jacks Complex**	**Snappers Complex**	**Grunts Complex**	**Porgies Complex**	**Deep-water Grouper & Tilefish Complex**
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.

Subalternative 2b. The ACT equals 85% of the ACL.

Subalternative 2c. The ACT equals 75% of the ACL.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Note: Current values for ACTs and Percent Standard Error (PSE) are shown in **Tables 4-41** and **4-42**, respectively.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceeds the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred) *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Why would an ACL change?

An ACL could change for the following reasons:

(1) From a rebuilding plan that specifies increasing ACLs.
(2) Based on new ABC recommendations from the SSC, including those from an updated stock assessment.
(3) From payback provisions if implemented.
(4) From a re-estimate of data.

Table 4-41. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**.
ACTs are based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACT for black grouper can be found in **Action 17**.

Deepwater Complex	Rec. ACT	Shallow-Water Groupers Complex	Rec. ACT
Yellowedge grouper		Red hind	
Blueline tilefish		Rock hind	
Silk snapper		Coney	33,082
Misty grouper	205,516	Graysby	
Queen snapper		Yellowfin grouper	
Sand tilefish		Yellowmouth grouper	
Black snapper		**Individual ACTs**	**Rec. ACT**
Blackfin snapper		Atlantic Spadefish	177,382
Jacks Complex	**Rec. ACT**	Bar Jack	9,936
Almaco jack		Blue Runner	892,305
Banded rudderfish	186,972	Gray Triggerfish*	312,208
Lesser amberjack		Greater Amberjack[2]	992,662
Snappers Complex	**Rec. ACT**	Hogfish	71,184
Cubera snapper		Mutton Snapper[1]	668,937
Gray snapper		Red porgy[2]	160,098
Lane snapper	775,001	Scamp	96,599
Dog snapper		Yellowtail Snapper[1]	897,219
Mahogany snapper			
Porgies Complex	**Rec. ACT**		
Jolthead porgy			
Knobbed porgy			
Saucereye porgy	74,933		
Whitebone porgy			
Scup			
Grunts Complex	**Rec. ACT**		
White grunt*			
Margate	466,864		
Sailor's choice			
Tomtate			

Source: Average PSE's from MRFSS (2005-2009).
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

[1] Per SSC ABC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for yellowtail snapper and mutton snapper are found in **Actions 18** and **19**, respectively. [2] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment
Note: Nassau grouper and Goliath grouper are not included in the table above since these are prohibited species, and ACL = 0.

Table 4-42. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Almaco Jack	24
Atlantic Spadefish	28
Banded Rudderfish	33
Bank Sea Bass	32
Bar Jack	28
Black Grouper	39
Black Margate	30
Black Sea Bass	13
Black Snapper	n/a
Blackfin Snapper	16
Blue Runner	19
Blueline Tilefish	39
Bluestriped Grunt	16
Coney	21
Cottonwick	n/a
Crevalle Jack	21
Cubera Snapper	36
Dog Snapper	16
French Grunt	2
Gag	18
Golden Tilefish	49
Goliath Grouper	0
Grass Porgy	n/a
Gray Snapper	10
Gray Triggerfish	15
Graysby	39
Greater Amberjack	15
Hogfish	28
Jolthead Porgy	34
Knobbed Porgy	35

Table 4-42. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Lane Snapper	19
Lesser Amberjack	77
Longspine Porgy	14
Mahogany Snapper	0
Margate	16
Misty Grouper	n/a
Mutton Snapper	13
Nassau Grouper	0
Ocean Triggerfish	59
Porkfish	26
Puddingwife	26
Queen Snapper	0
Queen Triggerfish	0
Red Grouper	31
Red Hind	40
Red Porgy	19
Red Snapper	21
Rock Hind	42
Rock Sea Bass	50
Sailors Choice	41
Sand Tilefish	33
Saucereye Porgy	8
Scamp	36
Schoolmaster	16
Scup	34
Sheepshead	11
Silk Snapper	25
Smallmouth Grunt	n/a
Snowy Grouper	41
Spanish Grunt	0
Speckled Hind	4
Tiger Grouper	n/a
Tomtate	23
Vermilion Snapper	15
Warsaw Grouper	2

Table 4-42. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
White Grunt	14
Whitebone Porgy	34
Wreckfish	0
Yellowedge Grouper	20
Yellowfin Grouper	0
Yellowmouth Grouper	6
Yellowtail Snapper	13

4.1.8.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for species addressed in this action and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous action. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty.

Subalternative 2d (Preferred) would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the Percent Standard Error (PSE) from the recreational fishery, whichever is greater (**Table 4-41**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-42**) in **Subalternative 2d**, more precaution is taken with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings could help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the 3-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions. Therefore, the average could create a lag and mask what is actually happening in the landings.

Subalternative 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives since it would remove high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag (45 days) from the end of a wave and when recreational data become available. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. Since **Subalternative 5b** was not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS 1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B (SAFMC 2010b), the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.8.2 Economic Effects

Action 8 considers alternatives that would establish AMs for the snapper grouper species harvested by the recreational sector that currently lack such measures. Accountability measures are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS 1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an AM for the recreational sector of the snapper grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long-run since the absence of an ACT could either increase the risk of overfishing or result in overfished snapper grouper stocks, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT which would, in general, establish the recreational ACTs as a proportion of the ACL. Specifically, **Subalternative 2a** sets no ACT and thus creates no buffer between the ACT and the ACL, which would be the least conservative of the four alternatives considered. **Subalternative 2b** sets the ACT at 85% of the ACL and thus creates a 15% buffer, **Subalternative 2c** sets the ACT at 75% of the ACL and thereby creates a 25% buffer, while **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater.

Table 4-43 shows that the more conservative the ACTs, the higher the potential short-term forgone losses in landings and consumer surplus (e.g., **Subalternative 2c** generates higher short-term losses in consumer surplus for all species relative to **Subalternative 2b**. These estimates assume the recreational sector can harvest the ACT. These short-run losses are expected to be offset in the long run when stock abundance is anticipated to increase. Higher stock abundances are expected to increase harvest and thus consumer surplus, and also reduce the long-run harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, these results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus.

The estimates in **Table 4-43** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the recreational sector from harvesting all of the ACTs. If recreational fishermen can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by harvesting other species. On the other hand, if recreational fishermen have limited flexibility to modify the composition of their catches as ACTs become more binding, then they may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional management measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place.

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)**, **3c**, **3d**, and **3e**

is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for the applicable snapper grouper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. As such, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5d** are expected to be greater than under **Subalternative 5e** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season or payback) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c-5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c-5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c-5e** in the short term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** would further assist with protecting the stocks whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

Table 4-43. Recreational ACTs as a proportion of the ACLs under **Subalternatives 2c** and **2d** relative to **Subalternative 2b** for **Action 8**.

Species and/or Species Groups	Alternative 2c (ACT=75% of rec ACL)		Alternative 2d (ACT using PSE rule)	
	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)
Atlantic Spadefish	(17,738)	(43,393)	(23,060)	(56,410)
Bar Jack	(994)	(2,434)	(1,310)	(3,208)
Black grouper	(5,243)	(64,337)	(12,584)	(154,409)
Blue Runner	(89,231)	(218,282)	(35,692)	(87,313)
Gray Triggerfish	(31,221)	(76,374)	0	0
Greater Amberjack	(93,603)	(228,977)	0	0
Hogfish	(7,118)	(77,772)	(9,254)	(101,103)
Mutton Snapper	(66,891)	(730,814)	13,378	146,163
Red porgy	(16,010)	(39,224)	(6,404)	(15,690)
Scamp	(9,660)	(118,505)	(20,286)	(248,861)
Wreckfish	(1,250)	0	1,875	0
Yellowtail Snapper	(89,716)	(980,193)	17,943	196,039
Deepwater Complex				
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	(20,552)	(242,997)	(10,276)	(121,499)
Jacks Complex				
Almaco Jack Banded Rudderfish Lesser Amberjack	(18,697)	(45,738)	(55,468)	(135,691)

Table 4-43. Continued. Recreational ACTs as a proportion of the ACLs under **Subalternatives 2c** and **2d** relative to **Subalternative 2b** for **Action 8**.

Species and/or Species Groups	Alternative 2c (ACT=75% of rec ACL)		Alternative 2d (ACT using PSE rule)	
	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)
Snappers Complex				
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	(77,500)	(846,732)	(17,050)	(186,281)
Porgies Complex				
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	(7,493)	(18,335)	(10,467)	(25,610)
Grunts Complex				
White grunt Margate Sailor's choice Tomtate	(46,686)	(114,219)	(40,104)	(98,114)
Shallow-Water Groupers Complex				
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	(3,308)	(40,588)	(3,182)	(39,039)

4.1.8.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for the recreational sector for the applicable snapper grouper species, which may have negative social effects if stocks are not sufficiently protected through other management. With continued harvest and no ACTs or AMs there could be long-term negative effects on the stock, which would eventually impose negative social effects. **Subalternatives 2a-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the most conservative of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if, for some reason, landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM and could have beneficial social effects as there would be no closure when the ACL is projected to be met as in **Subalternative 4b**. However, without a closure there is a chance that continued fishing may impose stricter AMs on next year's harvest if such alternatives are chosen.

Post-season accountability measures are considered under Alternative 5 with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in

Subalternative 5d (Preferred). Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5g** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.1.8.4 Administrative Effects

Under **Action 8**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. The administrative impacts of this action are expected to be similar to those for **Action 7**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Reauthorized Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This alternative, like **Alternative 5** to specify the post-season AM, will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.1.8.5 Council Conclusions

The South Atlantic Council used a four-stepped approach to assess the AM alternatives for the recreational sector. First, the South Atlantic Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action but is used to determine what management is necessary. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the snapper grouper fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would add a larger buffer for species that are not so common in the landings. For such species the PSEs are large, indicating higher uncertainty in the data. Hence using the PSE in the formula to set the ACT further accounts for uncertainty. On the contrary, when estimates for a species are robust, the PSEs are very small, and consequently the buffer to account for uncertainty would be reduced accordingly. Hence the South Atlantic Council concluded that **Preferred Subalternative 2d** best met the need to account for management uncertainty in the recreational snapper grouper fishery for the species that currently lack AMs. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in the future.

The Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Preferred Subalternative 3b**).

The Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the Council chose not to implement in-season AMs (**Preferred Subalternative 4a**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, the Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the Regional Administrator would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Snapper Grouper Advisory Panel (AP) supported **Subalternative 3d** (modified mean approach) as a way to determine when overages of the ACL have occurred. However, the AP made this recommendation during their April 2011 meeting and consequently did not receive further evaluation of the various approaches as the South Atlantic Council did during their June 2011 meeting.

The SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives under this action best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2 Snapper Grouper Fishery Management Plan (wreckfish)

Acceptable Biological Catch Control Rule and ABC for Wreckfish

The South Atlantic Council's SSC met in April 2010 to discuss ABC Control Rules for unassessed species. After extensive discussion of wreckfish issues, the SSC determined the ABC was unknown and that the South Atlantic Council should consider an annual catch limit that did not exceed 200,000 lbs. One of the issues discussed was that the management system of individual quotas tied to portions of the allowable harvest level potentially alters the relation between the recommended harvest and the realized harvest. Effort is reduced in the fishery, to the extent that recent landings are confidential because fewer than 3 dealers have been in operation in recent years. Landings are reduced and recent trends in landings, even if such landings could be publicly disseminated, are possibly not representative of fishery productivity.

The SSC discussed setting an ABC for wreckfish during their August 2010 meeting. The SSC stated that the 2001 assessment (Vaughan et al. 2001) indicated depletion at higher historical levels of effort and that the catch reductions appeared to have come mainly from gear restrictions, spawning season closure, and individual transferable quota (ITQ) implementation. Since stock size cannot be projected, an estimate of the overfishing limit from the 2001 assessment could not be produced. A Depletion-Based Stock Reduction Analysis (DBSRA) or Depletion-Corrected Average Catch (DCAC) estimate (**Table 4-22**) could be calculated, but recent landings are confidential, therefore the SSC was not able to perform the calculations to produce these estimates. The SSC agreed the 2001 assessment was dated and did not apply to current landings and conditions. The SSC concluded that a control rule based on catch-only data should be used even though a stock assessment exists for wreckfish.

In the absence of a current assessment, using a catch-only scenario at "moderate" historical catch (see **Section 1.4**), it is possible that increasing catch will result in overfishing. The SSC reached consensus that catch-only analysis was appropriate because it was inappropriate to use an old assessment applied to new catch data for catches coming from potentially different fishing conditions than at the time of the assessment. Although an estimate of F_{MSY} exists, it cannot be applied to current stock biomass. A recent estimate of fishing mortality (F) is close to F_{MSY}, so increasing F could lead to overfishing if there were increases in catch. Even though B_{MSY} is unknown, fishing at F_{MSY} on a stock that is below B_{MSY} is acceptable for a stock that is not overfished. Therefore, the SSC recommended setting the ABC at the average historical catch (1997-recent) of 250,000 lbs whole weight in September 2010. Due to confidentially of data, a more precise level could not be set. This level of harvest would cap the fishery where it is, consistent with the "moderate" level of historical catch in Methot's table for catch-only scenarios. The SSC also recommended conducting DCAC or DBSRA analysis in the next year to compare with the current catch-only recommendation.

4.2.1 Action 9: Specify Allocations for Wreckfish Fishery

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).]

Alternative 1 (No Action). Do not specify allocation. In this scenario, the total allowable catch (TAC) is essentially allocated 100% to the commercial sector.

Alternative 2. Divide allocations as 90% Commercial and 10% Recreational.

Alternative 3 (Preferred). Divide allocations as 95% Commercial and 5% Recreational.

Alternative 4. Allocate 100% of the allowable catch to the commercial sector.

4.2.1.1 Biological Effects

Alternative 1 (No Action) would not establish allocations for wreckfish. If an allocation is not specified then it would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an AM would be limited.

There has been recent interest in some recreational fishing for wreckfish, particularly by the for-hire sector. Currently, regulations to fish for, possess, and sell wreckfish require a person be a shareholder under the wreckfish ITQ program with coupons allocating annual pounds, have a wreckfish vessel permit, and posses a federal commercial South Atlantic snapper grouper permit. If a shareholder has a wreckfish permit, but no federal commercial permit for South Atlantic snapper grouper species, that person cannot sell wreckfish and must adhere to the aggregate snapper grouper bag limit, which includes wreckfish.

Wreckfish usually occur in very deep water (400-600 m) and far offshore. The wreckfish is fished over the Blake Plateau in areas of moderate to strong current using heavy-duty hydraulic reels spooled with 1/8 inch thick cable (Sedberry 2003). The fishing end of the cable is weighted with 50-200 lbs and 3 to 20 large circle hooks baited with squid are attached. The hooks are paid out until they reach the bottom and then reeled up a few feet to prevent snagging. The boat maintains low speed headed into the current during fishing. The fishery off the southeastern United States occurs over a complex bottom feature that has over 100 m of topographic relief, known as the Charleston Bump, that is located 130-160 km southeast of Charleston, South Carolina, at 31^{o}30'N and 79^{o}00'W on the Blake Plateau (Sedberry et al. 2001). Wreckfish landed in the southeastern United States average 15 kg (33 lbs) and 100 cm TL (39 inches TL) (Sedberry et al. 1994).

Alternatives 2-3 (Preferred) would divide the ABC between the recreational and commercial sectors. **Alternative 2** would provide 90% (225,000 lbs whole weight) to the commercial sector and 10% (25,000 lbs whole weight) to the recreational sector. **Alternative 3 (Preferred)** would be similar to **Alternative 2** with the exception that the allocations would be 95% (237,500 lbs whole weight) for the commercial sector and 5% (12,500 lbs whole weight) to the recreational sector. Under **Alternative 4**, 100% (250,000 lbs whole weight) would be allocated to the commercial sector, which is identical to **Alternative 1 (No Action)**. The amount of wreckfish that would be allocated to recreational fishermen would be very small. Under **Alternative 3 (Preferred)**, approximately 300-350 fish would be allocated to the recreational sector, as wreckfish weight on average between 35 and 40 lbs. However, **Alternative 3 (Preferred)** and **Alternative 2** would allow for the incidental catch of wreckfish when targeting co-occurring species.

Current permits and regulations would not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

ACLs would be based on allocations. Estimates of recreational landings are generally less certain for rarely encountered species in a survey-based system like MRFSS. Therefore, there is a greater chance that ACLs would be exceeded for the recreational sector under allocations specified in **Alternatives 2** and **3 (Preferred)** than for the commercial sector. In this situation, alternatives that allocate a greater portion of the catch to the commercial sector could have a greater biological benefit. However, if all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2-4** would be very similar. Furthermore, a recreational allocation could help mitigate bycatch mortality in this fishery. Currently, recreational fishermen have to discard any wreckfish they catch, and since the species inhabits deep water, discarded fish do not survive.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If the alternatives perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.1.2 Economic Effects

Ideally, when assessing the economic performance of the various alternatives, comparable welfare measures should be used. In well-behaved quota markets, coupon prices reflect expected net returns from harvesting a unit of quota in the current period. In the case of the wreckfish, the absence of an active market for coupons (allocation) precludes the estimation of reliable coupon (lease) prices to derive estimates of producer surplus in the commercial sector. Thus, for the evaluation of the alternatives for **Action 9**, estimates of gross revenue losses in the commercial sector are used to estimate welfare changes in the commercial sector, which as pointed out earlier overestimate producer surplus estimates. As in the analysis for **Action 5**, consumer surplus estimates are used to estimate welfare changes in the recreational sector. Since wreckfish cannot currently be retained in the recreational sector, there are no willingness-to-pay estimates for recreationally caught wreckfish. Thus, a willingness-to-pay estimate for South Atlantic grouper is used since it represents the best available proxy.

Alternative 1 (No Action) allows some opportunities for participation by the recreational sector if fishermen own wreckfish shares, a wreckfish permit, and fish under the bag limit. **Alternative 2** provides a 10% allocation to the recreational sector, **Alternative 3 (Preferred)** provides a 5% allocation to the recreational sector, while **Alternative 4** would not provide any allocation to the recreational sector.

Table 4-44 shows the relative anticipated changes in landings, gross revenue, and consumer surplus under the assumption that both the commercial and recreational sectors are able to harvest their assigned allocation, which is a reasonable assumption since the commercial allocation is being reduced by 88% and the recreational allocation is very small.

Alternative 1 (No Action) and **Alternative 4** provide the commercial sector with the greatest economic benefits, as measured by gross revenue, relative to **Alternative 2** and **Alternative 3 (Preferred)** because it gives the entire ACL to the commercial sector. **Alternative 1 (No Action)** and **Alternative 4** are basically equivalent with respect to their economic effects since the commercial sector would implicitly or explicitly receive the entire ACL under these alternatives, respectively, consistent with current and historical practice. On the other hand, the recreational sector would benefit the most under **Alternative 2**, followed by **Alternative 3 (Preferred)**.

Quantifying economic benefits of each of the alternatives to the commercial sector is complicated by the fact that the decrease in the TAC from 2 million lbs to 250,000 lbs decreases the annual poundage each shareholder can land by 87.5% under the ITQ Program that was implemented under Snapper Grouper Amendment 5 (SAFMC 1991). That is, each fisherman's wreckfish shares, which dictate the annual pounds that can be landed by that individual, will be reduced by 87.5%. If a fisherman wants to harvest more than this amount, the shareholder needs to purchase additional wreckfish shares or annual pounds from another wreckfish shareholder. Without purchase of additional shares or annual pounds, all of the alternatives will result in very small landings of wreckfish, if any at all since most fishermen have stated that they do not have the funds to purchase additional shares. Therefore, **Alternatives 1 (No Action)-4** differ little for the commercial sector since all alternatives will likely result in even smaller landings than currently are harvested, if any landings are made at all. However, if one or more of the highliners in the fishery are able to purchase additional shares or annual pounds, the fishery may continue and there would be a greater difference between the alternatives. **Alternatives 2** and **3 (Preferred)** make this situation worse for the commercial sector and require the purchase of even more shares or pounds. Under all alternatives, total commercial landings are expected to decline significantly.

Table 4-44. Changes in wreckfish landings, gross revenue and consumer surplus for **Action 9**.

	Changes in comm. landings (ww)	**Changes in rec landings (ww)**	**Changes in gross revenue ($)**	**Changes in consumer surplus ($)**
Alt 2 minus alt 1	(25,000)	25,000	(57,750)	61,250
Alt 3 minus alt 1	(12,500)	12,500	(28,875)	30,625
Alt 4 minus alt 1	0	0	0	0

4.2.1.3 Social Effects

Alternative 1 (No Action) would establish an overall ACL within the wreckfish component of the snapper grouper fishery with an allocation for the commercial sector only. This would not allow for a recreational fishery as the ITQ program only allows for transfer of quota to someone within the program. A commercial fisherman without a snapper grouper permit must adhere to the bag limit. Because there has been increasing interest within the recreational sector in being allowed to harvest this species, other alternatives offer benefits to the recreational sector for harvest. The different allocation alternatives vary with **Alternative 2** allowing the most allocation to the recreational fishery and **Alternative 3 (Preferred)** offering the least. **Alternative 4** would keep all allocation with the commercial fishery. Again, with any allocation regime, the social effects will depend upon other alternatives and whether or not further harvest restrictions are implemented. While there may be benefits to allowing recreational harvest, dividing the allocation in combination with other actions could result in harvest restrictions that have negative effects upon the commercial sector. The commercial wreckfish fishery is small with only a few harvesters, but if there is a significant decrease in harvest thresholds as anticipated, there could be more negative social effects that accrue to the commercial fishery with the allocation to the recreational fishery. However, the recreational fishery has and may see further restrictions for other species, which would make reallocation of wreckfish a possible alternative when other species are not available and therefore would have positive social outcomes for that sector that may not impose too many negative social outcomes on the commercial sector if the recreational allocation does not dramatically change the commercial allocation and harvesting capability.

4.2.1.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2** through **4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. **Alternative 3 (Preferred)** would not result in an administrative burden greater than the other action alternatives.

4.2.1.5 Council Conclusions

Current permits and regulations do not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish under the Wreckfish ITQ Program.

In recent years the South Atlantic Council has heard, from both commercial and recreational fishermen, of an increased incidence of wreckfish encounters. Since wreckfish are caught in very deep water, all incidentally caught wreckfish die and must be released dead since only wreckfish shareholders who fulfill all the other requirements above are allowed to keep the fish. By establishing a small allocation for the recreational sector the South Atlantic Council is attempting to curb some bycatch mortality by allowing fishermen to retain fish that would otherwise die. The allocation, when applied to the ABC and considering that, on average, a wreckfish weighs 40 lbs whole weight, amounts to approximately 313 fish.

At their November 2010 meeting, the Snapper Grouper Advisory Panel (AP) stated their support for the South Atlantic Council's preferred allocation of 95% commercial and 5% recreational. AP members stated that in South Florida and the Florida Keys wreckfish are a viable resource for charter captains since they can be found close to shore and "deep-dropping" is popular. Further north, off the Carolinas, juveniles and small adults may be encountered near wrecks and there are reports of encounters with wreckfish off Virginia and northern North Carolina. The Snapper Grouper AP reasoned that a recreational allocation does not significantly impact the commercial sector since the commercial sector is managed under an ITQ program and there are currently very few active vessels.

At their April 2011 meeting, while the Snapper Grouper AP still supported the preferred sector allocations, the Snapper Grouper AP cautioned that if it was the South Atlantic Council's intent to create a bycatch allowance, then it should be stated as such since specifying a recreational allocation would encourage targeting wreckfish and thus create more discards. Some Snapper Grouper AP members also expressed their concern over the creation of a directed recreational fishery for such a small number of fish.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish

Alternative 1 (No Action). Do not establish an Annual Catch Limit (ACL) for wreckfish.

Alternative 2 (Preferred). ACL = OY = ABC.

Alternative 3. ACL = OY = 90% of the ABC.

Alternative 4. ACL = OY = 80% of the ABC.

4.2.2.1 Biological Effects

The Magnuson-Stevens Act required that by 2010, FMPs for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) specified ACLs for species subject to overfishing.

Alternative 1 (No Action) would retain the current regulations established for wreckfish, which includes a total allowable catch (quota) equal to 2 million lbs whole weight. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing does not occur. Therefore ACLs are in place for wreckfish in the form of a total allowable catch (TAC). However, the South Atlantic Council's SSC specifies OFL. Further, an ABC of 250,000 lbs whole weight was specified by the SSC in August 2010, which is significantly less than the current TAC/ACL. The NS1 guidelines state the ACL must be less than OFL. Therefore, retention of the status quo TAC/ACL is not a viable option.

Alternatives 2 (Preferred)-4 would set OY equal to the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the MSY and OFL are unknown for wreckfish, the South Atlantic Council's SSC has established an ABC control rule that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternative 2 (Preferred) would set the ACL equal to the ABC. The NS1 guidelines indicate the ACL may typically be close to the ABC. The South Atlantic Council chose to allocate the ACL between two sectors (commercial and recreational) as their preferred alternative under **Action 9** (95% of allocation to the commercial sector and 5% to the recreational sector). Under **Alternative 2 (Preferred)**, and with an ABC equal to an ACL of 250,000 lbs whole weight, the ACL for the commercial sector would be 237,500 lbs whole weight and the ACL for the recreational sector would be 12,500 lbs whole weight. If all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2 (Preferred)-4** would be very similar.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 4** setting the most conservative ACL at 80% (200,000 lbs whole weight) of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. Scientific uncertainty was taken into consideration in the South Atlantic Council's SSC recommendation for ABC. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-4** on sea turtles and smalltooth sawfish would likely be beneficial. Since the SSC's recommended ABC is so much less than the current TAC for wreckfish, **Alternatives 2 (Preferred)-4** will likely lead to a reduction in effort. If these alternatives do reduce the overall amount of effort in the fishery, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.2.2 Economic Effects

Alternative 1 (No Action) will likely generate the least long-run economic benefits relative to the other alternatives since it fails to adopt an ACL, which would increase the risk of overfishing. **Alternative 2 (Preferred)**, **Alternative 3** and **Alternative 4** use ACLs as a means to hedge against the risk of overfishing.

Alternative 2 (Preferred) would set the ACL equal to the ABC most likely generating the least forgone economic benefits in the short-run (relative to **Alternatives 3** and **4**) and the lowest long-run benefits. **Alternative 3** and **Alternative 4** will generate the highest short-run forgone economic benefits but will likely generate the highest long-term economic benefits.

Table 4-45 shows that the relative anticipated changes in landings, gross revenue, and consumer surplus under the assumption that both the commercial and recreational fleets are able to harvest their assigned allocation. The reader should be cautioned that the use of gross revenue tends to overestimate producer surplus since gross revenue does not account for harvesting costs.

Table 4-45. Changes in landings, gross revenue and consumer surplus under **Alternatives 3** and **4** relative to **Alternative 2** for **Action 10**.

	Changes in comm. landings (wwt)	Changes in rec landings (wwt)	Changes in gross revenue ($)	Changes in consumer surplus ($)
Alt 3 minus alt 2	(23,750)	(1,250)	(54,863)	(3,063)
Alt 4 minus alt 2	(47,500)	(2,500)	(109,725)	(6,125)

4.2.2.3 Social Effects

Establishing an ACL for wreckfish will have social effects similar to the discussions under other actions which establish ACLs. As discussed previously, choosing a more restrictive ACL like **Alternative 4** would likely have more negative effects in the short term than would **Alternative 3**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the other alternatives and would likely have more positive social effects. It should be pointed out that this is a significant reduction from the current harvesting threshold. However, the wreckfish fishery has seen a decline in participation and harvest levels have not been close to the previous total allowable catch level. With a reduction that comes in **Alternative 2 (Preferred)** there could be some negative social impacts if latent effort were to enter the fishery and reduce landings for current participating vessels.

4.2.2.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would retain the current regulations established for wreckfish, which includes a total allowable catch equal to 2 million lbs whole weight. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much among the three alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.2.2.5 Council Conclusions

Optimum Yield (OY) is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. An ACL cannot exceed the ABC and may be set annually or on a multiyear basis. Annual catch limits in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, including wreckfish, the South Atlantic Council chose to set ACL equal to ABC. Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) expressed concerns that setting an ACL that is so much lower than the previous TAC (2 million lbs whole weight) will cause problems and recommended that the South Atlantic Council consider involving the LEAP in the process as they consider changes to the current ITQ program. Furthermore, the LEAP recommended that the South Atlantic Council consider a Vessel Monitoring System (VMS) requirement for this fishery.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery

Alternative 1 (No Action). Do not specify AMs for a recreational sector of the wreckfish fishery. Do not add new AMs for the commercial sector of the wreckfish fishery. Currently, the commercial sector for wreckfish is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year.

Decision 1. Specify an ACT?

The specification of a recreational ACT for wreckfish was moved to the rejected alternatives appendix.

Decision 2. What is the AM trigger?

Alternative 2. Specify the AM trigger.

Subalternative 2a. Do not specify an AM trigger.

Subalternative 2b (Preferred). If the _annual landings_ exceed the ACL in a given year.

Subalternative 2c. If the _mean landings_ for the past three years exceed the ACL.[1, 2]

Subalternative 2d. If the _modified mean landings_ exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 2e. If the lower bound of the 90% _confidence interval_ estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] _Start the clock over._ In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

The specification of a commercial and recreational in-season AM for wreckfish (closing recreational fishery when ACL met) was moved to the rejected alternatives appendix.

Decision 4. Is there a post-season AM?

Alternative 3. Specify the recreational post-season AM.

Subalternative 3a. Do not specify a recreational post-season AM.

Subalternative 3b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 3c. _Monitor following year._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 3d (Preferred). _Monitor following year and shorten season as necessary._ If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 3e. _Monitor following year and reduce bag limit as necessary._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 3f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 3g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.2.3.1 Biological Effects

Alternative 1 (No Action) would continue the currently managed quota system, with 100% of the ACL allocated to the commercial sector and no recreational ACLs. Theoretically, when the commercial quota is reached the fishery would be closed. However, the quota is very high when compared to actual annual landings. The fishery has never harvested their full quota and therefore, has never undergone a quota closure. In essence, there is no actively utilized AM in place that would restrict harvest to the status quo quota, or the preferred ACL alternative of 250,000 lbs whole weight. At the December 2010 meeting the South Atlantic Council chose a preferred alternative in **Action 9** to allocate 5% of the ACL to the recreational sector, and consequently is considering alternatives to hold that sector accountable for maintaining harvest levels at or below the sector ACL. Applying sector-specific AMs prevents both sectors from being penalized when only one sector has exceeded their assigned ACL. Because the proposed ACL is lower than the status quo quota greater biological benefits may be expected if commercial fishing is prohibited once this much lower harvest threshold is reached. A discussion of possible AMs for the recreational sector.

As is the case for many fisheries, accurate in-season monitoring of ACLs can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded. With the exception of **Subalternative 2a**, **Alternative 2** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 2b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 2c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternative 2d is similar to **Subalternative 2c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 2e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 2c-2e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 2d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift. The biological benefits would increase in order from **Subalternatives 2e-2b (Preferred).**

With the exception of **Subalternative 3a**, which would not specify a post-season AM, **Alternative 3** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 3b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If **Subalternative 3b** is not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 3c-3e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 3c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 3d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 3e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 3f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 3g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 3d (Preferred) and **3f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 3c-3e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 3f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B, the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-3** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-3** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.3.2 Economic Effects

Action 11 considers alternatives that would establish accountability measures (AMs) for the recreational sector of the wreckfish fishery. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector of the wreckfish fishery is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the wreckfish stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Under **Alternative 1 (No Action)**, AMs would not be established for the recreational sector of the wreckfish fishery. **Alternative 2** considers alternatives for establishing an AM trigger. **Subalternative 2a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 2b (Preferred)**, **2c**, **2d**, and **2e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while the ACL is the least likely to be exceeded under **Subalternative 2e**. Assuming these same relative probabilities apply to wreckfish, **Subalternative 2b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**.

Alternative 3 considers alternatives for establishing a post-season AM. **Subalternative 3a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 3b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. In general, it is highly likely that **Subalternatives 3c** to **3g** will generate some adverse indirect economic effects in the short term because the recreational ACL for wreckfish is so small (12,500 lbs ww). **Subalternative 3c** may generate the same indirect economic effects in the short term as **Subalternative 3d (Preferred)** and **Subalternative 3e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 3d** are expected to be greater than under **Subalternative 3e** in the short term**.**

Under **Subalternative 3f** and **Subalternative 3g**, a post-season AM (i.e., reducing the length of the fishing season or payback) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e.** Because the probability that a post-season AM will be required is greater under **Subalternative 3f** and **Subalternative 3g** relative to **Subalternatives 3c-3e**, the expected adverse indirect economic effects resulting from **Subalternative 3f** and **Subalternative 3g** are also expected to be greater than under **Subalternative 3c-3e** in the short term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 3g** relative to **Subalternative 3f.** The payback that would be implemented under **Subalternative 3g** would further assist with protecting the stock whereas **Subalternative 3f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

4.2.3.3 Social Effects

Because the commercial sector is managed under an ITQ system, AMs are built into the system, although other AMs could be added. **Alternative 1 (No Action)** would specify no new AMs for the commercial fishery or any AMs for the recreational fishery, which may have negative social effects if the stock is made unsustainable over time as a result.

Under **Alternative 2,** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 2a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 2b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon landing as in **Subalternative 2c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for “smoothing out” landings is used in **Subalternative 2d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 2e**, which could impose negative social effects as harvest levels are well below averages in most years.

Post-season AMs are considered under **Alternative 3** with several different subalternatives. **Subalternative 3a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 3b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 3c**, which uses only the next year for monitoring. **Subalternative 3d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 3e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 3f** may have more negative social effects alone as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 3d (Preferred)**. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 3g** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.2.3.4 Administrative Effects

Under **Action 11**, the alternatives for specifying ACTs and AMs for the wreckfish fishery are explained using a step-wise process for ease of understanding. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives specify the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 3** and associated subalternatives specify the post-season AMs. These will likely have an increased administrative burden associated with enforcement, monitoring, rule-making, and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.2.3.5 Council Conclusions

Accountability Measures for the commercial and recreational components of the snapper grouper fishery were specified under **Actions 7** and **8**, respectively. For wreckfish, the ITQ program currently in place serves as the AM for the commercial sector so the South Atlantic Council chose not to implement any changes to the commercial sector AMs in this amendment. The wreckfish ITQ program is being addressed under Amendment 20 the Snapper Grouper FMP (currently in development).

Since the South Atlantic Council chose to specify a recreational allocation for the wreckfish component of the snapper grouper fishery, recreational AMs needed to be specified. However, no data on recreational landings currently exist, so setting an ACT was removed from consideration. The South Atlantic Council chose to adopt a similar approach to that for other snapper grouper species (see **Action 8**): AMs would be triggered if the annual landings exceeded the ACL in a given year; if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence of increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary.

The Snapper Grouper Advisory Panel (AP) did not have a recommendation for this action.

The South Atlantic Council's SSC did not have a recommendation on AMs for the wreckfish fishery.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.4 Action 12: Establish Management Measures for Wreckfish

Alternative 1 (No Action). Retain the January 15-April 15 spawning season closure. Wreckfish is included in the 20-fish snapper grouper aggregate bag limit. The TAC/ACL for wreckfish is 2 million lbs.

Recreational Sector

Alternative 2. Remove wreckfish from the 20 fish aggregate snapper grouper bag limit.

Alternative 3 (Preferred). Implement a one-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 4. Implement a one-wreckfish per angler per day bag limit for the recreational fishery.

Alternative 5. Implement a 5-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 6 (Preferred). Establish a July-August recreational season.

Alternative 7. Establish a May-June recreational season.

Alternative 8. Exempt the recreational sector from having to have commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish.

4.2.4.1 Biological Effects

Alternative 1 (No Action) would retain the January 15-April 15 spawning season closure for wreckfish in the commercial sector.

Wreckfish spawn from December through May, with a peak during February and March (Wyanski and Meister 2002). Larvae develop into pelagic juveniles as they drift in a northeasterly direction with the Gulf of Mexico Stream and approach eastern North Atlantic islands Azores and Madeira (Sedberry et al. 1996; Sedberry 2003). This migration may take 4 to 7 months, and a complete circuit of the North Atlantic (from Blake Plateau to eastern Atlantic and back) could be completed in approximately 9 to 11 months (Sedberry 2003). Juveniles are pelagic and remain in surface waters for 2 to 3 years (~ 60 cm) before settling to the bottom (Sedberry et al. 1999). Wreckfish is a relatively long-lived species inhabiting deep waters (40 to 1,000 meters) on both sides of the North Atlantic Ocean (including the Mid-Atlantic Ridge), the Mediterranean, western South Pacific, and southern Indian Oceans (Carpenter 2002). The Blake Plateau/Charleston Bump area off the U.S. Atlantic coast is the only documented spawning area for wreckfish in the North Atlantic (Sedberry 2003); however, unpublished observations from fish caught on the mid-Atlantic ridge indicate that wreckfish may spawn there as well (Sedberry 2003).

Wreckfish have been targeted primarily by commercial fishermen because they occur in very deep water (400-600 meters) and far offshore. They are fished over the Blake Plateau off South Carolina in areas of moderate to strong current using heavy-duty hydraulic reels spooled with 1/8 inch thick cable (Sedberry 2003). Wreckfish landed in the southeastern United States average 15 kg (33 lbs) and 100 cm TL (39 inches TL) (Sedberry et al. 1994). **Alternative 1 (No Action)** would retain the current TAC/ACL of 2 million lbs whole weight. In August 2010, the South Atlantic Council's SSC specified an ABC of 250,000 lbs whole weight for wreckfish. With the implementation of this amendment, the TAC/ACL would be lowered to 250,000 lbs whole weight since the preferred ACL alternative under **Action 10** is ACL=OY=ABC. This is significantly lower than the current 2 million lbs whole weight, so **Alternative 1 (No Action)** would be biologically beneficial.

Alternative 1 (No Action) would also retain wreckfish in the list of species included in the 20-fish aggregate bag limit, which includes all species in the snapper grouper fishery management unit, with the exception of tomtate and blue runner. There has been recent interest in some recreational fishing for wreckfish, particularly by the for-hire sector. Currently, regulations to fish for, possess, and sell wreckfish require a person be a shareholder under the wreckfish ITQ with coupons allocating annual lbs, have a wreckfish vessel permit, and possess a federal commercial South Atlantic snapper grouper permit. If a shareholder has a wreckfish permit, but no federal commercial permit for South Atlantic snapper grouper species, that person cannot sell wreckfish and must adhere to the aggregate snapper grouper bag limit, which includes wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

Alternatives 2-8 address the recreational sector for wreckfish. **Alternative 2** would remove wreckfish from the 20-fish aggregate bag limit and would be consistent with an alternative in **Action 9**, which would allocate 100% of the allowable catch to the commercial sector. **Alternatives 3 (Preferred)-5** explore various recreational bag and vessel limits for wreckfish, with **Alternative 3 (Preferred)** being the most conservative alternative limiting catches to one wreckfish per vessel per day. **Alternative 4** would allow one wreckfish per angler per day to be retained, and **Alternative 5** would allow a five wreckfish per vessel per day bag limit. With landings data being confidential for the commercial fishery for most of the last decade, and an absence of recreational landings, the magnitude of harvest reductions from the alternatives cannot be quantified. Generally speaking, a reduction in harvest usually translates into positive biological benefits. Therefore, the biological effects of **Alternative 3 (Preferred)** would be expected to be more positive compared to **Alternatives 4** and **5.**

Alternatives 6 (Preferred) and **7** establish a two-month fishing season for the recreational sector. **Alternative 6 (Preferred)** would allow recreational fishermen to retain wreckfish in July and August of every year, while **Alternative 7** would allow recreational fishermen to retain wreckfish in May and June. Since the preferred allocation alternative provides a small recreational ACL of 12,500 lbs whole weight, an abbreviated recreational fishing season may be appropriate. The negative aspects of having an established recreational fishing season for wreckfish is that incidentally captured wreckfish could not be retained and would have to be discarded outside the recreational season. Wreckfish do not survive the trauma of being brought to the surface due to the extreme water depths in which they occur.

Currently, there is a spawning season closure in place from January15-April 15 of each year. Biologically, the benefits from **Alternatives 6 (Preferred)** and **7** may not vary by much, but **Alternative 7** would allow for the recreational effort to start only two weeks after the spawning season closure ends. Alternatively, **Alternative 6 (Preferred)** would provide a longer time interval after the spawning season before the recreational fishing season began, which could provide a greater biological benefit to the fishery. **Alternative 6 (Preferred)** also provides an opportunity for recreational fishermen to fish for wreckfish in the summer, when weather conditions are more favorable offshore with more fishermen on the water who might encounter wreckfish.

The preferred alternative under **Action 9** would allocate 95% of allocation to the commercial sector and 5% to the recreational sector. Under **Action 10**, the preferred alternative (ACL=OY=ABC) would result in the ACL for the commercial sector of 237,500 lbs whole weight and the ACL for the recreational sector of 12,500 lbs whole weight. **Alternative 8** exempts the recreational sector from the constraints currently in place to retain wreckfish under the bag limit. The South Atlantic Council determined at their March 2011 meeting, that an alternative to exempt the recreational sector from requirements for the commercial sector is not needed, but should be discussed and explained within this action.

If all wreckfish caught by recreational fishermen are reported, then the biological effects of **Alternatives 2-8** could be similar. However, if only MRFSS is used to track recreational landings of wreckfish then large uncertainty would be expected in estimates of recreational landings. In this situation, **Alternative 2**, which would remove wreckfish from the 20-fish aggregate with no allowable recreational bag limit could have the greatest positive biological effect.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-8** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-8** and the associated subalternatives are unclear. If the management measures perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.4.2 Economic Effects

Action 12 considers seven alternatives for managing recreational harvest of wreckfish in addition to **Alternative 1 (No action)**. According to information in **Section 3.8.2**, there have been no recreational trips that targeted or harvested wreckfish in the South Atlantic between 2005 and 2009, which is consistent with current regulations prohibiting retention of wreckfish by recreational anglers who do not possess the proper commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish. Since a recreational sector for wreckfish does not currently exist under the snapper grouper FMP, neither does the necessary data to conduct analysis of the expected economic effects of the various alternatives. In general, the direct and indirect economic effects of the alternatives considered under this Action are expected to be minimal given the recreational ACL of 12,500 lbs whole weight under **Alternative 3 (Preferred)** for **Action 9** and **Alternative 2 (Preferred)** for **Action 10**. However, the indirect economic benefits under **Alternative 6 (Preferred)** might be greater relative to **Alternative 7** as it may be safer to fish in July and August than May and June.

4.2.4.3 Social Effects

Alternative 1 (No Action) would continue the spawning closure and could have few social effects on the commercial fishery, however, it would continue current management of the recreational fishery for wreckfish keeping it in the aggregate bag limit. **Alternative 2** would remove wreckfish from the aggregate bag limit, not allowing any recreational catch. The other **Alternatives 3-5** would allow the recreational sector a bag limit with the larger bag limit having positive social effects for the recreational fishery in the short term. Of those alternatives, **Alternative 3 (Preferred)** is the most restrictive allowing one wreckfish per vessel per day when compared to **Alternative 5** which would allow 5-wreckfish per vessel per day. The smaller bag limit would likely extend the season and allow for more participation within the recreational sector. **Alternative 6 (Preferred)** would establish a recreational season after the spawning closure while **Alternative 7** would establish an opening closer to the end of the spawning closure. The benefits of **Alternative 6 (Preferred)** are that recreational fishing during that time may be safer since weather conditions are calmer during those late Spring months than the earlier months with **Alternative 7**. **Alternative 8** would exempt the recreational sector from the requirement of a commercial permit, shares or coupons to land wreckfish and would reduce the administrative requirements and likely have positive social effects for that sector, although the **Alternative 3 (Preferred)** accomplishes the same.

4.2.4.4 Administrative Effects

Alternative 1 (No Action) would maintain the status quo and would not increase the administrative burden on the agency. This action requires enforcement of a spawning season closure and bag limit. **Alternative 3 (Preferred)** and **Alternative 6 (Preferred)**

would implement a bag limit and a seasonal closure different from the status quo but is not expected to change the administrative impacts associated with these management measures. Other action alternatives considered are also not expected to have a significant administrative impact. **Alternatives 2-7** would require administrative support in the form of rule making, outreach, and enforcement, but the impacts would not differ much between the action alternatives and the status quo. **Alternative 8** would likely reduce the administrative burden as it would eliminate the need for recreational fishermen to have permits, shares, and coupons.

4.2.4.5 Council Conclusions

To manage the recreational component of the wreckfish fishery, the South Atlantic Council chose to specify measures that would limit the harvest: a one-wreckfish per vessel per day limit and a July-August recreational season. The South Atlantic Council reasoned that having a short season initially (two months so that it actually corresponds with a wave) to see how many fish are actually caught in that wave would be a reasonable approach to managing a fishery that comprises a few hundred fish. Also, if no restrictions were placed on the harvest, then the likelihood of landings going over the ACL could be high. In addition, the South Atlantic Council stated their intent to no longer require recreational fishermen to have a federal commercial South Atlantic snapper grouper permit, a wreckfish permit, and ITQ shares and allocation in order to possess a wreckfish.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative of one-fish per vessel per day.

The South Atlantic Council's SSC did not have any recommendations on management measures for wreckfish.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3 Snapper Grouper Fishery Management Plan (black grouper remaining actions; yellowtail snapper & mutton snapper jurisdictional allocations)

4.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper

The stock assessment for black grouper (SEDAR 19, 2010) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments thus the ABC for black grouper applies across Council jurisdictions. The assessment indicated that the black grouper stock was not overfished and was not undergoing overfishing.

Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

> **Subalternative 2a.** South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).
> **Subalternative 2b (Preferred).** South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).
> **Subalternative 2c.** South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).
> **Subalternative 2d.** South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

4.3.1.1 Biological Effects

At the June 2010 South Atlantic Council meeting, a motion was made for Gulf of Mexico and South Atlantic staff to work together to develop alternative methods for allocating the black grouper catch between the South Atlantic and Gulf of Mexico Councils' jurisdictional areas. The stock assessment for black grouper treated the Gulf of Mexico and South Atlantic management unit as a single stock rather than providing separate assessments. The Gulf of Mexico Council received a letter dated June 10, 2010, from the South Atlantic Council accepting the Gulf of Mexico Council's ABC control rule and the ABC recommendation developed by the Gulf of Mexico Council's SSC. The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico's SSC for 2012 is 522,543 lbs whole weight without dead discards and 654,942 lbs whole weight with dead discards (**Table 4-46**). This value is similar to the South Atlantic's SSC ABC recommendation of 610,482 lbs whole weight (landings and discards). The South

Atlantic Council ultimately chose to adopt the Gulf of Mexico's SSC recommendation since a single ABC had to be agreed to between the two Councils for the purpose of establishing jurisdictional allocations.

The Gulf of Mexico Council's SSC recommends that a five-year time stream from 2011-2015, to include landings and dead discards in whole weight as the ABC for black grouper, for a P* of 0.33 (**Table 4-46**).

Table 4-46. Black grouper landings and discard projections (lbs whole weight) for 2011-2015.
(Source: OFL projections table A3.3.4.17 of the final SEDAR 19 stock assessment report and ABC projections, R. Muller, FL FWC, FWRI, person communication).

	OFL		
Year	**Landings**	**Discards**	**Total**
2011	695,007	123,952	818,959
2012	652,810	127,396	780,206
2013	627,552	130,213	757,765
2014	619,665	130,237	749,902
2015	615,801	130,207	746,008

	ABC		
Year	**Landings**	**Discards**	**Total**
2011	523,000	126,761	649,761
2012	522,543	132,399	654,942
2013	545,595	130,978	676,574
2014	558,711	130,314	689,025
2015	564,737	130,018	694,755

Table 4-47. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ACL of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	240,370	282,173
Alternative 2b (Preferred)	**245,595**	**276,948**
Alternative 2c	250,821	271,722
Alternative 2d	261,272	261,272

Table 4-48. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**.

Year	ABC	South Atlantic	Gulf of Mexico
2011	523,000	245,810	277,190
2012	522,543	245,595	276,948
2013	545,595	256,430	289,165
2014	558,711	262,594	296,117
2015	564,737	265,426	299,311

Alternative 1 (No Action) would not establish jurisdictional allocation of the black grouper ABC between the Gulf of Mexico Council and South Atlantic Council (Councils). Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between them. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe

County because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

After discussions with the SEDAR 19 (2010) analysts regarding recreational landings (MRFSS-charterboat, private, and shore mode), the recommendation was made to remove all Florida Keys landings from the Gulf of Mexico Council landings, including discards, and place them into the South Atlantic landings. Legal sized black grouper caught in the Florida Keys are more likely to have been caught from South Atlantic jurisdictional waters; however, based on the current system of MRFSS landings for Monroe County they were previously grouped into the Gulf of Mexico landings. Black grouper are probably caught in the back reef area of the Florida Keys (Gulf of Mexico Council jurisdiction), but are probably not legal size (B. Muller, FL FWC, FWRI, personal communication). The headboat fishery already accounts for Florida Keys (Monroe County) by including those landings in the South Atlantic jurisdiction (SEDAR 19, 2010). The commercial data set used to derive the jurisdictional allocations are from the Florida trip ticket program so that “area fished” could be stratified, which is particularly important for the Florida Keys. The commercial data set, which allows the Florida Keys (Monroe County) landings to be split between Council jurisdictions, is slightly higher than landings data used in the SEDAR 19 (2010) stock assessment.

Subalternative 2a would establish a jurisdictional allocation of ABC for the South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC. These percentages were derived using average landings from 1991-2008. Recreational data collection and fish species identification were notably improved in 1991 so the time series was started in that year.

Subalternative 2b (Preferred) would establish a jurisdictional allocation of ABC for the South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC. These percentages were derived using the same formula presented in the letter from the South Atlantic Council to the Gulf of Mexico Council: use 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008. Under **Subalternative 2b (Preferred)**, the ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 (the year when measures are likely to be implemented for the Comprehensive ACL Amendment) is 522,543 lbs whole weight (without dead discards; **Table 4-46**). Under this alternative the ABC for the South Atlantic in 2012 would be 245,595 lbs whole weight (**Table 4-47**). ABCs by year and Council area are shown in **Table 4-48**. These ABCs are consistent with what is being proposed in the Gulf of Mexico Fishery Management Council’s Generic ACL Amendment. Failure to adopt the same ABC recommendation would result in inconsistent ABCs and ACLs between the two Councils.

Subalternative 2c would establish a jurisdictional allocation of ABC for the South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC. These percentages were derived from the same formula presented in the June 10, 2010 letter, but starting the catch history in 1991 when recreational data collection and fish species identification were notably improved (use 50% of average landings from 1991-2008 + 50% of from 2006-2008).

Subalternative 2d would establish a jurisdictional allocation of ABC for the South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC, dividing the ABC evenly between the two Councils. In recent years, commercial landings of black grouper have been similar in each Council's jurisdiction and using catch history results in percentages that are close to a 50:50 split of the ABC. For example, using catch history in 2001-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 49% and Gulf of Mexico = 51% of the ABC. This time series was started in 2001 when the first full year in the Gulf of Mexico EEZ that different minimum size limits were adopted for both the commercial (24 inches total length, TL) and recreational (22 inches TL) sectors. The South Atlantic Council increased the minimum size limit from 20 inches TL to 24 inches TL in 1999 for both sectors. Using catch history in 1999-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 46% of the ABC and Gulf of Mexico = 54% of the ABC, the same percentages that are listed under **Subalternative 2a**.

Landings of black grouper in the Gulf of Mexico and South Atlantic jurisdictions are shown in **Figure 4-2**.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Subalternatives 2a-2d** would be similar. The recent stock assessment indicates that management measures in both areas are sufficient to prevent overfishing. The South Atlantic Council has recently implemented a four-month spawning season closure for black grouper and the Gulf of Mexico Council has implemented an ITQ system for grouper species. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure black grouper does not experience overfishing.

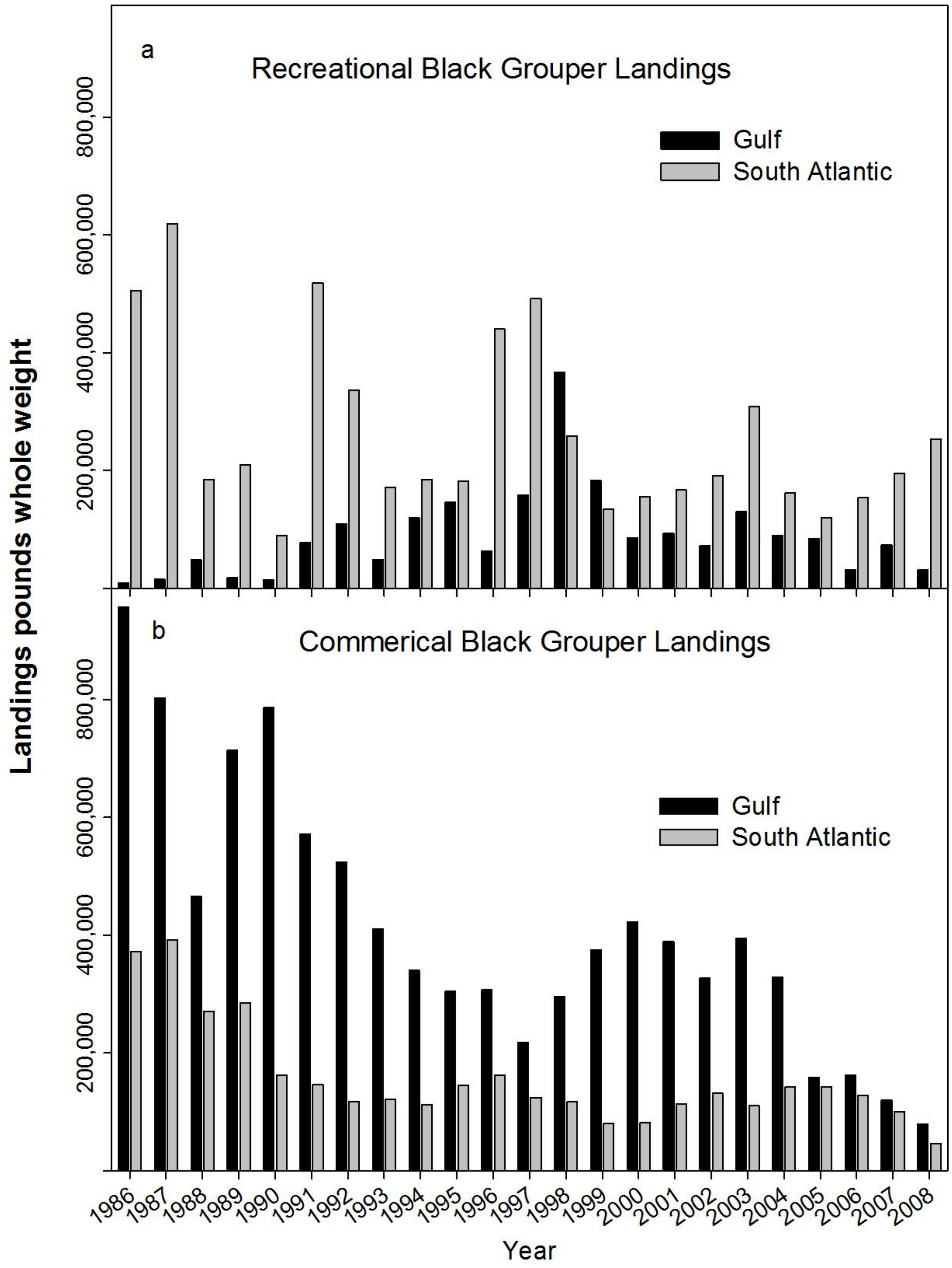


Figure 4-2. Landings of black grouper in whole weight (ww) in the Gulf of Mexico and South Atlantic jurisdictions A) recreational landings (MRFSS and headboat data combined) and B) commercial black grouper landings.
Sources: MRFSS data from T. Sminkey, NOAA Fisheries, personal communication and headboat data from SEDAR 19 (2010) Final Data Workshop Report. Commercial data from Florida's trip ticket program, B. Muller, FL FWC, FWRI, personal communication.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries use the same general gear types and techniques to when fishing for groupers (including black grouper), and those activities were not likely adversely affect marine mammals or *Acropora* species. **Alternative 2** and its subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternative 2** and its subalternatives are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternative reduces the overall amount of effort in the fisheries the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.1.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 13** assume the allocation of black grouper between the commercial and recreational sectors under **Alternative 2b (Preferred)** for **Action 14**, which are 36.88% commercial and 63.12% recreational. In addition, the average commercial ex-vessel price per pound for black grouper is $3.19 and the estimated recreational willingness-to-pay per pound for black grouper is $12.27 (personal communication, SEFSC). The analysis also assumes that, under **Alternative 1 (No Action)**, the distribution of black grouper landings between the South Atlantic and Gulf of Mexico Councils' jurisdictions would remain the same as it has been on average from 2005-2009. As can be seen in **Table 4-49**, relative to **Alternative 1 (No Action)**, the greatest increase in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic black grouper fishery would accrue under **Subalternative 2d**, followed by **Subalternative 2c**, **Subalternative 2b (Preferred)**, while **Subalternative 2a** would provide the lowest total economic benefits.

Table 4-49. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for black grouper, **Action 13**. ACLs are in lbs whole weight.

Alternative	**SA ABC**	**Gulf ABC**	**SA Commercial ACL**	**SA Recreational ACL**	**SA Commercial Gross Revenue**	**SA Recreational CS**	**Change in SA Gross Revenue Relative to Alt. 1**	**Change in SA CS relative to Alt 1**	**Total Change in Economic Benefits**
Alternative 1	208K	315K	77K	131K	$245K	$1,612K	$0	$0	$0
Alternative 2a	241K	282K	89K	152K	$283K	$1,863K	$38K	$251K	$289K
Alternative 2b (Preferred)	**246K**	**277K**	**91K**	**155K**	**$289K**	**$1,904K**	**$44K**	**$292K**	**$336K**
Alternative 2c	251K	272K	93K	158K	$295K	$1,944K	$50K	$332K	$383K
Alternative 2d	261K	261K	96K	165K	$308K	$2,025K	$63K	$413K	$476K

4.3.1.3 Social Effects

In establishing jurisdictional allocations for black grouper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects. While **Subalternatives 2a** through **2d** progressively give more allocation to the South Atlantic and are based upon different time series, it is difficult to know what the social effects would be although recent discussions have implied that more landings, especially recreational may be coming from the South Atlantic. **Subalternative 2b (Preferred)** is between the other allocation schemes and is based upon catch history from two different time periods and may account for differing harvesting patterns historically and presently. **Alternative 1 (No Action)** would likely impose administrative burdens on both Councils as they each have differing management regimes that include black grouper. Therefore, no action would likely have negative social impacts. By selecting **Subalternative 2b (Preferred)** the social effects should be positive as management of this species will be specific to each council and their regimen. However, the jurisdictional boundary does pose some problems for fishermen in the Keys as they can easily fish in both Councils' jurisdictions.

4.3.1.4 Administrative Effects

Alternative 1 (No Action) would not specify allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation. Under **Subalternatives 2b (Preferred)**, **2c**, and **2d**, ABC would be almost evenly divided among the Councils. This could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored to ensure the commercial and recreational ACLs are not exceeded in each region. However, **Subalternative 2b (Preferred)** is not expected to increase administrative impacts relative to the other action alternatives.

4.3.1.5 Council Conclusions

The stock assessment for black grouper (SEDAR 19, 2010) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments thus the ABC for black grouper applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils selected the jurisdictional allocation under **Subalternative 2b** (**Preferred)** (Gulf = 53% of the ABC and SA = 47% of the ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008)).

The alternatives that were considered by both Councils removed all Florida Keys landings from the Gulf of Mexico, including discards, and placed them with South Atlantic landings since legal sized black grouper caught in the Florida Keys are more likely to have been caught in South Atlantic jurisdictional waters. However, based on the current system of MRFSS landings for Monroe County, the landings were previously attributed to Gulf of Mexico waters. The headboat fishery already accounts for Florida Keys (Monroe County) by including those landings in the South Atlantic jurisdiction (SEDAR 19 2010). The Florida trip ticket program data set used for commercial data allows for stratification of "area fished". Landings were split in this fashion to more accurately reflect black grouper harvest in the two areas and thus provide more fair and equitable jurisdictional allocation alternatives.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred jurisdictional allocation alternative for black grouper.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2b (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.2 Action 14: Specify Sector Allocations for Black Grouper

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).
When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Note: Average landings used as "catch history" in computations. Data use the same post-stratification approach (MRFSS landings from Monroe County, Florida, re-assigned from Gulf of Mexico to South Atlantic), that was used in Action 13 (jurisdictional allocations for black grouper).

Alternative 1 (No action). Do not establish sector allocations for black grouper.

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

> **Subalternative 2a**. Commercial = 48.14% and recreational = 51.86% using average landings from 1986-2008.
> **Subalternative 2b**. Commercial = 50.13% and recreational = 49.87% using average landings from 1986-1998.
> **Subalternative 2c**. Commercial = 43.74% and recreational = 56.26% using average landings from 1999-2008.
> **Subalternative 2d**. Commercial = 33.02% and recreational = 66.98% using average landings from 2006-2008.
> **Subalternative 2e (Preferred)**. Commercial = 36.88% and recreational = 63.12% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Alternative 3. Establish commercial, recreational, and for-hire sector allocations based on criteria outlined in subalternatives below.

> **Subalternative 3a**. Commercial = 48.14% , for-hire = 11.11%, and recreational = 40.75% using average landings from 1986-2008.
> **Subalternative 3b**. Commercial = 48.14% , for-hire = 8.45%, and recreational = 41.42% using average landings from 1986-1998.
> **Subalternative 3c**. Commercial = 43.74% , for-hire = 16.99%, and recreational = 39.27% using average landings from 1999-2008.
> **Subalternative 3d**. Commercial = 33.02% , for-hire = 15.06%, and recreational = 51.92% using average landings from 2006-2008.
> **Subalternative 3e**. Commercial = 36.88% , for-hire = 15.29%, and recreational = 47.83% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

4.3.2.1 Biological Effects

Alternative 1 (No Action) would not specify a commercial or recreational allocation for black grouper. If an allocation is not specified then it would not be possible to identify the sector ACLs. Only a single ACL could be established for both sectors.

Subalternative 2e (Preferred) would divide the jurisdictional allocation for the South Atlantic specified in **Action 13** between the recreational and commercial sectors (**Table 4-50**).

Table 4-50. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**.

Alternative 2 (Preferred)	**Comm**	**Rec**	
Sub Alt 2a	118,237	127,358	
Sub Alt 2b	123,120	122,475	
Sub Alt 2c	107,434	138,161	
Sub Alt 2d	81,104	164,491	
Sub Alt 2e (Preferred)	**90,575**	**155,020**	
Alternative 3	**Comm**	**For-Hire**	**Rec**
Sub Alt 3a	118,237	27,278	100,079
Sub Alt 3b	123,120	20,748	101,727
Sub Alt 3c	107,434	41,728	96,433
Sub Alt 3d	81,104	36,990	127,501
Sub Alt 3e	90,575	37,547	117,473

Subalternatives for allocations under **Alternative 2** would divide the ACL between commercial and recreational sectors with subalternatives ranging from 33.02% commercial/66.98% recreational (**Subalternative 2d**) to 50.13% commercial/49.87% recreational (**Subalternative 2b**). Subalternatives under **Alternative 3** are similar to **Alternative 2** with the exception that the recreational sector is divided into for-hire and private recreational. Subalternatives for allocations under **Alternative 3** would range from 33.02% commercial/15.06% for-hire/51.92% private recreational (**Subalternative 3d**) to 48.14% commercial/8.45% for-hire/41.42% private recreational (**Subalternative 3b**).

The commercial allocation under options for **Alternative 2**, which contains **Subalternative 2e (Preferred)**, and **Alternative 3,** would be almost identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for for-hire and private recreational sectors under **Alternative 3** than for for-hire and private recreational sectors combined under

Alternative 2. Furthermore, estimates of recreational landings could be less certain when recreational data are divided into sectors.

The allocations in the various subalternatives are similar; however, subalternatives that capture early landings would allocate more to the commercial sector than the recreational sector. For example, **Subalternatives 2a-2b** and **3a-3b**, which are based on landings from 1986-2008 and 1986-1998, would allocate 48.14%-50.13%, and 48.14% to the commercial sector, respectively. In contrast, subalternatives which capture recent landings (**Subalternatives 2d, 2e (Preferred), 3d,** and **3e**) would allocate a higher percentage to the recreational sector.

Subalternative 2e (Preferred) is based on data from 1991-2008, which includes a portion of the early time period when the commercial sector dominated the catch, as well as recent data from 2006-2008 when recreational landings were higher. These percentages were derived using 50% of the average landings from 1991-2008 and 50% of the average landings from 2006-2008. The South Atlantic Council chose a start year of 1991 because recreational data collection and fish species identification were notably improved in 1991.

Table 4-51. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in preferred **Subalternative 2e**.

Year	Total ACL	Comm	Rec
2012	245,595	90,575	155,020
2013	256,430	94,571	161,859
2014 (and onwards until modified)	262,594	96,844	165,750

As the allocations in the various subalternatives are fairly similar, it would be expected that there would be similar biological effects among the subalternatives contained within **Alternatives 2** and **3**. The biological effects of the different allocation alternatives would be expected to be similar if landings in various sectors could be closely monitored. The negative biological effects of **Alternative 3** would be expected to be greater than those resulting from **Alternative 2** since recreational data can be less certain when they are divided into sectors. Further, the biological effects of subalternatives that allocate more landings to the commercial sector could have a positive biological effect because there is less of a chance that a commercial ACL would be exceeded than a recreational ACL. Commercial data can often be more closely monitored as they are based on dealer reports; whereas, much of the recreational data (except headboat data) are based on survey information.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery would not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2** and **3** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2** and **3** and the associated subalternatives are unclear. If the sector allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.2.2 Economic Effects

Alternative 2 in **Action 14** proposes five different allocations of the black grouper harvest that separate allocations for the commercial and recreational sectors. **Subalternatives 2c-2e (Preferred)** and **3c-3e** tend to favor the recreational sector relative to **Subalternatives 2a-2b** and **3a-3b** because they rely on shorter and more recent time series of data during which time an increase in recreational participation occurred. **Subalternatives 2c-2e (Preferred)** and **3c-3e** will likely generate less economic disruptions in the short term relative to **Subalternatives 2a-2b** and **3a-3b** because they more closely align with the distribution of landings between the two sectors under the status quo (i.e., **Alternative 1, No Action)**.

Ideally, when examining the economic effects of alternative allocations, estimates of marginal commercial and recreational net economic benefits under the various allocation alternatives should be considered so that scarce fish resources can be reallocated to those sectors that generate the highest net benefits to society. Economic benefits are maximized at the allocation level where the marginal net economic benefits to the commercial and recreational sectors are equal. However, marginal net economic benefits for the various alternatives are not available at this time and so the analysis relies on comparisons of gross revenue estimates in the commercial sector and consumer surplus estimates in the recreational sector. As in the case of wreckfish, an estimate of willingness-to-pay is used to generate the consumer surplus estimates. In addition, as noted before, gross revenue tends to overestimate the relative loss in terms of producer surplus, which is the more appropriate measure of welfare changes in the commercial sector.

Alternative 3 proposes five different allocations of the black grouper harvest that further separate the recreational allocation between the for-hire and private recreational sectors. As such, the potential changes in producer surplus or NOR to the for-hire sector should be measured separately in theory. However, as indicated in **Section 3.8.2**, there were no charter trips targeting black grouper and only an average of 642 charter trips per year harvesting black grouper in the South Atlantic between 2005 and 2009. Thus, it is difficult to analyze the expected economic effects of the proposed subalternatives under **Alternative 3**. However, if accurate, the data suggests the economic effects on the for-hire sector associated under the various subalternatives for **Alternative 3** will differ little.

Tables 4-52a and **4-52b** show the maximum anticipated changes in gross revenue to the commercial sector and anticipated changes in consumer surplus to the recreational sector under the various alternatives.[8] The gross revenue estimates assume the commercial fleet can harvest the entire allocation whereas the recreational consumer surplus estimates assume that the recreational sector can harvest the entire allocation and anglers' willingness-to-pay for each fish is constant.

[8] Gross revenue were estimated by multiplying the average dockside price of black grouper times the commercial allocation and consumer surplus was calculated by multiplying willingness-to-pay estimate times the recreational allocation. The willingness-to-pay estimate was derived from Carter, D.W. and C. Liese. 2011. The Economic Value of Catching and Keeping or Releasing Saltwater Sportfish in the Southeast United States. *In Review*; and Habb, T., R. Hicks, K. Schnier, and J. C. Whitehead. 2009. Angler heterogeneity and the species-specific demand for recreational fishing in the southeast United States. National Marine Fisheries Service Marine Fisheries Initiative Grant Report #NA06NMF4330055, Miami, Florida.

Table 4-52a. Changes in gross revenue and consumer surplus under **Alternative 2** for **Action 14**.

ACL Options	Comm landings minus No Action comm landings (lbs, ww)	Rec landings minus No Action rec landings (lbs, ww)	Comm gross revenues minus No Action comm gross revenues ($)	Rec consumer surplus minus No Action rec consumer surplus ($)
ACL=245,595 lbs ww				
Subalternative 2a	(10,455)	10,455	(33,978)	128,280
Subalternative 2b	(5,572)	5,572	(18,108)	68,366
Subalternative 2c	(21,258)	21,258	(69,088)	260,833
Subalternative 2d	(47,588)	47,588	(154,660)	583,902
Subalternative 2e	(38,117)	38,117	(123,880)	467,693
ACL=256,430 lbs ww				
Subalternative 2a	(10,916)	10,916	(35,477)	133,940
Subalternative 2b	(5,818)	5,818	(18,907)	71,382
Subalternative 2c	(22,196)	22,196	(72,136)	272,340
Subalternative 2d	(49,687)	49,687	(161,483)	609,662
Subalternative 2e	(39,798)	39,798	(129,345)	488,326
ACL=262,594 lbs ww				
Subalternative 2a	(11,178)	11,178	(36,330)	137,159
Subalternative 2b	(5,957)	5,957	(19,362)	73,098
Subalternative 2c	(22,729)	22,729	(73,870)	278,887
Subalternative 2d	(50,882)	50,882	(165,365)	624,317
Subalternative 2e	(40,755)	40,755	(132,454)	500,065

Table 4-52b. Changes in gross revenue and consumer surplus under **Alternative 3** for **Action 14**.

ACL Options	Comm landings minus No Action comm landings (lbs, ww)	For-hire landings minus No Action rec landings (lbs, ww)	Rec landings minus No Action rec landings (lbs, ww)	Comm gross revenues minus No Action comm gross revenues ($)	For hire consumer surplus minus No Action rec consumer surplus ($)	Rec consumer surplus minus No Action rec consumer surplus ($)	For hire operating net revenues minus No Action operating net revenues ($)
ACL=245,595 lbs ww							
Subalternative 3a	(10,454)	2,473	7,981	(33,976)	30,344	97,930	Minor since no targeted trips
Subalternative 3b	(5,572)	(4,057)	9,629	(18,108)	(49,781)	118,146	Minor since no targeted trips
Subalternative 3c	(21,258)	16,923	4,335	(69,088)	207,644	53,189	Minor since no targeted trips
Subalternative 3d	(47,588)	12,185	35,403	(154,660)	149,509	434,393	Minor since no targeted trips
Subalternative 3e	(38,117)	12,742	25,375	(123,880)	156,343	311,350	Minor since no targeted trips
ACL=256,430 lbs ww							
Subalternative 3a	(10,916)	2,582	8,333	(35,475)	31,683	102,251	Minor since no targeted trips
Subalternative 3b	(5,818)	(4,236)	10,054	(18,907)	(51,977)	123,359	Minor since no targeted trips
Subalternative 3c	(22,196)	17,669	4,526	(72,136)	216,805	55,535	Minor since no targeted trips
Subalternative 3d	(49,687)	12,722	36,965	(161,483)	156,105	453,558	Minor since no targeted trips
Subalternative 3e	(39,798)	13,304	26,494	(129,345)	163,241	325,086	Minor since no targeted trips
ACL=262,594 lbs ww							
Subalternative 3a	(11,178)	2,644	8,534	(36,328)	32,444	104,709	Minor since no targeted trips
Subalternative 3b	(5,957)	(4,338)	10,295	(19,362)	(53,226)	126,324	Minor since no targeted trips
Subalternative 3c	(22,729)	18,094	4,635	(73,870)	222,016	56,870	Minor since no targeted trips
Subalternative 3d	(50,882)	13,028	37,853	(165,365)	159,857	464,460	Minor since no targeted trips
Subalternative 3e	(40,755)	13,624	27,131	(132,454)	167,165	332,900	Minor since no targeted trips

4.3.2.3 Social Effects

By establishing sector allocations there could likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating harvest into multiple sectors has the perception of creating scarcity in that limits have been imposed on each individual sector. Each subsequent division will drive perceptions of scarcity and likely change the fishing behavior of those within a particular sector. **Alternative 1 (No Action)** would maintain an overall allocation (recreational and commercial combined) and may have few social effects. However, determining accountability may become an issue if a closure were to occur. With **Alternative 2** and its subalternatives, establishing an allocation between the recreational and commercial sectors would provide accountability between the two, although monitoring the recreational may be difficult. **Subalternatives 2a and 2b** favor the commercial sector by using earlier landings. **Subalternatives 2d and 2e (Preferred)** would allocate more to the recreational sectors using more recent landings that reflect a recent increase in recreational participation for this species. The difference with **Alternative 3** is the splitting of the recreational sector into two allocations which may provide the charter and headboat sectors with more stability and the possibility to plan with a known quantity of fish. The **Subalternatives 3a-c** allocate more to the private recreational sector respectively with **Subalternative 3d** allocating the most to the for-hire sector. With **Subalternative 3e** the time series differs but the allocation scheme between the two is similar to **Subalternative 3c**. As mentioned, there can be many different social effects that result as allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. However, with regard to **Alternative 3** and its subset of alternatives, there has been significant resistance from the private recreational component of the overall recreational sector to separate allocations. Some within the charter sector see some benefits from having a separate allocation as there may be more stability in having some accountability within each sector.

4.3.2.4 Administrative Effects

Alternative 1 (No Action) would not establish allocations and would result in the least administrative burden. Under **Subalternative 2e (Preferred)**, ABC would be more evenly divided among the commercial and recreational sectors, but require more of an administrative burden than **Alternative 1 (No Action)**. Subalternatives under **Alternative 3** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

4.3.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, data are not available to calculate the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible due to resource and personnel limitations of NOAA Fisheries Service and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries because it considers past and present participation. Furthermore, the South Atlantic Council concluded an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Subalternative 2e (Preferred)** as their preferred approach to establish allocations for black grouper.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred allocation alternative for back grouper.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that balancing long-term catch history with recent catch history is the most fair and equitable way to allocate black grouper. **Subalternative 2e (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.3 Action 15. Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper

Alternative 1 (No Action). Retain aggregate recreational and commercial ACLs and OY for black grouper, red grouper, and gag.

Alternative 2 (Preferred). ACL = OY = ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 3. ACL = OY = 90% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 4. ACL = OY = 80% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Table 4-53. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**.

Alternative	ACL Formula	Years	Total ACL (South Atlantic)	Comm ACL	Rec ACL
1 (No Action)	The group ACL for gag, black grouper, and red grouper is 662,403 gw (781,636 ww) for the commercial sector and 648,663 gw (765,422 ww) for the recreational sector. The total group ACL is 1,311,066 gw (1,547,058 ww). *				
2 (Preferred)	**ACL =ABC**	**2012**	**245,595**	**90,575**	**155,020**
		2013	**256,430**	**94,571**	**161,859**
		2014+	**262,594**	**96,844**	**165,750**
3	ACL=90% ABC	2012	221,036	81,518	139,518
		2013	230,787	85,114	145,673
		2014+	236,335	87,160	149,175
4	ACL=80% ABC	2012	196,476	72,460	124,016
		2013	205,144	75,657	129,487
		2014+	210,075	77,475	132,600

*Note: An individual ACL is currently not in place for black grouper. These values are equivalent to the expected catch resulting from the implementation of management measures for black grouper in Amendment 16 and specified in Amendment 17B. The black grouper portion of the combined gag, black, and red grouper ACL would translate to a total ACL of 140,124 lbs ww (118,749 lbs gw); 102,526 lbs ww (86,866 lbs gw) for the commercial ACL; and 37,598 lbs ww (31,868 lbs gw) for the recreational ACL.

4.3.3.1 Biological Effects

Alternative 1 (No Action) would retain the commercial and recreational aggregate ACL specified for gag, black grouper, and red grouper in Amendment 17B (SAFMC 2010b). The aggregate commercial ACL for gag, black grouper, and red grouper is 662,403 lbs gutted weight, and the aggregate recreational ACL is 648,663 lbs gutted weight. The aggregate ACL is based on expected landings from actions taken in Amendment 16 (SAFMC 2009a) and therefore does not take into consideration recent information from the black grouper stock assessment.

Alternatives 2 (Preferred)-4 would set the OY equal to the ACL. The NS 1 guidelines establish the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT or ACL to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternatives 2 (Preferred)-4 would specify an individual ACL and OY for black grouper based on the ABC from the recent SEDAR stock assessment (SEDAR 19, 2010). Under **Alternatives 2 (Preferred)-4,** ACLs for the commercial and recreational sectors would increase through 2014 and then remain at 2014 levels until otherwise specified by the South Atlantic Council. Guidance from the Council was to adopt the ABC/ACL projections for three years and hold steady thereafter. This approach is consistent with how the Council has addressed other species in rebuilding plans. However, the ACLs would not increase the following fishing year if the total ACL is exceeded during the current year.

The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 is 522,543 lbs whole weight (without dead discards). The South Atlantic Council's preferred jurisdictional allocation of ABC specified in **Action 13** is 47% for the South Atlantic, resulting in South Atlantic black grouper ABC equal to 245,595 lbs whole weight. Based on the preferred allocation alternatives in **Action 14**, 63.12% of the ACL would be allocated to the recreational sector and 36.88% of the ACL would be allocated to the commercial sector. The commercial and recreational ACLs based on alternatives in this action as well as the preferred allocation alternative in **Action 14** are shown in **Table 4-53**.

Alternative 2 (Preferred) would set the ACL and OY equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. **Alternatives 3** and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 4** setting the most conservative ACL at

80% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance overfishing would not occur. However, the South Atlantic Council's SSC has established an ABC control rule that takes into consideration scientific uncertainty to ensure catches are maintained at sustainable levels. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. Annual catch targets (ACTs), which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. A preferred alternative in **Action 17** includes an ACT for the recreational sector.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery would not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2 (Preferred)-4** are unclear. If the new ACL and OY perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.3.2 Economic Effects

Alternative 1 (No Action) would retain the aggregate ACL for red grouper, gag, and black grouper, which contains an implicit black grouper ACL of 140,124 lbs whole weight. **Alternatives 2**, **3,** and **4** explicitly establish an ACL specifically for black grouper. While **Alternative 2 (Preferred**) sets the black grouper ACL equal to the ABC, **Alternatives 3** and **4** create a buffer between the ACL and ABC.

Table 4-54 shows the maximum anticipated short-term changes in the commercial and recreational sector. Discounted gross revenue and consumer surplus estimates using a 3% and 5% discount rate for years 2012, 2013, and 2014 are provided, though the estimates using the two discount rates differ little. In general, the short-run economic benefits tend be higher when there is no or little buffer between the ACL and the ABC, as is the case under **Alternative 2 (Preferred**). As the ACL becomes more conservative under **Alternatives 3** and **4**, the anticipated short-term losses in economic benefits tend to increase. **Alternative 3** is preferable to **Alternative 4** in the short term, at least, since it results in a higher ACL for the commercial and recreational fisheries. Long-term economic benefits may be maximized under **Alternative 2 (Preferred**) as long as there is very little uncertainty regarding whether the ACL will be exceeded or not. If there is uncertainty, then long-term economic benefits are greatest under scenarios where a buffer is in place (**Alternatives 3** and **4**). Long-term economic benefits will depend on the ability of the ACL to increase stock abundance and reduce harvesting costs.

Table 4-54. Changes in discounted gross revenue and consumer surplus under **Alternatives 2, 3, and 4** relative to **Alternative 1 (No Action)** for **Action 15**.

Alternative	ACL Formula	Comm landings minus Alt 1 comm landings (lbs, ww)	Rec landings minus Alt 1 rec landings (lbs, ww)	Comm benefits minus Alt 1 comm benefits (discounted gross revenue, $)	Rec. benefits minus Alt 1 rec benefits (discounted consumer surplus, $)
Discount rate of 3% (3 years only- 2012, 2013 and 2014)					
Alternative 2 (Preferred)	**ACL=OY= ABC**	**189,424**	**154,822**	**537,718**	**1,760,921**
Alternative 3	ACL=OY=90% ABC	139,724	128,060	380,956	1,442,237
Alternative 4	ACL=OY=80% ABC	90,024	101,299	224,191	1,123,554
Discount rate of 5% (3 years only- 2012, 2013 and 2014)					
Alternative 2 (Preferred)	**ACL=OY= ABC**	**189,424**	**154,822**	**487,445**	**1,672,030**
Alternative 3	ACL=OY=90% ABC	139,724	128,060	333,658	1,359,393
Alternative 4	ACL=OY=80% ABC	90,024	101,299	179,867	1,046,757

4.3.3.3 Social Effects

Establishing an ACL for black grouper will have social effects similar to the discussions under other actions establishing ACLs. As discussed previously, choosing a more restrictive ACL like **Alternative 4** would likely have more negative effects in the short term than would **Alternative 3**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status as black grouper would have no specific ACL, just an ACL as part of the grouper aggregate. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2** (**Preferred)** would be less restrictive than the **Alternatives 3** and **4** and have fewer negative social effects. Although black grouper has never had an individual ACL, it has been part of the larger grouper aggregate ACL. By establishing a specific ACL for this species there could be changes in fishing behavior that may induce other social effects if target switching causes closures for black grouper or other species.

4.3.3.4 Administrative Effects

Specifying an ACL and sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would result in the least administrative burden due to the fact that the ACLs have already been implemented and fishermen are aware of them. However, the administrative impacts of specifying an ACL through **Alternatives 2 (Preferred) - 4** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures is not expected to increase from the status quo. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.3.3.5 Council Conclusions

Optimum Yield (OY) is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. ACL cannot exceed the ABC and may be set annually or on a multiyear basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, including back grouper, however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 16** and **17**). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternative 2** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper

Alternative 1 (No Action). Retain the existing commercial AMs for black grouper (**Table 4-55**).

Table 4-55. Current commercial regulations for black grouper.

Current Commercial Regulations	
Aggregate ACL and in-season closures	Group commercial ACL for gag, black grouper and red grouper of 662,403 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: gag, black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.

Alternative 2. Specify Annual Catch Targets (ACT) for the commercial sector.

- **Subalternative 2a (Preferred).** Do not establish a commercial sector ACT.
- **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
- **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished.

4.3.4.1 Biological Effects

Magnuson-Stevens Act NS 1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Councils revise their FMPs they use the same terms as set forth in the NS 1 guidelines. Current snapper grouper regulations include some species-specific size limits, seasonal closures, bag limits, and certain prohibited gear types. However, for most of the species and species groups included in this amendment, there are no previously specified measures that would be considered AMs. Therefore, AMs for snapper grouper species and/or species groups outlined in previous actions must be specified pursuant to Magnuson-Stevens Act requirements.

There are several types of AMs that may be applied for black grouper (part of the snapper grouper fishery). In-season AMs are those that are triggered during the fishing season, typically before an ACL is exceeded or when it is projected to be met. Some examples of in-season AMs include quota closures, trip or bag limit changes, gear restrictions, or catch shares. Post-season AMs would be triggered if the ACL is exceeded and would typically be implemented the following fishing season. Post-season AMs could include seasonal closures, reduced trip or bag limits, or shortening of the fishing season implemented in the subsequent year. Ideally, a combination of in-season and post-season AMs would be used to first prevent the ACL from being exceeded, and then provide a mechanism to correct for an overage if one should occur. Implementing a post-season AM in addition to an in-season AM would reduce the risk of overfishing since there would be two layers of protection against unsustainable harvest rates. It is important to note that the new framework procedure in Amendment 17B (SAFMC 2010b) would allow for timely adjustments to be made to AMs if the South Atlantic Council and NOAA Fisheries Service determine a change is needed.

The efficacy of in-season AMs is largely reliant upon in-season monitoring of landings, which may be especially difficult for the recreational sector. The MRFSS and the newly implemented MRIP uses random survey methods and may not capture data on species that are infrequently encountered. Therefore, in-season tracking of black grouper landings in the recreational sector would be based on the MRFSS program and state landings reports. An additional obstacle to tracking recreational harvest in-season is that there is a 45-day lag time between when the fish are landed and when those landings are reported in the landings database after each two-month wave. This lag time means that projections of when the ACL is expected to be met would need to be employed. Landings projections are not always 100% accurate, thus using such estimates could lead to an in-season AM being triggered prematurely, or not soon enough causing an ACL overage.

The South Atlantic Council may choose one or more post-season AMs to supplement any of the in-season AMs. This would be the most administratively burdensome scenario; however, if an ACL overage were to occur after an in-season AM has been implemented, a post-season AM would be available to the RA as a means to correct an overage and prevent overfishing. Post-season AMs would allow all landings for a particular season to be reported before any harvest restriction measures would take effect. This method of accountability alone may correct for one year’s or several years’ overages; however, it does little to prevent an overage from occurring again unless it is chosen in conjunction with an in-season AM.

The NS1 guidelines recommend the use of ACTs in systems of AMs so that an ACL is not exceeded. For fisheries without in-season management control to prevent the ACL from being exceeded, AMs may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. If an ACT is specified as part of the AMs for black grouper, an ACT control rule that accounts for management uncertainty may be utilized for setting the ACT. The objective for establishing an ACT and related AMs is that the ACL not be exceeded.

AMs are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector annual catch target is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to account for overages.

Since the ACT is typically set lower and would be reached sooner than the ACL for any given species, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages, which could benefit the biological and socioeconomic environments.

The updated framework procedure included in Amendment 17B (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NOAA Fisheries Service determine they are necessary. Therefore, if the South Atlantic Council chooses not to implement ACTs for black grouper through this Comprehensive ACL Amendment, ACTs may be easily established and modified in the future if needed.

The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation concludes that the ACL is being chronically exceeded for black grouper, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. It is anticipated that this performance standard will be applied to all species and all systems of ACLs and AMs established in this amendment in accordance with NS1 guidelines.

Alternative 1 (No Action) would retain the existing commercial AMs for black grouper (**Table 4-55**). **Alternative 2** invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish an ACT as an actual harvest level that presumably once exceeded, would trigger an AM as intended under NS 1 guidelines. **Subalternatives 2b**

and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus provide a disincentive to target black grouper once the ACL has been reached. **Alternative 4 (Preferred)** could serve as a complement to **Alternative 3 (Preferred)** in that it would correct for an ACL overage in the post-season if one were to occur during the fishing season but only if the species is determined to be overfished. For assessed species like black grouper, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for black grouper would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the amount as that taken in excess the year before, and may shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. The effects on protected species resulting from **Alternatives 2, 3 (Preferred) and 4 (Preferred)** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery, the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.4.2 Economic Effects

Action 16 considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the commercial sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS-1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

As discussed above, establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on commercial fishing participants. Direct economic effects on commercial fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) leaves the current AMs for the commercial black grouper sector in place. **Subalternative 2a (Preferred)** sets no buffer, **Subalternative 2b** sets the buffer at 90% of the ACL, and **Subalternative 2c** sets the buffer at 80% of the ACL. **Table 4-56** shows the anticipated changes in short-term (annual) landings and gross revenue of the proposed subalternatives. As before, the expected gross revenue assumes that the commercial fleet can harvest the entire ACT. This table shows that the anticipated landings and gross revenue decrease as the ACTs become more conservative.

Estimates in **Table 4-56** should be considered upper bounds since the adoption of multiple ACTs could bring about a change in fishing practices, which may prevent the fleet of harvesting all of the ACTs. If fishing firms can easily re-organize their catch mix as the ACTs become constraining, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if fishing firms have limited flexibility to modify the composition of their catches as ACT become binding, then fishermen may reduce harvests of black grouper, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place. Management regimes that favor harvesting privileges, like catch shares, are relatively more likely to generate larger economic benefits in the long run relative to a regulated open or limited access regime.

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run than **Alternative 2,** but still be bound by the figures in **Table 4-56**, since this alternative is intended to prevent the commercial sector from harvesting black grouper in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which would result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if black grouper is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-56. Changes in gross revenue under **Alternative 2** for **Action 16**.

Alternative	ACT Formula	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm gross revenue minus Alt 2a comm gross revenue ($)
Subalternative 2a	NO ACT		
Subalternative 2b	ACT=90% ACL	3,128	9,977
Subalternative 2c	ACT=80% ACL	(5,930)	(18,916)

4.3.4.3 Social Effects

Alternative 1 (No Action) would have few negative social impacts as it would not impose further restrictions on the commercial sector retaining current accountability measures for several grouper species. A buffer could be imposed through **Alternative 2,** which might reduce the harvest threshold further from the ACL. **Subalternative 2a (Preferred)** would be less restrictive than **Subalternative 2b** or **2c** and therefore have fewer negative social effects. Once the ACL is met in **Alternative 3 (Preferred)** with harvest restricted to bag limit and no sales there should be beneficial social effects in keeping the fishery sustainable. The payback provision in **Alternative 4 (Preferred)** should provide added protection for the stock and beneficial social effects. However, with closures and restricted sales that may occur under some of these alternatives, it is anticipated that fishermen will target other species if possible. Whether that flexibility will continue to exist as ACLs and AMs are imposed on all fisheries remains to be seen.

4.3.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT (**Alternative 2** and associated subalternatives) or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

4.3.4.5 Council Conclusions

Annual Catch Targets refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left at the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial black grouper fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT. Quota monitoring in the commercial fishery and AMs the South Atlantic Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus provide a disincentive to target this species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. **Alternative 4 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision. However, the latter would only apply if there were indication that the species was overfished. The South Atlantic Council chose to make this distinction to be consistent with how they chose to address paybacks in other FMPs (i.e. Coastal Migratory Pelagic species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Snapper Grouper Advisory Panel (AP) expressed their support for the South Atlantic Council's preferred approach to setting AMs for the commercial sector.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2a (Preferred)** and **Alternatives 3** and **4 (Preferreds)** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper

Alternative 1 (No Action). Do not specify new recreational AMs for black grouper.

Table 4-57a. Current recreational regulations for black grouper.

Current Recreational Regulations	
Bag limit	Included in three grouper aggregate bag limit per person per day (1 may be black or gag). Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.
ACL/AM	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.
- **Subalternative 2a**. Do not specify an ACT.
- **Subalternative 2b.** The ACT equals 85% of the ACL.
- **Subalternative 2c.** The ACT equals 75% of the ACL.
- **Subalternative 2d (Preferred).** The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Note: ACTs for black grouper are shown in **Table 4-57b**.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.
- **Subalternative 3a**. Do not specify an AM trigger.
- **Subalternative 3b (Preferred)**. If the <u>*annual landings*</u> exceed the ACL in a given year.
- **Subalternative 3c.** If the <u>*mean landings*</u> for the past three years exceed the ACL.[1, 2]
- **Subalternative 3d.** If the <u>*modified mean landings*</u> exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% _confidence interval_ estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] _Start the clock over._ In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. _Monitor following year._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). _Monitor following year and shorten season as necessary._ If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. _Monitor following year and reduce bag limit as necessary._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. _Shorten following season._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage if the species is overfished.

Table 4-57b. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 4-42**). Values are in lbs whole weight.

Year	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 2b; ACT=85%(ACL)	ACT Subalt. 2c; ACT=75%(ACL)	ACT Subalt. 2d (Preferred); ACT equals sector ACL*(1-PSE) or ACL*0.5, whichever is greater
2012	155,020	131,767	116,265	**94,562**
2013	161,859	137,580	121,394	**98,734**
2014+	165,750	140,888	124,313	**101,108**

Table 4-58. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper.

	Commercial (lbs)	Recreational (lbs gw)	Total (lbs gw)
Gag ACL *(Amend 16)*	352,940 (gw) 416,469 (ww)	340,060 (gw) 401,271 (ww)	693,000 (gw) 817,740 (ww)
Black grouper landings (2010)	37,258 (gw) 43,964 (ww)	35,222 (gw) 41,562 (ww)	72,480 (gw) 85,526 (ww)
Red grouper landings (2010)	277,337(gw) 327,258(ww)	91,508(gw) 107,979 (ww)	368,845(gw) 435,237 (ww)
Gag, black, red aggregate ACL	662,403 (gw) 781,635 (ww)	648,663 (gw) 765,422 (ww)	1,311,006 (gw) 1,546,987 (ww)

4.3.5.1 Biological Effects

A general discussion of AMs is presented for **Action 16** and is not repeated here.
Alternative 1 (No Action) would not specify recreational AMs for black grouper and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. Like the recreational ACL, the recreational ACT would increase through 2014 and then remain constant unless otherwise specified by the South Atlantic Council. Since the recreational ACT is a function of the recreational ACL, the recreational ACT would not change unless the recreational ACL also changed. **Subalternative 2a** would not set a recreational sector ACT.

Subalternatives 2b and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Table 4-57**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-57**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternative 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty.

This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**) and scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after each two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological effects may not be adverse by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage if the species is overfished.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season under **Subalternative 5f**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B (SAFMC 2010b), the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.5.2 Economic Effects

Action 17 considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the recreational sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

As discussed above, establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an ACT for the recreational sector of the black grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long run since the absence of an ACT could either increase the risk of overfishing or result in overfished black grouper stock, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT which would, in general, establish the recreational ACTs as a proportion of the ACL. Specifically, **Subalternative 2a** sets no ACT and thus creates no buffer between the ACT and the ACL, which would be the least conservative of the four alternatives considered. **Subalternative 2b** sets the ACT at 85% of the ACL and thus creates a 15% buffer, **Subalternative 2c** sets the ACT at 75% of the ACL and thereby creates a 25% buffer, while **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater.

Table 4-59 shows that, the more conservative the ACTs, the higher the short-term forgone losses in landings and consumer surplus. **Subalternative 2c** generates higher short-term losses in consumer surplus relative to **Subalternative 2b** and **Subalternative 2d (Preferred)** generates higher short-term losses in consumer surplus relative to **Subalternative 2c**. These estimates assume the recreational sector can harvest the ACT. These short-term losses are expected to be offset in the long run when stock abundance is anticipated to increase. Higher stock abundance is expected to increase harvest and thus consumer surplus, and also reduce the long-run harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, these results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest short-term losses in landings and consumer surplus.

The estimates in **Table 4-59** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the recreational sector from harvesting all of the ACTs. If recreational fishermen can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by harvesting other species. On the other hand, if recreational fishermen have limited flexibility to modify the composition of their catches as ACTs become more binding, then they may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place.

Table 4-59. Changes in recreational landings and consumer surplus under **Alternative 2** for **Action 17**.
Note: Changes are relative to **Subalternative 2b**.

Alternative	**ACT Formula**	**Rec landings minus Alt 2b rec landings (lbs, ww)**	**Rec consumer surplus minus Alt 2b rec consumer surplus ($)**
Subalternative 2b	ACT= 85% ACL		
Subalternative 2c	ACT= 75% ACL	(15,502)	(190,210)
Subalternative 2d (Preferred)	**Greater of ACL*(1-PSE) or ACL*0.5**	(37,205)	(456,505)

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)**, **3c**, **3d**, and **3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Alternative 3e**. Assuming these same relative probabilities apply to black grouper, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due highly inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c-5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c-5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c-5e** in the short-term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** if the species is overfished would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

4.3.5.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for the black grouper recreational sector which may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the most conservative of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM which could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer negative social effects than **Subalternative 5c** which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5g** payback if the species is overfished would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.3.5.4 Administrative Effects

Under **Action 17**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.3.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assessing the AM alternatives for the black grouper recreational sector. First, the Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the black grouper fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would add a more appropriate buffer than ACTs based on a simple percentage of the ACL since the PSE would reflect the quality of data. Large PSEs indicate higher uncertainty in the data while small PSEs suggest more robust estimates. Hence using the PSE in the formula to set the ACT further accounts for uncertainty. The Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational black grouper fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. The ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary.

The Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the black grouper recreational landings, the Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, the Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives describe methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternatives for black grouper AMs. The Snapper Grouper AP suggested the South Atlantic Council consider approaches to address underages.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper

The stock assessment for yellowtail snapper (SEDAR 3, 2003) used data from two regions: the Atlantic region, primarily from Palm Beach county south through Miami-Dade county, and the Florida Keys, comprising Monroe county and west. The assessment estimated catch-at-age for the MRFSS recreational, headboat, and commercial sectors separately for the Atlantic (Dade county north) and Keys regions (Monroe county north). Although commercial landings data were available for earlier years, recreational data were only available since1981. Therefore, the stock assessment included data from 1981 to 2001. The stock of yellowtail snapper was not overfished nor undergoing overfishing at the time the stock assessment was conducted.

Alternative 1 (No action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

> **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
>
> **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
>
> **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established by using highest catch history from 1987-2001).
>
> **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established by using lowest catch history from 1987-2001).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Table 4-60a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	2,840,530	57,970
Alternative 2b	2,840,530	57,970
Alternative 2c	2,898,500	0
Alternative 2d	2,753,575	144,925
Alternative 3	2,115,905	782,595
Alternative 4 (Preferred)	**2,173,875**	**724,625**
Alternative 5	2,231,845	666,655
Alternative 6	2,057,935	840,565

Table 4-60b. Values for ACL (lbs whole weight; commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic.

Parameter	Value	Source
ABC	2,173,875	Action 18, Preferred Alternative 4
ACL	2,173,875	Action 6, Preferred Alternative 2
Comm ACL	1,142,657	Action 5, Preferred Alternative 2
Rec ACL	1,031,218	Action 5, Preferred Alternative 2
Rec ACT	897,160	Action 8, Preferred Alternative 2d

4.3.6.1 Biological Effects

Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. Since yellowtail snapper are primarily landed off Florida especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. Recreational landings in other Gulf of Mexico and South Atlantic states are low, averaging less than 38,000 lbs whole weight. These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

The most recent stock assessment for yellowtail snapper was completed in 2003 and has landings through 2001 (SEDAR 3, 2003). The landings in the stock assessment are divided by the following regions: 1 - North of Palm Beach County; 2 - Palm Beach through Miami-Dade Counties; 3 - Monroe County (Florida Keys); and 4 - Gulf of Mexico north or west of the Keys. In the stock assessment, landings in regions 1 and 2 are clearly in the South Atlantic jurisdiction; whereas, region 3 - Monroe County (Florida Keys) is more difficult to determine if the landings came from the South Atlantic or Gulf of Mexico Councils' jurisdiction without stratifying the landings. The OFL and ABC recommendations are shown in **Table 4-61**. Using the ABC recommended by the SSC results in estimates for the jurisdictional allocation shown in **Table 4-60a**. Sector ACLs/ACT for the South Atlantic Council's area are shown in **Table 4-60b**.

Table 4-61. The OFL and ABC recommendations for yellowtail snapper from the South Atlantic Scientific and Statistical Committee.

OFL (ww)	ABC (ww)
Yield @ F_{MSY}	2,898,500 lbs.

Source: The ABC is the average of the OY defined as $75\%_{MSY}$ for the "fleet" and "ICA" models Table 2 minutes from the South Atlantic SSC report.

Alternative 1 (No Action) would not establish jurisdictional allocation of yellowtail snapper between the Gulf of Mexico and South Atlantic Councils. Under this alternative, yellowtail snapper would be managed jointly. The two Councils would need to agree on an annual catch limit and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If both Councils decided to allocate this species they would also have to agree on recreational and commercial allocations.

Alternative 2 would establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003), which does not consider stratified yellowtail snapper catches for Monroe County, Florida. Yellowtail snapper are likely caught in the back reef area of the Florida Keys (Gulf of Mexico Council jurisdiction), but are probably not legal size (B. Muller, FL FWC, FWRI, personal communication). Juveniles are typically found over shallow-water including the back reef on patch reefs and grass beds. Adult yellowtail snapper typically inhabit sandy areas near offshore reefs at depths ranging from 10-70 m (SEDAR 3 2003). Based on information in the stock assessment and discussions with the analyst, juvenile yellowtail are likely more abundant in the Gulf of Mexico Council jurisdiction and adults along the reef tract are more abundant in the

South Atlantic Council jurisdiction (B. Muller, personal communication). Therefore, alternatives that consider post-stratified data are likely more appropriate for determining jurisdictional allocations than **Alternative 2**.

Subalternatives 2a and **2b** result in the same jurisdictional allocation for South Atlantic = 98% of the ABC and Gulf of Mexico = 2% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010 letter from the South Atlantic Council to the Gulf of Mexico Council for black grouper as the following, but with more recent landings: use 50% of the average landings from 1987-2001 + 50% of the average landings from 1999-2001. Using catch history from 1987-2001 resulted in the same jurisdictional allocation between the South Atlantic and Gulf of Mexico (**Subalternative 2a**). **Subalternative 2c** would allocate 100% of ABC to the South Atlantic by using highest catch history from 1987-2001, which occurred in 2000. **Subalternative 2d** would allocate 95% of ABC to the South Atlantic and 5% to the Gulf of Mexico by using lowest catch history from 1987-2001, which occurred in 1999. The amount of yellowtail snapper landings that would be allocated to the Gulf of Mexico and South Atlantic is shown above in **Table 4-60a**.

Under **Alternatives 3-6**, data for yellowtail snapper in the Florida Keys were stratified into the South Atlantic and Gulf of Mexico using the following methods for each sector: commercial landings are based on annual landings summary and are sub-setted by region based on fisher reported "catch area"; headboat landings were defined as North Carolina-Florida Keys statistical areas 1-17 (South Atlantic); and MRFSS data was post-stratified to break the Florida Keys out from the Gulf of Mexico landings. The MRFSS landings from the Florida Keys were then re-assigned to the South Atlantic Council, because most legal sized yellowtail snapper (minimum size limit of 12-inch TL) would be caught in South Atlantic waters. All catch histories begin in 1993 due to issues associated with post-stratifying Florida Keys (Monroe County) landings prior to that date.

Alternatives 3-6 take into account any management changes that took place for yellowtail snapper in both the Gulf of Mexico and South Atlantic Councils since all catch history data begins in 1993. In the Gulf of Mexico, Amendment 1 effective in 1990 set a 12-inch TL minimum size limit for the recreational and commercial sectors that was compatible with state of Florida regulations (GMFMC 1989). Amendment 1 also limited the catch of yellowtail snapper by the 10-snapper aggregate bag limit for recreational anglers and the licensing requirements for commercial fishers (GMFMC 1989). In the South Atlantic, the original Fishery Management Plan, effective in 1985, set a 12-inch TL minimum size limit for yellowtail snapper and a 10-snapper per person possession limit (SAFMC 1983).

Alternative 3 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010, letter from the South Atlantic Council for black grouper allocation as the following: use 50% of the average landings from 1993-2009 + 50% of the average landings from 2007-2009. The South Atlantic Council is using catch histories that include landings in 2009 and their inclusion is consistent with other data sets in their Comprehensive ACL Amendment. The concept of this method is to use all available years to determine the split and to provide additional weight to the most recent three years. The catch histories begin in 1993 due to issues associated with post-stratifying landings prior to that date from the Florida Keys (Monroe County).

Alternative 4 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010 letter from the South Atlantic Council for black grouper allocation as the following: use 50% of the average landings from 1993-2008 + 50% of the average landings from 2006-2008. The concept of this method is to use all available years to determine the split, but this data set was stopped in 2008 similar to the methods used for black grouper jurisdictional allocation (**Action 13**).

Applying the preferred jurisdictional allocation in **Alternative 4** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified above in **Table 4-60b**.

Alternative 5 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC. These percentages were derived by using the most recent ten years of catch history data from 1999-2008, but stopping in 2008 similar to the methods used for black grouper allocation (**Action 13**). The assessment was conducted in 2009 so landings from that year were not available for the assessment.

Alternative 6 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC. These percentages were derived by using the most recent five years of data including 2009 landings. The South Atlantic Council is using catch histories that include landings in 2009 and their inclusion is consistent with other data sets in the Comprehensive ACL Amendment.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Alternatives 2-6** would be similar. The 2003 stock assessment indicates yellowtail snapper are not experiencing overfishing and are not overfished. Furthermore, both Councils are in the process of specifying ACLs and AMs for all management species. Additional measures have been and are being considered to ensure yellowtail snapper does not experience overfishing.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries were not likely adversely affecting marine mammals or *Acropora* species. **Alternatives 2-6** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-6** are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternatives reduce the overall amount of effort in the fisheries, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.6.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 18** assume the allocation of yellowtail snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 52.56% commercial and 47.44% recreational, respectively. In addition, the average commercial ex-vessel price per pound for yellowtail snapper is $2.60 and the estimated recreational willingness-to-pay per pound for yellowtail snapper is $10.93 (personal communication, SEFSC). The analysis also assumes that, under **Alternative 1 (No Action)**, the distribution of yellowtail snapper landings between the South Atlantic and Gulf of Mexico Councils' jurisdictions would remain the same as it has been on average from 2005-2009. Further, since the 2005-2009 distribution of landings is the basis for **Alternative 6**, the South Atlantic and Gulf of Mexico ACLs for yellowtail snapper are the same under **Alternative 1 (No Action)** and **Alternative 6**. As can be seen in **Table 4-62**, relative to **Alternative 1 (No Action)**, the greatest change in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the SA yellowtail snapper fishery would accrue under **Subalternative 2c**, followed by **Subalternative 2a** and **Subalternative 2b** (which are equivalent), **Subalternative 2d**, **Alternative 5**, **Alternative 4 (Preferred)**, **Alternative 3**, and the least, for reasons explained above, under **Alternative 6**.

Table 4-62. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for Yellowtail Snapper, **Action 18**. ACLs are in lbs whole weight.

Alternative	SA ABC	Gulf of Mexico ABC	SA Comm ACL	SA Rec ACL	SA Comm Gross Revenue	SA Rec CS	Change in SA Gross Revenue Relative to Alt. 1	Change in SA CS relative to Alt 1	Total Change in Economic Benefits
1	2,057,935	840,565	1,081,651	976,284	$2,812,292	$10,670,788	$0	$0	$0
2a	2,840,530	57,970	1,492,983	1,347,547	$3,881,755	$14,728,693	$1,069,463	$4,057,905	$5,127,368
2b	2,840,530	57,970	1,492,983	1,347,547	$3,881,755	$14,728,693	$1,069,463	$4,057,905	$5,127,368
2c	2,898,500	0	1,523,452	1,375,048	$3,960,974	$15,029,279	$1,148,682	$4,358,491	$5,507,173
2d	2,753,575	144,925	1,447,279	1,306,296	$3,762,925	$14,277,815	$950,633	$3,607,027	$4,557,661
3	2,115,905	782,595	1,112,120	1,003,785	$2,891,511	$10,971,374	$79,219	$300,586	$379,805
4	**2,173,875**	**724,625**	**1,142,589**	**1,031,286**	**$2,970,731**	**$11,271,959**	**$158,439**	**$601,171**	**$759,610**
5	2,231,845	666,655	1,173,058	1,058,787	$3,049,950	$11,572,545	$237,658	$901,757	$1,139,415
6	2,057,935	840,565	1,081,651	976,284	$2,812,292	$10,670,788	$0	$0	$0

4.3.6.3 Social Effects

In establishing jurisdictional allocations for yellowtail snapper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects. **Alternative 1 (No Action)** may make management of yellowtail snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. The **Subalternatives 2a** and **2b** are similar in that the allocation schemes give the same amount to each Council although they are based upon different time series. It is difficult to know what the social effects would be although recent discussions have implied that more landings, especially recreational, may be coming from the South Atlantic. **Subalternative 2b** is between the other allocation schemes and is based upon catch history from two different time periods and may account for differing harvesting patterns historically and presently. **Subalternative 2c** provides 100% allocation to the South Atlantic with **Subalternative 2d** allowing 5% to the Gulf of Mexico. **Alternatives 3-6** allocate based upon a different time series and jurisdictional boundary. As mentioned earlier, the allocation procedure selected may have few social effects depending upon the other restrictions that come from the administration by each Council. At present it is difficult to ascertain any specific social effects other than any reduction in harvest or increased regulatory burden from the allocation scheme may have negative social effects.

4.3.6.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. All of the action alternatives and subalternatives would carry a moderate administrative burden. Establishing jurisdictional allocation would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in both the Gulf of Mexico and South Atlantic in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. Under **Subalternative 2c**, the ABC would be allocated 100% to the South Atlantic and 0% for the Gulf of Mexico. Under this scenario, monitoring, enforcement and reporting would carry the least administrative burden.

4.3.6.5 Council Conclusions

As for black grouper, the Gulf of Mexico and South Atlantic Councils requested that jurisdictional allocation alternatives be developed for yellowtail snapper. The stock assessment for yellowtail snapper treated the Gulf of Mexico and South Atlantic management unit as a single stock rather than providing separate assessments. Thus the ABC currently applies across Council jurisdictions. Since yellowtail snapper are primarily landed off the state of Florida especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues.

These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils were presented with a suite of alternatives that treated the splitting of Monroe County landings similarly. Both Councils chose as their preferred alternative (**Alternative 4 Preferred**) to establish a jurisdictional allocation based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

During their April 2011 meeting, the Snapper Grouper Advisory Panel (AP) were provided recent landings (2005-2009) information for the South Atlantic and the Gulf of Mexico. Based on those landings and their knowledge of the fishery, the Snapper Grouper AP submitted for the South Atlantic Council's consideration an allocation of 70% of the ABC to the South Atlantic and 30% to the Gulf.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternative 4** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.7 Action 19: Establish Jurisdictional Allocations for Mutton Snapper

The mutton snapper stock was assessed through SEDAR 15A in 2008. The base run of the stock assessment model indicated the stock was neither undergoing overfishing nor was the stock overfished in 2006. However, sensitivity runs indicated that there was a moderate probability that the stock could be overfished. The increase in the recreational fishing mortality rate added to the concern at the time.

Alternative 1. (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper Acceptable Biological Catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

4.3.7.1 Biological Effects

The Gulf of Mexico Council and South Atlantic Council requested that jurisdictional allocation alternatives be developed for mutton snapper. The stock assessment for mutton snapper (SEDAR 15A, 2008) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments. The stock assessment was completed in 2008 and concluded that the stock is neither overfished nor undergoing overfishing.

The South Atlantic Council's SSC recommended that the OFL be set equal to the equilibrium maximum sustainable yield proxy, which is the yield at $F30\%_{SPR}$= 1.52 mp whole weight (ww) and the ABC be set equal to the equilibrium optimum yield, which is the yield at $F40\%_{SPR}$ = 1.16 mp whole weight (ww). The Gulf Council's SSC recommended a consistent OFL and ABC, but separated landed weight from the dead discards (**Tables 4-63** and **4-64**).

Table 4-63. OFL and ABC Recommendations from Gulf Council's SSC.

OFL (ww)		
Landings	Discards	Total
1,480,000	35,300	1,515,300

ABC (ww)		
Landings	Discards	Total
1,130,000	26,500	1,156,500

Table 4-64. Mutton snapper ABC (landed catch lbs ww) in Gulf of Mexico and South Atlantic based on jurisdictional allocation alternatives.

	Not Adjusted for Dead Discards		Adjusted for Dead Discards	
Alternative	Gulf	South Atl	Gulf	South Atl
Alternative 2 (Preferred)	**208,080**	**947,920**	**203,400**	**926,600**
Alternative 3	242,480	913,520	237,300	892,700
Alternative 4	0	1,156,000	0	1,130,000

Values proposed by the South Atlantic Council are shown in **Table 4-65** below.

Table 4-65. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic.

Parameter	Value	Source
OFL	1,515,300	Action 19
ABC	926,600	Action 19, Preferred Alternative 2
ACL	926,600	Action 6, Preferred Alternative 2
Comm ACL	157,707	Action 5, Preferred Alternative 2
Rec ACL	768,893	Action 5, Preferred Alternative 2
Rec ACT	668,937	Action 8, Preferred Alternative 2d

Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Mutton snapper are widely distributed in the western Atlantic from Massachusetts and Bermuda to southeastern Brazil, including the Gulf of Mexico, the Bahamas, and the Greater and Lesser Antilles. Mutton snapper are found throughout the coastal waters of the Gulf of Mexico and are associated with coral reefs, sandy bottoms, and seas grasses, including estuaries and bays with mangroves (SEDAR 15A, 2008).

Alternative 1 (No Action) would not establish jurisdictional allocations of mutton snapper between the Gulf and South Atlantic Councils. Under this alternative, mutton snapper would be managed jointly. The two Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If the Councils decided not to allocate this species by region they would have to agree on recreational and commercial allocations.

Alternative 2 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the formula: 50% of the average landings from 1990-2008 + 50% of the average landings from 2006-2008. In **Alternatives 2 (Preferred)** and **3**, data from Monroe County, Florida are stratified using methodology described in **Action 18**. Employing the ABC for the preferred jurisdictional **Alternative 2 (Preferred)** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified above in **Table 4-65**.

Alternative 3 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 79% of the ABC and Gulf = 21% of the ABC. These percentages were derived by using catch histories from 2002-2006.

Alternatives 2 (Preferred) and **3** are similar, with only 3% difference in allocation of the ABC between the Gulf and South Atlantic Councils. Based on the stock assessment for mutton snapper (SEDAR 15A 2008), the commercial landings (handline and longline combined) are close to a 50:50 split between the Gulf and South Atlantic Councils. The recreational landings (Marine Recreational Fisheries Statistical Survey (MRFSS) and heaboat) are primarily from the South Atlantic jurisdiction.

Alternative 4 would be dependent upon the Gulf Council relinquishing management of mutton snapper. Under this alternative the South Atlantic Council would manage mutton snapper in the South Atlantic, where most of the landings occur as well as the Gulf of Mexico. The biological effects of **Alternative 4** could be slightly greater than **Alternatives 2 (Preferred)** and **3** because management measures (a two month spawning season closure; May/June limited to 10 per person bag limit) are more restrictive for the commercial sector in the South Atlantic than in the Gulf of Mexico. However, commercial landings of mutton snapper are small relative to recreational landings, and landings from the Gulf of Mexico are much less than those in the South Atlantic. In the South Atlantic and Gulf of Mexico, there is a 16- inch total length minimum size limit in place for the commercial and recreational sectors, and mutton snapper is included in the 10-snapper aggregate recreational bag limit in both regions.

Regardless of which alternative is selected, SEDAR 15A (2008) indicates management measures in both areas are sufficient to prevent overfishing of mutton snapper. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure mutton snapper does not experience overfishing.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries were not likely adversely affecting marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternatives reduce the overall amount of effort in the fisheries, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.7.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 19** to establish a jurisdictional allocation of mutton snapper between the South Atlantic and Gulf Councils assumes that the allocation of mutton snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 17.02% commercial and 82.98% recreational, respectively. Also, under **Alternative 1 (No Action)**, the distribution of mutton snapper landings between the South Atlantic and Gulf Councils' jurisdictions is assumed to remain the same as it has been on average from 2005-2009. Analysis adopts the South Atlantic Council SSC's recommendation for ABC that makes adjustments for dead discards and assumes MRFSS landings data from Monroe County are assigned to the Gulf of Mexico. In addition, the analysis assumes the average commercial ex-vessel price per pound for mutton snapper is $2.43 and the estimated recreational willingness to pay per pound for mutton snapper is $10.93 (personal communication, SEFSC).

As can be seen in **Table 4-66**, relative to **Alternative 1 (No Action)**, the greatest losses in gross revenue to the commercial sector of the South Atlantic mutton snapper fishery would accrue under **Alternative 2 (Preferred)**. However, the greatest losses in consumer surplus to the recreational sector occur under **Alternative 3**. Because the losses in consumer surplus under **Alternative 3** exceed the losses in gross revenue under **Alternative 2 (Preferred)**, the greatest economic losses in the South Atlantic mutton snapper fishery would likely accrue under **Alternative 3**. Thus, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 1 (No Action)** relative to **Alternative 2 (Preferred)** and **Alternative 3**. Conversely, participants in the South Atlantic mutton snapper fishery would experience gains in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits under **Alternative 4**. Therefore, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 4** relative to **Alternative 1 (No Action)**, **Alternative 2 (Preferred)** and **Alternative 3**.

Table 4-66. Changes in South Atlantic Commercial Gross Revenue, Recreational Consumer Surplus, and Total Economic Benefits for **Alternatives 2-4** relative to **Alternative 1 (No Action)** under **Action 19**. ACLs are in lbs whole weight. Based on ABC recommendation from South Atlantic Council's SSC. Assumes ACL = ABC.

Alternative	SA ACL	Gulf ACL	SA Commercial ACL	SA Recreational ACL	SA Commercial Gross Revenue	SA Recreational CS	Change in SA Gross Revenue Relative to Alt. 1	Change in SA CS relative to Alt 1	Total Change in Economic Benefits
Alternative 1	970K	184K	165K	805K	$401,338	$8,801,123	$0	$0	$0
Alternative 2 (Preferred)	**927K**	**203K**	**158K**	**769K**	**$383,315**	**$8,403,607**	**-$18,023**	**-$397,516**	**-$415,539**
Alternative 3	893K	237K	152K	741K	$369,209	$8,096,529	-$32,129	-$704,594	-$736,723
Alternative 4	1,130K	0	192K	938K	$467,352	$10,248,777	$66,014	$1,444,654	$1,513,668

4.3.7.3 Social Effects

In establishing jurisdictional allocations for mutton snapper the social effects are similar to those for other species, like yellowtail snapper, within the Comprehensive ACL Amendment. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects, although **Alternative 1 (No Action)** may make management of mutton snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. Furthermore, the social effects of **Alternative 4** would be dependent upon how the South Atlantic Council addresses issues regarding required permits to catch mutton snapper in the Gulf of Mexico and South Atlantic. The allocations based upon **Alternatives 2 (Preferred)** and **3** are close and the social effects would differ minimally between the two. Both alternatives use data from recent years with **Alternative 2 (Preferred)** including older data to account for the historical fishery. The social effects of **Alternatives 2 (Preferred)**, **3**, and **4** would likely be positive in the long term as it would allow for management and accountability based upon regional fishing activities. It becomes problematic in areas like the Florida Keys where fishermen may fish in both jurisdictional areas and management differences could make fishing decisions more complicated. Overall, if management becomes more accountable and fishing thresholds provide stability in harvest the benefits should be positive. It will depend upon the ability to monitor and implement any AMs through each council process over time.

4.3.7.4 Administrative Effects

Alternative 1 (No Action) would retain the current situation and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Under **Alternatives 2 (Preferred)** and **3**, 82% and 79% of the ABC, respectively, would be allocated to the South Atlantic Council. **Alternative 4** could increase the administrative burden if changes are needed to the Federal Gulf Reef Fish and the Federal Snapper Grouper Permits.

4.3.7.5 Council Conclusions

The stock assessment for mutton snapper treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments. The stock assessment was completed in 2008 and concluded that the stock is neither overfished nor undergoing overfishing. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Since mutton snapper are primarily landed off the state of Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils were presented with a suite of alternatives that treated the splitting of Monroe County landings similarly. Both Councils chose as their preferred alternative to establish a jurisdictional allocation based on the following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the following formula: use 50% of the average landings from 1990-2008 + 50% of the average landings from 2006-2008. The concept of this method is to use all available years to determine the split. The catch history was recommended to begin in 1990 when fish identification and sampling methods improved (J. O'Hop, personal communication).

The Snapper Grouper Advisory Panel (AP) and the South Atlantic Council SSC did not review the alternatives for mutton snapper jurisdictional allocations and thus no recommendations were provided to the Council. At its March 2011 meeting, the South Atlantic Council included mutton snapper among those species that would be removed from the FMU. However, Florida later expressed concern over its ability to manage the species into Federal waters, particularly due to difficulty in enforcing regulations for out-of-state vessels. Therefore, in June 2011, the South Atlantic Council voted to retain mutton snapper within the FMU.

The Law Enforcement Advisory Panel (AP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4 Dolphin Wahoo FMP

4.4 Dolphin

Fishery Management Unit

Common dolphin, *Coryphaena hippurus*, and pompano dolphin, *Coryphaena equiselis*, are in the fishery management unit for the FMP for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo FMP). Pompano dolphin are rarely landed, don't reach the minimum size limit for common dolphin, and are included in the landings data for common dolphin. At the September 2009 meeting, the South Atlantic Council directed staff to develop alternatives to designate pompano as an ecosystem component species or consider them a part of a multispecies group for the MSY, OFL, and ABC values.

Pompano dolphin is considered as part of a multispecies group herein. Pompano dolphin are included in the landings of common dolphin and it is the South Atlantic Councils' intent that the MSY, OY, OFL, ABC, ACL, and AM parameters set for common dolphin also include pompano dolphin. Thus it is not necessary, nor possible to specify these parameters separately for pompano dolphin.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added dolphin and wahoo to the fishery management unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; Atlantic Coastal Cooperative Statistics Program (ACCSP) reporting requirements; framework procedure; allowable gear; gear prohibitions in highly migratory species (HMS) closed areas; Essential Fish Habitat (EFH)/EFH-Habitat of Particular Concern (HAPCs); and the fishing year as January 1 through December 31.
2. Prohibited sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
3. Established a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the South Atlantic Council will review the data and evaluate the need for additional regulations, which may be established through the framework.
4. Established a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) allowed a bag limit of 10 dolphin per paying passenger.
5. Established a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield (MSY)

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSY for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million lbs. There is no updated MSY estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSY. Therefore, the existing MSY will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)
The Councils have determined that the MSST for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass (Bcurrent) to biomass at MSY or (1-M)*B_{MSY}, where 1-M (natural mortality) should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass (Bcurrent) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)
Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin Wahoo FMP:
A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} (F30%Static SPR). The most recent recommendation from the South Atlantic Council's SSC stated that OFL for dolphin is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to landings. An ABC = 14,596,216 lbs whole weight was recommended based on the SSC's ABC control rule for unassessed species in April 2011. This ABC value is similar to the value resulting from the guidance provided by the South Atlantic Council that they were comfortable with ABC approximating the mean plus one standard deviation.

Previously, the South Atlantic Council's SSC had provided the following recommendation at their April 2010 meeting: "The existing MSY estimate for dolphin (Prager 2000) applies to the Gulf of Mexico, South Atlantic, and Caribbean regions (i.e., no MSY value specific for the Atlantic stock exists). Therefore, the SSC decided to use landings data to estimate OFL. However, given dolphin's distribution and stock structure the OFL should be based on landings data for the entire Atlantic stock (i.e., not just South Atlantic). The SSC also discussed the decline in recreational landings (the bulk of total dolphin landings) during 2008-2009, which the group thought was strongly influenced by the economic downturn and associated reduction in recreational effort (number of fishing trips). The SSC decided not to use these years for developing the OFL estimate. Other points were also brought up regarding regulations that probably have kept dolphin landings down since 2004. The committee decided to use the period 1994-1997 (Atlantic coast landings data obtained from the Dolphin Wahoo FMP) to calculate average landings as the OFL estimate (OFL = 11,882,898 lbs; the mean was used instead of the median because of the short landings time series)." **(Table 4-67a)**.

The NMFS SEFSC corrected and updated the 1994-1997 data used by the SSC. The South Atlantic Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-67b**). The South Atlantic Council also requested the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 13,709,523.

Table 4-67a. Landings data used by the SSC in April 2010 to develop the OFL value.

Dolphin Landings (whole weight) from Dolphin Wahoo FMP (SAFMC 2003a; Table 8)					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	9,500,580	88%	1,252,553	12%	10,753,133
1995	13,092,212	85%	2,231,787	15%	15,323,999
1996	8,002,144	87%	1,216,682	13%	9,218,826
1997	10,640,713	87%	1,594,920	13%	12,235,633
SSC's	**OFL = Mean 1994-1997**				11,882,898

Table 4-67b. Corrected and updated landings data for use by the SSC to develop the OFL value.

Corrected/Updated Dolphin Landings (whole weight) from SEFSC					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	11,067,791	90%	1,200,064	10%	12,267,855
1995	13,824,090	87%	2,136,532	13%	15,960,622
1996	10,557,938	90%	1,220,769	10%	11,778,707
1997	13,228,677	89%	1,602,230	11%	14,830,907
SSC's	**OFL = Mean 1994-1997**				13,709,523

The South Atlantic Council requested the SSC consider the Gulf of Mexico Council's ABC control rule which would use mean, mean + 0.5 to 2.0 times the SD of the last 10 years landings. During their March 2011 meeting, the South Atlantic Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the South Atlantic Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended that the Gulf of Mexico Council's ABC Control Rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stocks. Their action changed their previous OFL/ABC recommendation for dolphin (and wahoo).

4.4.1 Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin

Alternative 1 (No Action). Do not establish an ABC Control Rule for Dolphin.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule (**Table 4-23**). Note: The Gulf of Mexico Council's Control Rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD. (ABC = 12,795,629 to 15,415,524 lbs whole weight).

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule described in **Table 4-22**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 4-24** and OFL = unknown (currently ABC = 14,596,216 lbs ww).

4.4.1.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for dolphin. For stock and stock complexes required to have an ABC, the NS1 guidelines for the Magnuson-Stevens Act state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 (Preferred) would specify an ABC control rule for dolphin. Under **Alternative 2** the ABC would be equal to the OFL specified by the South Atlantic Council's SSC. The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3** and **4 (Preferred)**. Furthermore, since the South Atlantic Council's SSC indicated at their April 2011 meeting that OFL is unknown, no value for ABC could be provided under **Alternative 2**. The South Atlantic Council indicated at their December 2010 meeting that OFL = ABC was a reasonable alternative given the species is extremely short-lived, extremely productive, reproduces at an early age, and is not vulnerable to overfishing. They reasoned that an appropriate buffer to account for scientific uncertainty could be addressed when setting the ACL (**Action 21**). In contrast to **Alternative 2**, **Alternative 3** would be based on the Gulf of Mexico SSC's ABC control rule, which would account for scientific uncertainty by providing a buffer between ABC and OFL. However, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3 would specify an ABC control rule based on the Gulf of Mexico Council SSC's ABC control rule (**Table 4-23**). As stated, **Alternative 3** would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule: "No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends." For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council's SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in values (12,795,629 to 15,415,524 lbs whole weight; **Table 4-68**) that are similar to the South Atlantic Council SSC's ABC control rule value of 14,596,216 lbs whole weight (**Alternative 4 (Preferred)**). Therefore, the biological effect of **Alternative 3**, which is based on the Gulf of Mexico Council SSC's ABC control rule would be very similar to **Alternative 4 (Preferred)**, which is based on the South Atlantic Council SSC's ABC control rule.

Table 4-68. ABC for dolphin (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009 (Tier 3a of the Gulf of Mexico Council's SSC ABC control rule.
Note: OFL = mean + 2SD = 16,743,471 lbs whole weight.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
11,431,682	12,795,629	14,087,576	15,415,524

Establishing an ABC control rule for dolphin would not directly affect protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.4.1.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 20** are indirect. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from commercial dolphin landings are predicted to total $1,582,000 (**Table 4-69**). This alternative is expected to generate the least dislocation in the short term, but will also likely generate the smallest long-term economic benefits relative to other alternatives. **Alternative 2** sets the ABC equal to the OFL estimated earlier by the South Atlantic Council's SSC (**Table 4-67b**), which may lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**. The potential annual short-term loss to the commercial sector was estimated at $115,000. **Alternative 3** creates a buffer between the ABC and OFL and is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), foregone gross revenue are predicted to decrease. **Table 4-69** shows that the greater the buffer, the greater the potential short-term forgone gross revenue. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a loss of $36,000 in gross revenue whereas the adoption of **Alternative 3** may result in as much as $252,000 in forgone gross revenue if ABC = mean.

Alternative 4 (Preferred) would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule. The adoption of **Alternative 4 (Preferred)** may result in a loss of $78,000 in gross revenue. **Alternative 4 (Preferred)** is the least restrictive of all the alternatives other than **Alternative 1 (No Action)**.

Table 4-69. Predicted ex-vessel gross revenues attributed to dolphin landings after the establishment of an ABC control rule.
Commercial TAC values are based on the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, the preferred ACL formula for dolphin (100% of ABC) in **Action 22**, no commercial sector ACT for dolphin (**Action 23**), and preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Alternative	ABC Control Rule	Ex-vessel gross revenues attributed to landings of dolphin ($)
1 (No Action)		$1,582,000
2	ABC = OFL = 13,709,523 lbs ww	$1,467,000
3	ABC = mean = 11,431,682 lbs ww	$1,330,000
3	ABC = mean + 0.5 SD = 12,795,629 lbs ww	$1,404,000
3	ABC = mean + 1 SD = 14,087,576 lbs ww	$1,480,000
3	ABC = mean + 1.5 SD = 15,415,524 lbs ww	$1,546,000
4 (Preferred)	**ABC_{SSC} = 14,596,216 lbs ww**	**$1,504,000**

If **Alternative 1 (No Action)** is chosen, then the baseline estimate of consumer surplus value for recreational dolphin trips is $141,741,000 using willingness-to-pay estimates from the nested logit (NL) model and $51,081,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-70**).

Alternative 2 sets the ABC equal to the OFL, which leads to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated at $57,151,000 for the NL model and $20,596,000 for the ML model.

Alternative 3 creates a buffer between the ABC and OFL and is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), the potential economic gain to the recreational sector is expected to increase. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a potential gain of $81,900,000 in consumer surplus for the NL model and a gain of $29,516,000 in economic value to the recreational sector for the ML model. Adoption of **Alternative 3** may result in a gain of $24,105,000 in consumer surplus for the NL model and a gain of $8,687,000 in consumer surplus for the ML model if ABC = mean.

Alternative 4 (Preferred) would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of as much as $70,014,000 in consumer surplus for the NL model and a potential gain of $25,232,000 in consumer surplus for the ML model.

Table 4-70. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for dolphin.
Recreational ACL values are based on the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, the preferred ACL formula for dolphin (100% of ABC) in **Action 22**, rec ACT for dolphin (**Action 24**), and preferred minimum size limit (MSL) of 20 in FL in **Action 25**.

Alternative	ABC Control Rule	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 (No Action)		$141,741,000	$51,081,000
2	ABC = OFL = 13,709,523 lbs ww	$198,892,000	$71,677,000
3	ABC = mean = 11,431,682 lbs ww	$165,846,000	$59,768,000
3	ABC = mean + 0.5 SD = 12,795,629 lbs ww	$185,633,000	$66,899,000
3	ABC = mean + 1 SD = 14,087,576 lbs ww	$204,376,000	$73,654,000
3	ABC = mean + 1.5 SD = 15,415,524 lbs ww	$223,642,000	$80,597,000
4 (Preferred)	**ABC_{SSC} = 14,596,216 lbs ww**	**$211,755,000**	**$76,313,000**

4.4.1.3 Social Effects

As with the previous action, setting the biological parameters for harvest thresholds have few direct social effects as they are more indirect from the implementation of the acceptable biological catch and any subsequent reduction. **Alternative 1 (No Action)** does not establish an ABC control rule for dolphin and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur initiating management and rebuilding which might cause more volatility in the fishery which can have negative social effects in both the short term and long term. **Alternative 4 (Preferred)** would use the South Atlantic SSC's control rule. Basing the ABC on the best available science is more likely to have beneficial effects. The combined effect of any of the reductions in harvest levels is likely to have negative social effects, both short term and long term.

4.4.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.4.1.5 Council Conclusions

The SSC's final ABC Control Rule document (**Appendix Q**) states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th *percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.*

The “decision tree” was incorporated into an alternative for the South Atlantic Council’s consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the SSC’s ABC control rule and is prepared to make adjustments as needed in the future. In particular, the South Atlantic Council is aware of various approaches proposed for situations in which only catch data are available. NOAA released a Technical Memorandum in May 2011— *Calculating Acceptable Biological Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* — that presents various methodologies. The SSC intends to review the information included in this document and revise their ABC control rule as needed. Once the SSC finalizes Level 4 of their ABC control rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the SSC finalizes their ABC control rule.

During their April 2011 meeting, the SSC commented on the decline in dolphin landings post 1999-2000 (or thereabouts). They stated that various factors were likely responsible: FMP effect on commercial fishery, impacts of voluntary bag limit and FMP, and recent environmental conditions and impacts on charter and private industries. Also the Florida longline closure was noted as a possible contributing factor. The SSC stated that biological data for this species reportedly show no trend in length composition. The SSC recommended applying the revised unassessed stocks control rule and setting the ABC at the third highest landings value (1999-2008). This value approximates that resulting from South Atlantic Council guidance at their March 2011 meeting (ABC for dolphin and wahoo should approximate the mean plus one standard deviation). The SSC noted other factors affecting their ABC recommendations for this species: the stock is unassessed, current fishery removals are impacted by management, and no measure of the stock biomass relative to landings exists. An assessment for dolphin is scheduled for 2014.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council’s preferred alternative for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.2 Action 21: Specify Allocations for Dolphin

[Note: When considering two sectors (Commercial and Recreational), the Recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (Commercial, Recreational, and For-hire), the Recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the accumulative landings system (ALS), MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.4.2.1 Biological Effects

Alternative 1 (No Action) was implemented through the Dolphin Wahoo FMP, which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic exclusive economic zone (SAFMC 2003a). The Dolphin Wahoo FMP established this allocation as a “soft cap” on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The 13% cap was met in 2009 (**Table 4-71**). The South Atlantic Council’s intent was to monitor the fishery and if commercial landings exceeded the non-binding allocation, determine if additional regulations were necessary. Although the recreational landings have historically greatly exceeded the commercial, this action was taken to prevent the potential future expansion of the commercial fishery. Dolphin is predominantly a recreational fishery, and the South Atlantic Council wanted to maintain this structure.

Table 4-71. Annual landings (pounds whole weight) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	1,046,580	6,157,434	5,208,432	11,365,866	1,046,580	12,412,446	8%	92%
2000	987,623	8,462,750	6,017,689	14,480,440	987,623	15,468,063	6%	94%
2001	764,823	10,006,719	4,420,779	14,427,499	764,823	15,192,322	5%	95%
2002	670,415	6,567,523	7,358,279	13,925,801	670,415	14,596,216	5%	95%
2003	722,921	7,112,286	2,741,572	9,853,858	722,921	10,576,779	7%	93%
2004	856,517	4,452,548	3,779,531	8,232,079	856,517	9,088,596	9%	91%
2005	576,671	4,774,541	4,798,153	9,572,695	576,671	10,149,366	6%	94%
2006	650,004	5,370,256	4,163,860	9,534,116	650,004	10,184,120	6%	94%
2007	967,151	6,300,261	4,136,398	10,436,659	967,151	11,403,810	8%	92%
2008	780,818	4,964,915	3,259,429	8,224,344	780,818	9,005,162	9%	91%
2009	1,135,531	5,672,189	1,844,661	7,516,851	1,135,531	8,652,382	13%	87%

Source: SERO ACL landings database from data provided by SEFSC.

Alternatives 2-4 would modify the allocations specified in the Dolphin Wahoo FMP in favor of the recreational sector. The allocations in **Alternatives 2-4** would essentially be the same. **Alternatives 2 and 3 (Preferred)** would use a different time series of years resulting in allocations of 7% commercial/93% recreational. **Alternative 3 (Preferred)** uses a formula that would equal 50% * average of long catch range (lbs) 1999-2008 + 50% * average of recent catch trend (lbs) 2006-2008 thereby balancing the total time series with more recent data. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred)** would divide the recreational component of the catch into for-hire and private recreational sectors.

There is a small difference in the amount of ACL allocated to the commercial and recreational sectors in **Alternatives 1 (No Action)-4** and therefore, very little difference in the biological effects among the alternatives. **Alternative 1 (No Action),** which would maintain the allocation of 13% commercial/87% recreational, could be considered to have a positive biological effect since it allocates a greater proportion of the ABC to the commercial sector. However, as mentioned previously, **Alternative 1 (No Action)** represents a non-binding allocation. Therefore, **Alternative 3 (Preferred)**, which provides the highest binding allocation to the commercial sector, would be considered to have the greatest biological effect. The biological benefits of **Alternatives 2** and **4** would be slightly less than **Alternative 3 (Preferred)**. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the recreational catch estimates.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely to adversely affect *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-4** are unclear. If the sector allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.4.2.2 Economic Effects

Under **Alternative 1 (No Action)**, assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,582,000. This figure assumes the preferred ACL for dolphin of 14,596,216 lbs ww in **Action 22**. The remaining alternatives would reduce the commercial allocation from 13% to 7% under **Alternative 2** and 7.3% under **Alternative 3 (Preferred)** and **Alternative 4**. The predicted loss in gross revenue due to a 43.8% reduction (i.e., 13% to 7.3%) in allocation as defined by **Alternative 3 (Preferred)** is $78,000 (as well as **Alternative 4**).

Note that this is the same loss associated with establishing the preferred ABC Control Rule in **Action 20**. This is because the simulation model uses the five-year average to estimate future revenue. The largest amount that the industry can earn based on historical data and given the preferred alternatives in the other actions is $1,582,000. However, commercial landings of dolphin by pelagic longliners increased markedly during 2008-2009; therefore, future foregone revenue (i.e., losses) based on the most recent levels of fishing effort would be larger than those currently predicted by the simulation model using data from 2005-2009. The predicted loss in gross revenue due to a 46.2% reduction (i.e., 13% to 7%) in allocation as defined by **Alternative 2** is $105,000.

Table 4-72. Predicted ex-vessel gross revenues attributed to landings of dolphin after the establishment of sector allocations.
Commercial ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**, no commercial sector ACT for dolphin (**Action 23**), and the preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Alternative	Sector Allocation	Ex-vessel gross revenues attributed to landings of dolphin ($)
1 (No Action)	Comm.=13%; Rec.=87%	$1,582,000
2	Comm.=7%; Rec.=93%	$1,477,000
3 (Preferred)	**Comm.=7.3%; Rec.=92.7%**	**$1,504,000**
4	Comm.=7.3%; FH=38.4%; Rec.=54.4%	$1,504,000

Under **Alternative 1 (No Action)**, and assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, then the baseline estimate of consumer surplus value for recreational dolphin trips is $198,735,000 using willingness-to-pay estimates from the nested logit (NL) model and $71,621,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-73**). This figure assumes the preferred ACL for dolphin of 14,596,216 lbs ww in **Action 22**. The remaining alternatives would increase the recreational allocation from 87% to 93% (**Alternative 2**) and 92.7% (**Alternatives 3 (Preferred)** and **4**). **Alternative 4** allocates 41.4% of the recreational allowance to the for-hire sector and 58.7% to the private recreational sector.

The predicted potential gain in aggregate economic value to the recreational sector due to a 6.6% increase (i.e., 87% to 92.7%) in allocation as defined by **Alternative 3 (Preferred)** is $13,021,000 for the NL model and $4,692,000 for the ML model. Using the same willingness-to-pay estimates the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $87,717,000 and $124,266,000, respectively, for the NL model and $31,612,000 and $44,784,000, respectively, for the ML model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g., dolphin) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $37,721,000 under the allocation rule in **Alternative 4**. Using the estimates from Haab et al. (2009) the predicted gain in aggregate economic value to the recreational sector due to a 6.9% increase (i.e., 87% to 93%)

in allocation as defined by **Alternative 2** is $13,706,000 for the NL model and $4,939,000 for the ML model.

Table 4-73. Predicted potential economic value to the recreational sector after the establishment of sector allocations for dolphin.
Recreational ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**.

Alternative	**Sector Allocation**	**Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)**	**Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)**
1 (No Action)	Comm.=13%; Rec.=87%	$198,735,000	$71,621,000
2	Comm.=7%; Rec.=93%	$212,441,000	$76,560,000
3 (Preferred)	**Comm.=7.3%; Rec.=92.7%**	**$211,755,000**	**$76,313,000**
4	Comm.=7.3%; FH=38.4%; Rec.=54.4%	FH-$87,717,000 Rec.-$124,266,000	FH-$31,612,000 Rec.-$44,784,000

4.4.2.3 Social Effects

Sector allocations exist for the recreational and commercial sectors already, **Alternative 1 (No Action)** would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue if a closure were to occur. With **Alternative 2** there would be a decrease in the commercial allocation, which could have some negative social effects, especially if other actions further decreased the harvest thresholds. **Alternative 3 (Preferred)** would also decrease the commercial allocation from the present level. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed and there has been some resistance to further separating the recreational allocation. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

4.4.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations of 13% recreational and 87% commercial. Under any of the proposed alternatives, administrative impacts will occur as allocations will need to be monitored and enforced to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. The administrative impact associated with the proposed alternatives is expected to be similar to the administrative impacts under **Alternative 1 (No Action).** None of the action alternatives are expected to increase the administrative impacts relative to the others.

4.4.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, there are difficulties in coming to terms on the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources since it considers past and present participation, and has chosen to apply it to many of its managed fisheries. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Alternative 3** as their preferred approach to establish allocations for dolphin.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Dolphin Wahoo Advisory Panel (AP) reviewed the alternatives under this action during their April 2011 meeting and recommended an allocation of 90% recreational and 10% commercial. The South Atlantic Council discussed the Dolphin Wahoo AP's recommendation during their June 2011 meeting but chose to remain consistent with the approach that has been used to specify sector allocations for other managed species.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the maximum sustainable yield (MSY) (between 14.1 and 34.9 million lbs).

Alternative 2 (Preferred). ACL = OY =ABC (currently estimated to be 14,596,216 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 lbs ww).

Discussion

The Dolphin Wahoo FMP (SAFMC 2003a) established what is called a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The wording is as follows:

> **ACTION 12**. Establish a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the South Atlantic Council will review the data and evaluate the need for additional regulations, which may be established through the framework.

The Dolphin Wahoo AP initially discussed adding an alternative that would set ACL equal to 65%, 75%, or 85% of 46.5 million lbs (the top end of the current MSY range). The AP could not provide an ACL recommendation at this time given the problems with the landings data. The AP did recommend the South Atlantic Council examine a regional approach to allocating the quotas.

4.4.3.1 Biological Effects

Alternatives 2 (Preferred)-5 would set the OY equal to the ACL or some percentage of the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discuss the relationship between OFL and MSY and ACT (ACL) and OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the OFL is unknown for dolphin, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed OFL level. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternative 1 (No Action), would retain the current regulations established for dolphin, which includes a "soft cap" for the commercial sector of 1.5 million lbs or 13% of total landings, whichever is greater. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACLs, ACTs, and AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing does not occur. Therefore ACLs are in place for dolphin in the form of a soft total allowable catch. However, the South Atlantic Council's SSC has recommended an ABC based on its ABC control rule and this document provides alternatives for ABC. **Alternatives 2 (Preferred)-5** would set the ACL based on the South Atlantic Council's choice of ABC. Therefore, retention of the status quo ACL may not be an appropriate option.

Alternative 3 would set the ACL =OY= 85% of the ABC. The ABC recommended by the South Atlantic Council's SSC is 14,596,216 lbs whole weight. Based on the preferred allocation alternatives in **Action 21**, 7.3% (1,065,524 lbs whole weight) of the ACL would be allocated to the commercial sector and 92.7% (13,530,692 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-74**).

Alternative 3 would have a greater positive biological effect than **Alternative 2 (Preferred)**, because it would create a buffer between the ACL and ABC. **Alternatives 4-5** would have a greater positive biological effect than **Alternative 3,** because they would create a larger buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the South Atlantic Council's preferred ABC control rule are provided in **Table 4-74**. Creating a buffer between the ACL and ABC would provide a greater assurance of preventing overfishing by accounting for scientific uncertainty. Setting a buffer between the ACL and ACT would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. **Action 24** includes a preferred alternative to establish ACTs for the recreational sector.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely to adversely affect *Acropora* species. **Alternatives 2 (Preferred)-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2 (Preferred)-5** will likely be beneficial. Since the ACLs and OYs being considered are less than the current range of OY for dolphin, **Alternatives 2 (Preferred)-5** are likely to reduce the overall amount of effort targeting dolphin. This decrease will likely reduce the likelihood of interactions between the fishery, sea turtles, and smalltooth sawfish. As the proposed ACLs and OYs decrease, the biological benefits to sea turtles and smalltooth sawfish will likely increase.

Table 4-74. ACL formula, ACL, and OY values (lbs whole weight) for dolphin under **Alternatives 2-5**.
Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**14,596,216**	**1,065,524**	**13,530,692**
Alternative 3	85% ABC	12,406,784	905,695	11,501,089
Alternative 4	75% ABC	10,947,162	799,143	10,148,019
Alternative 5	65% ABC	9,487,540	692,590	8,794,950

4.4.3.2 Economic Effects

Under **Alternative 1 (No Action)**, gross revenue derived from dolphin landings is predicted to total $1,582,000 (**Table 4-75**). This alternative is expected to generate the least dislocation in the short term, but will also likely generate the smallest long-term economic benefits relative to other alternatives. **Alternative 2 (Preferred)** sets the ACL/OY equal to the ABC, which leads to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**. The annual short-term loss to the commercial sector was estimated at $78,000. The other alternatives create a buffer between the ACL and the ABC. **Table 4-75** shows that the greater the buffer, the greater the short-term forgone gross revenue. The adoption of **Alternative 3** is expected to result in a loss of $191,000 in gross revenue; whereas, the adoption of **Alternative 4** and **Alternative 5** are anticipated to result in $281,000 and $385,000 in forgone gross revenue, respectively.

Table 4-75. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACL formulas.
Commercial ACL values are based on the preferred ABC for dolphin (14,596,216 lbs ww) in **Action 20**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, no commercial sector ACT for dolphin (**Action 23**), and the preferred MSL of 20 in FL for dolphin in **Action 25**.

Alternative	ACL Formula	Ex-vessel revenue attributed to commercial landings of dolphin
1 (No Action)	No ACL	$1,582,000
2 (Preferred)	**ACL=ABC**	**$1,504,000**
3	ACL=85% of ABC	$1,391,000
4	ACL=75% of ABC	$1,301,000
5	ACL=65% of ABC	$1,197,000

Table 4-76. Predicted potential economic value to the recreational sector for different ACL formulas for dolphin.
Recreational ACL values are based on the preferred ABC for dolphin (14,596,216 lbs ww) in **Action 20** and the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 (No Action)	No ACL	$141,741,000	$51,081,000
2 (Preferred)	**ACL=ABC**	**$211,755,000**	**$76,313,000**
3	ACL=85% of ABC	$179,992,000	$64,866,000
4	ACL=75% of ABC	$158,816,000	$57,235,000
5	ACL=65% of ABC	$137,641,000	$49,604,000

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational dolphin trips is $141,741,000 using willingness-to-pay estimates from the nested logit (NL) model and $51,081,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-76**). **Alternative 2 (Preferred)** sets the ACL equal to the ABC, which leads to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated at $70,014,000 for the NL model and $25,232,000 for the ML model.

Alternative 3 creates a buffer between the ACL and the ABC. **Table 4-76** shows that the greater the buffer, the lower the estimate of aggregate consumer surplus. The adoption of **Alternative 3** is expected to result in a gain of $38,251,000 in consumer surplus for the NL model and a gain of $13,785,000 in consumer surplus for the ML model. **Alternative 4** is expected to result in a gain of $17,075,000 in consumer surplus for the NL model and a gain of $6,154,000 in consumer surplus for the ML model. However, the adoption of **Alternative 5** is anticipated to result in a loss of $4,100,000 in consumer surplus for the NL model and a loss of $1,477,000 in economic value to the recreational sector for the ML model.

4.4.3.3 Social Effects

Establishing an ACL for dolphin will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 1 (No Action)**, **2 (Preferred)**, **3**, or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. Under **Alternative 1 (No Action)** there would likely be few direct social effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. **Alternative 3** would be less restrictive than the **Alternatives 4 and 5** and more restrictive than **Alternative 1**

(No Action). In choosing **Alternative 2 (Preferred)** there may be fewer negative social effects as any further buffers imposed would not be on top of a previous buffer between ABC and ACL.

4.4.3.4 Administrative Effects

The specification of ACL/OY is a procedural exercise. Although ACL/OY can have implications on management actions, no specific management actions are required through the specification of ACL/OY. The administrative impacts of specifying ACL/OY are minimal and would not differ much between the proposed alternatives.

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and AMs would likely increase. Other administrative burdens that may result from any of the action alternatives would take the form of development and dissemination of outreach and education materials for fishery participants.

4.4.3.5 Council Conclusions

The OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment (dolphin included), however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 23** and **24** for dolphin). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Dolphin Wahoo Advisory Panel (AP) recommended the South Atlantic Council chose **Alternative 2** as their preferred.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin

Alternative 1 (No Action). Do not specify commercial sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Alternative 2. Specify commercial sector ACTs for dolphin.

- **Subalternative 2a (Preferred).** Do not specify a commercial sector ACT.
- **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
- **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Table 4-77. The commercial sector ACT for each of the alternatives.
Values are in lbs gutted weight.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Subalt. 2a (Preferred); No ACT	ACT Subalt. 2b; ACT=90%(ACL)	ACT Subalt. 2c; ACT=80%(ACL)
Dolphin	1,065,524	N/A	958,972	852,419

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

4.4.4.1 Biological Effects

Currently, there are only size limits, trip limits, and bag limits in place to restrict harvest of dolphin in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the South Atlantic Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult. The challenges associated with monitoring in-season harvest often lead to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded.

Overall, the most biologically conservative approach to specifying AMs for dolphin would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of dolphin are reported through dealer trip tickets, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded, would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL. **Alternative 3 (Preferred)** would remove the incentive to target dolphin on commercial trips since all purchase and sale would be prohibited once the ACL is met. This alternative would also still allow some level of harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of dolphin.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting dolphin for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.4.4.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,504,000. This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in

Actions 20-22. If the South Atlantic Council would have specified a commercial sector ACT, then the commercial sector would have forgone gross revenue in the future, if management measures enforcing the ACT are implemented, ranging from $83,000 for **Subalternative 2b** to $161,000 for **Subalternative 2c** due to specification of the ACT (**Table 4-78**).

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run, but still be bound by the figures in **Table 4-76**, since this alternative is intended to prevent the commercial sector from harvesting dolphin in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could adversely affect the stock.

Alternative 4 calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative would likely generate adverse short-term economic effects (i.e., lower short-term gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-term economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-78. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACT formulas.
Commercial ACL values are based on the preferred ACL for dolphin (1,065,524 lbs ww) in **Action 22**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, and the preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Subalternative	**ACT Formula**	**Ex-vessel gross revenue attributed to commercial landings of dolphin ($)**
1 and **2a (Preferred)**	**No ACT**	**$1,504,000**
2b	90% ACL	$1,421,000
2c	80% ACL	$1,343,000

4.4.4.3 Social Effects

There would likely be few negative social effects from the **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or AMs. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** would impose reductions of 90% of ACL and 80% of ACL, respectively. In both cases the reductions could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because dolphin are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

4.4.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4** would be expected to have similar administrative impacts.

4.4.4.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial component of the dolphin fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT (**Subalternative 2a, Preferred**). Quota monitoring in the commercial fishery and the AMs the Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of dolphin in quantities exceeding the ACL, and thus provide a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. The South Atlantic Council saw no need to put in place measures to correct for an ACL overage post-season. The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Dolphin Wahoo Advisory Panel (AP) did not support the South Atlantic Council's preferred approach to setting commercial AMs for dolphin. Instead, the Dolphin Wahoo AP recommended developing a method of notifying the sector (commercial, for-hire, and private recreational) when 90% of their quota is being met.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin

Alternative 1 (No Action). Do not specify new recreational AMs for dolphin.

Decision 1. Specify an ACT?

Subalternative 2. Specify an ACT.

- **Subalternative 2a**. Do not specify an ACT.
- **Subalternative 2b.** The ACT equals 85% of the ACL.
- **Subalternative 2c.** The ACT equals 75% of the ACL.
- **Subalternative 2d (Preferred).** The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 3-year average (7.0).

Table 4-79. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Dolphin	8.5	7.6	26.6	16.4	17.5	15.6	9.9	14.3	17.2

Note: The South Atlantic Council decided to use the 3-year average PSE because this better represented recent catches than the 5-year average.

Table 4-80. The recreational ACT for dolphin for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Dolphin	13,530,692	11,501,088	10,148,019	11,595,803

Average recreational landings for 2005-2009 from **Table 4-71** = 9,056,933 lbs ww.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the _annual landings_ exceed the ACL in a given year.

Subalternative 3c. If the _mean landings_ for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the _modified mean landings_ exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% _confidence interval_ estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] _Start the clock over._ In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For

2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. _Monitor following year._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). _Monitor following year and shorten season as necessary._ If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. _Monitor following year and reduce bag limit as necessary._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. _Shorten following season._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. _Reduce bag limit._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5h. _Payback._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.4.5.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for dolphin and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 22**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL (**Tables 4-79** and **4-80**). **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Tables 4-79** and **4-80**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-79**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternatives 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have been regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting dolphin for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.4.5.2 Economic Effects

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus for recreational dolphin trips is $211,755,000 using willingness-to-pay estimates from the nested logit (NL) model and $76,313,000 using willingness-to-pay estimates from the mixed logit (ML) model. Since the South Atlantic Council specified a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to a potential marginal decrease in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)** and **Subalternative 2a**. The potential annual short-term loss to the recreational sector was estimated at $31,763,000 for the NL model and $11,447,000 for the ML model. **Subalternative 2d (Preferred)** leads to the most loss in consumer surplus resulting in potential annual short-term loss to the recreational sector of $57,502,000 for the NL model and $20,723,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Table 4-81. Predicted potential economic value to the recreational sector for different ACT formulas for dolphin.
Recreational ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22** and the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**.

Subalternative	ACT Formula	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 and 2a	No ACT	$211,755,000	$76,313,000
2b	85% ACL	$179,992,000	$64,866,000
2c	75% ACL	$158,816,000	$57,235,000
2d (Preferred)	**ACT equals [sector ACL *(1-PSE)] or [ACL*0.5], whichever is greater**	**$154,253,000**	**$55,590,000**

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)-3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. Assuming these same relative probabilities apply to dolphin, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternatives 3c** and **3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AMs and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternatives 5d (Preferred)** and **5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be less than under **Subalternative 5d (Preferred)** in the short term.

Under **Subalternatives 5f** and **5g**, a post-season AM (i.e., reducing the length of the fishing season or the bag limit) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c, 5d (Preferred)**, and **5e.** Because the probability that a post-season AM will be required is greater under **Subalternatives 5f** and **5g** relative to **Subalternatives 5c, 5d (Preferred)**, and **5e**, the expected adverse indirect economic effects resulting from **Subalternatives 5f** and **5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred)**, and **5e** in the short-term. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g (Preferred)** in the short term**.**

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternative 5f** or **Subalternative 5g**. The payback that would be implemented under **Subalternative 5h** would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year and **Subalternative 5g** alone would not since it reduces the bag limit rather than recreational sector ACL in the following year.

4.4.5.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for dolphin recreational sector which may have few negative social effects as there are measures in place through previous management actions. No ACT would be established through **Subalternative 2a**, which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is less restrictive than **Subalternatives 2b** and **2c**.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM which could have beneficial social effects as there would be no closure when the ACL is projected to be met as there is in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended through such action. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5h** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.4.5.4 Administrative Effects

Under **Action 24**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** (and associated subalternatives) to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.4.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assess the AM alternatives for the recreational sector. First, the South Atlantic Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the South Atlantic Council determined the approach to decide whether or not an ACL overage has occurred. Next, the South Atlantic Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The South Atlantic Council reasoned that the level of management uncertainty for the recreational component of the dolphin fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would further account for uncertainty in the recreational estimates. Hence the South Atlantic Council concluded that **Subalternative 2d (Preferred)**, best met the need to account for management uncertainty in the recreational dolphin fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in a particular fishery.

The South Atlantic Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings were greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings were greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the South Atlantic Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data after each two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for the recreational sector. Therefore, the South Atlantic Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Dolphin Wahoo Advisory Panel (AP) did not support the South Atlantic Council's preferred alternatives for recreational AMs. Instead, the Dolphin Wahoo AP recommended that the South Atlantic Council modify their proposed approach to only adjust bag limits and deduct overages if the total ACL (commercial and recreational) is exceeded. The South Atlantic Council discussed this approach during their June 2011 meeting. However, given that this was not among the alternatives that had been analyzed, the South Atlantic Council could not consider it. However, the South Atlantic Council intends to evaluate this approach further and determine its applicability.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.6 Action 25: Establish Management Measures for Dolphin

Note: The South Atlantic Council's preferred recreational ACT does not require a reduction in harvest based on 2005-2009 average recreational catch; in fact, the average catch (9,056,933 lbs whole weight; 2005-2009) is 22% below the recreational ACT (11,595,803 lbs whole weight; **Table 4-82**). The commercial sector will be closed when the commercial ACL is met or projected to be met.

Alternative 1 (No Action). Retain current management regulations.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught dolphin in or from the Atlantic EEZ is prohibited. For-hire vessels possessing the necessary state and federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
- Commercial soft cap of 1.5 million lbs or 13% of total landings, whichever is greater.
- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches fork length off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches fork length; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.
- Allowable gear is specified.
- For a commercial permitted vessel fishing north of 39^{o}N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels.
Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.

Alternative 4. Establish a minimum size limit of 20 inches fork length from Florida through New England.

Alternative 5. Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.

Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 lbs with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.
Subalternative 7b. Establish a 5,000 pound trip limit.
Subalternative 7c. Establish a 4,000 pound trip limit.
Subalternative 7d. Establish a 3,000 pound trip limit.
Subalternative 7e. Establish a 2,000 pound trip limit.
Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person.

Table 4-82. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

						Formula	%Recreational Reduction from various time periods		
Dolphin	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL(7.3%)**	**Rec ACL(92.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**
SSC ABC Control Rule	Unknown	14,596,216	14,596,216	1,065,524	13,530,692	11,595,803	-22%	-23%	-23%
GMFMC Tier 3a*	16,743,471	15,415,524	15,415,524	1,125,333	14,290,191	12,246,693	-26%	-27%	-27%
Mean + 1.0 Std.Dev.		14,087,576	14,087,576	1,028,393	13,059,183	11,191,720	-19%	-20%	-20%
Mean + 0.5 Std.Dev.		12,759,629	12,759,629	931,453	11,828,176	10,136,747	-11%	-12%	-12%
Mean		11,431,682	11,431,682	834,513	10,597,169	9,081,774	0%	-2%	-2%
Average landings for time period from **Table 4-71**.							9,056,933	8,927,993	8,919,457

*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.

4.4.6.1 Biological Effects

Alternative 1 (No Action) would retain the current regulations for dolphin. These regulations include: A "soft cap" on the commercial sector, which requires a review of the data and a determination whether action is necessary but does not close the fishery; a prohibition on the sale of recreationally caught dolphin in or from the Atlantic EEZ except for for-hire vessels that possess the necessary state and federal commercial permits; a 10 fish per day bag limit for dolphin, which cannot exceed 60 dolphin per boat per day, except on headboats; and a 20 inch fork length (FL) minimum size limit off Florida and Georgia. There is no minimum size limit north of Georgia.

Prager (2000) conducted the first comprehensive exploratory stock assessment for dolphin based on landings from the U.S. Atlantic and Gulf of Mexico. In the South Atlantic, dolphin is not overfished and is not experiencing overfishing. Dolphin grow very rapidly attaining 40 lbs in 12 months and reach sexual maturity by 3 to 4 months of age. They spawn intermittently year-round throughout their 4-year life span. The life history of dolphin and estimates generated by Prager (2000) suggest the species may be able to withstand a relatively high rate of exploitation.

Dolphin is neither overfished nor experiencing overfishing, and average catch in recent years is less than the South Atlantic Council's preferred alternatives for recreational ACL and ACT specified in **Actions 23** and **24**. At their April 2011 meeting, the South Atlantic Council's SSC indicated OFL is unknown for dolphin and recommended an ABC = 14,596,216 lbs whole weight based on their ABC control rule. Based on average data from 1999-2009 or 2005-2009, the commercial ACL of 1,065,524 lbs whole weight would not be met and a commercial closure would not occur. However, commercial catches in 2009 (**Table 4-71**) were slightly above the commercial ACL. For the recreational sector, no reduction in average 2005-2009 recreational landings (9,056,933 lbs whole weight) would be needed to ensure the recreational ACT (**Action 24**) was not exceeded (ACT = 11,595,803 lbs whole weight) (**Table 4-82**). The AMs under **Actions 23** and **24** include alternatives such as closing the sector when landings approach an ACL to ensure overfishing does not occur. The South Atlantic Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded and perhaps prevent seasonal closures.

Alternatives 2-8 would all be expected to have positive biological effects. **Alternative 2 (Preferred)** would prohibit bag limit sales of dolphin from for-hire vessels. Currently, for-hire fishermen who possess the necessary state and federal permits can sell bag limit quantities of dolphin. With the possibility of more restrictive catch limits for dolphin being imposed on recreational and commercial fishermen, the South Atlantic Council is concerned that when for-hire fishermen sell their catch to dealers, catch will be counted toward the commercial quota resulting in early filling of commercial ACL. In addition, sales of bag limit fish may result in double counting if catches are reported through the MRFSS/MRIP and through commercial dealers. Therefore, the South Atlantic Council is considering an alternative to prohibit the sale of bag limit caught dolphin from for-hire vessels. The intent of this action is to ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Alternative 3 (Preferred) would establish a minimum size limit of 20 inches FL from Florida through South Carolina. The current minimum size limit is 20 inches FL off Florida and Georgia but there is not a minimum size limit north of Georgia. Among sectors, the average size of dolphin landed by state is smallest for headboat fishermen. Among states, the average size of dolphin landed is largest for South Carolina. Length data are not available for all sectors north of North Carolina (**Table 4-83**)

Table 4-83. Average size (inches FL) of dolphin landed by state during 2004-2008.

State	Comm	HB	Private	Charter
FL	28.2	23.4	26.6	26.8
GA*	28.9	28.2	-	26.6
SC	33.7	27.5	31.0	32.0
NC	27.9	24.1	28.4	29.1
VA	-	-	-	25.4
MD	-	-	33.2	22.5
DE	-	-	21.7	26.3
NJ	-	-	18.4	22.5
NY	-	-	22.8	-

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

A small percentage of dolphin less than 20 inches FL are landed in South Carolina (**Table 4-84**). Based on the proportion of landings in the different sectors, establishing a 20-inch FL minimum size limit for dolphin landed in South Carolina would be expected to reduce total harvest of dolphin by 1.4%. The overall reduction in total kill would be less when release mortality is considered. There are currently no estimates of release mortality for dolphin. However, since dolphin are caught at the surface, release mortality would likely be low and a function of hooking injuries and effects of handling when removing the hook.

Table 4-84. Percentage of dolphin less than 20 inches FL for Florida, Georgia, South Carolina, and North Carolina during 2004-2008.
Length data are not available for areas north of North Carolina for all sectors.

State	Comm	HB	Private	Charter
FL	3.06%	14.04%	7.24%	5.37%
GA*	0.00%	0.00%	0.00%	5.26%
SC	1.07%	8.70%	0.00%	5.06%
NC	10.87%	16.07%	3.96%	2.85%
total	5.66%	13.19%	6.07%	3.26%

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

Alternative 4 would increase the minimum size limit for Florida through New England to 20 inches FL. Data are not available for areas north of North Carolina for all sectors and a 20-inch FL size limit is already in place for Florida and Georgia. Establishing a 20-inch FL size limit for dolphin in South Carolina and North Carolina would be expected to reduce harvest of dolphin by about 5% (**Table 4-85a**). A minimum size limit of 21 inches FL would provide about a 14% reduction in harvest. No reduction is needed based on average recreational landings during 2005-2009.

Table 4-85a. Reduction in harvest provided by establishing a minimum size limit in South Carolina and North Carolina of 20 inches FL or greater based on data from 2004-2008.

Sector	20 inch limit	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	11.23	15.78	20.69	25.53	28.66
Headboat	15.11	21.58	25.90	30.22	33.09
Private	5.84	14.81	21.69	31.56	34.55
Charter	4.56	10.85	17.13	27.73	32.73
All sectors	5.39	14.11	21.43	32.98	37.98
Rec sector	4.98	12.03	18.46	28.82	33.25

Alternative 5 would increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches FL. Among all sectors combined, an increase in the minimum size limit from 20 inches FL to 22 inches FL would be expected to reduce harvest by about 17% (**Table 4-85b**) and would provide more than needed to ensure the recreational ACT would not be exceeded. This value assumes the same amount of non-compliance with the size limit would continue with a change in the minimum size limit. Increasing the minimum size limit to 24 inches FL would be expected to provide a 35% reduction in harvest among all sectors off of Florida and Georgia and therefore would have a greater biological effect than increasing the size limit to 22 inches FL.

Table 4-85b. Reduction in harvest provided by increasing the minimum size limit for dolphin in Florida and Georgia from 20 inches FL based on data from 2004-2008.
Analyses take into consideration non-compliance with the 20-inch FL minimum size limit.

Sector	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	5.43	12.05	18.83	24.74
Headboat	9.88	19.73	28.38	36.31
Private	7.94	17.24	26.37	35.97
Charter	7.96	17.01	26.49	36.13
All sectors	7.72	16.75	25.70	34.96
Rec sector	7.94	17.19	26.35	35.94

Alternative 6 would reduce the boat limit for private and charter recreational fishermen from a maximum of 60 fish per vessel to a maximum of 45 fish per vessel in **Subalternative 6a**, 40 fish per vessel in **Subalternative 6b**, and 30 fish in **Subalternative 6c**. Proposed reductions in the vessel limit would reduce harvest of dolphin by 6% to 18% (**Table 4-86**).

Table 4-86. Reduction in harvest of dolphin for Atlantic states provided by a reduction in the vessel limit.

	Charter	Private	All
Vessel limit	Reduction	Reduction	Reduction
50	3.88	0	3.14
45	7.39	0	5.99
40	10.85	0	8.80
35	16.91	0.12	13.74
30	22.4	0.4	18.24
25	29.67	1.06	24.27
20	37.4	2.29	30.77
15	46.94	4.57	38.94
10	57.73	9.29	48.58
9	60.54	11.24	51.23
8	63.29	13.41	53.87
7	66.31	16.2	56.84
6	69.5	19.68	60.09
5	72.99	24.09	63.76
4	76.78	29.68	67.88
3	81.07	37.06	72.76
2	86.04	48	78.86
1	92.01	65.68	87.03

Alternative 7 would establish a commercial trip limit for dolphin. **Subalternative 7a** would establish a 3,000 pound trip limit for dolphin north of 31° N. latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia). A 3,000 pound gutted weight trip limit would be expected to reduce harvest north of 31° N. latitude by about 3.6% (**Table 4-87**), and a 1,000 pound gutted weight trip limit would

reduce harvest of dolphin by about 31% for areas south of 31° N. Latitude (**Table 4-88**). **Subalternatives 7b-7f** would establish a trip limit for dolphin throughout the South Atlantic ranging from 5,000 lbs gutted weight (**Subalternative 7b**) to 1,000 lbs (**Subalternative 7f**). The trip limit of 5,000 lbs gutted weight proposed in **Subalternative 7b** would do little to reduce harvest of dolphin (**Table 4-88**). The greatest biological effect among the trip limit subalternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in dolphin harvest for all areas (**Table 4-89**).

Table 4-87. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from Georgia, South Carolina, and North Carolina (North of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	848.0	85,522	0	100.0%	100.0%
23	463.5	69,152	16,370	54.7%	80.9%
45	299.0	59,948	25,574	35.3%	70.1%
68	223.8	53,516	32,006	26.4%	62.6%
90	171.0	48,614	36,908	20.2%	56.8%
104	147.0	46,235	39,286	17.3%	54.1%
135	109.0	41,730	43,791	12.9%	48.8%
158	98.3	39,140	46,382	11.6%	45.8%
180	82.3	36,899	48,623	9.7%	43.1%
225	61.5	33,389	52,133	7.3%	39.0%
270	46.5	30,780	54,742	5.5%	36.0%
450	21.0	24,192	61,330	2.5%	28.3%
541	17.3	22,275	63,246	2.0%	26.0%
631	13.8	20,736	64,786	1.6%	24.2%
721	13.3	19,382	66,139	1.6%	22.7%
811	11.5	18,136	67,386	1.4%	21.2%
901	11.0	17,029	68,492	1.3%	19.9%
991	10.5	15,968	69,554	1.2%	18.7%
1,081	9.5	14,967	70,554	1.1%	17.5%
1,171	9.3	14,040	71,482	1.1%	16.4%
1,261	9.0	13,127	72,395	1.1%	15.3%
1,351	8.8	12,249	73,273	1.0%	14.3%
1,441	8.3	11,389	74,133	1.0%	13.3%
1,532	7.5	10,618	74,904	0.9%	12.4%
1,622	7.3	9,884	75,638	0.9%	11.6%
1,712	6.3	9,227	76,295	0.7%	10.8%
1,802	6.0	8,623	76,899	0.7%	10.1%
2,027	5.3	7,173	78,349	0.6%	8.4%
2,252	4.5	5,985	79,537	0.5%	7.0%
2,477	4.0	4,921	80,601	0.5%	5.8%
2,703	3.8	3,928	81,594	0.4%	4.6%
2,928	3.5	3,049	82,472	0.4%	3.6%
3,153	1.8	2,319	83,202	0.2%	2.7%
3,378	1.8	1,882	83,640	0.2%	2.2%

Table 4-87. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
3,604	1.3	1,510	84,012	0.1%	1.8%
3,829	1.3	1,197	84,325	0.1%	1.4%
4,054	1.0	892	84,630	0.1%	1.0%
4,279	1.0	642	84,880	0.1%	0.8%
4,505	0.8	412	85,110	0.1%	0.5%
4,730	0.5	250	85,272	0.1%	0.3%
4,955	0.5	125	85,397	0.1%	0.1%

Table 4-88. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east Florida (South of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	1,308.3	137,484	0	100.0%	100.0%
23	681.3	112,830	24,654	52.1%	82.1%
45	453.5	99,069	38,415	34.7%	72.1%
68	337.3	89,253	48,231	25.8%	64.9%
90	261.3	81,811	55,673	20.0%	59.5%
104	225.8	78,160	59,324	17.3%	56.9%
135	161.5	71,555	65,929	12.3%	52.0%
158	138.5	67,785	69,699	10.6%	49.3%
180	110.8	64,691	72,793	8.5%	47.1%
225	79.3	59,947	77,537	6.1%	43.6%
270	60.8	56,504	80,980	4.6%	41.1%
450	20.0	49,172	88,312	1.5%	35.8%
541	15.0	47,439	90,046	1.1%	34.5%
631	12.5	46,088	91,396	1.0%	33.5%
721	10.8	44,921	92,563	0.8%	32.7%
811	9.8	43,900	93,584	0.7%	31.9%
901	8.0	43,011	94,474	0.6%	31.3%
991	8.0	42,211	95,274	0.6%	30.7%
1,081	7.5	41,417	96,068	0.6%	30.1%
1,171	7.5	40,667	96,818	0.6%	29.6%
1,261	7.5	39,917	97,568	0.6%	29.0%
1,351	7.3	39,191	98,294	0.6%	28.5%
1,441	7.0	38,475	99,010	0.5%	28.0%
1,532	6.8	37,780	99,705	0.5%	27.5%
1,622	6.8	37,105	100,380	0.5%	27.0%
1,712	6.5	36,450	101,034	0.5%	26.5%
1,802	6.3	35,820	101,664	0.5%	26.1%
2,027	5.8	34,363	103,121	0.4%	25.0%
2,252	5.5	32,947	104,537	0.4%	24.0%

Table 4-88. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
2,477	5.0	31,627	105,857	0.4%	23.0%
2,703	5.0	30,377	107,107	0.4%	22.1%
2,928	4.8	29,128	108,356	0.4%	21.2%
3,153	4.5	27,991	109,493	0.3%	20.4%
3,378	4.3	26,914	110,570	0.3%	19.6%
3,604	4.0	25,889	111,595	0.3%	18.8%
3,829	4.0	24,889	112,595	0.3%	18.1%
4,054	4.0	23,889	113,595	0.3%	17.4%
4,279	4.0	22,889	114,595	0.3%	16.6%
4,505	4.0	21,889	115,595	0.3%	15.9%
4,730	4.0	20,889	116,595	0.3%	15.2%
4,955	4.0	19,889	117,595	0.3%	14.5%

Table 4-89. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east FL to NC during 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expecte d catch	% trips over limit	% reduction in catch from limit
0	2,183.0	226,587	0	100.0%	100.0%
23	1,164.8	184,987	41,600	53.4%	81.6%
45	767.0	161,592	64,996	35.1%	71.3%
68	574.3	144,985	81,602	26.3%	64.0%
90	442.3	132,349	94,238	20.3%	58.4%
104	382.5	126,173	100,414	17.5%	55.7%
135	278.8	114,729	111,858	12.8%	50.6%
158	243.3	108,188	118,399	11.1%	47.7%
180	198.3	102,704	123,883	9.1%	45.3%
225	144.5	94,213	132,375	6.6%	41.6%
270	110.5	87,983	138,604	5.1%	38.8%
450	42.5	73,627	152,961	1.9%	32.5%
541	33.0	69,854	156,733	1.5%	30.8%
631	26.8	66,895	159,692	1.2%	29.5%
721	24.3	64,335	162,252	1.1%	28.4%
811	21.5	62,044	164,543	1.0%	27.4%
901	19.0	60,040	166,547	0.9%	26.5%
991	18.5	58,179	168,409	0.8%	25.7%
1,081	17.0	56,384	170,203	0.8%	24.9%
1,171	16.8	54,706	171,881	0.8%	24.1%
1,261	16.5	53,043	173,544	0.8%	23.4%
1,351	16.0	51,440	175,148	0.7%	22.7%
1,441	15.3	49,864	176,724	0.7%	22.0%
1,532	14.3	48,398	178,190	0.7%	21.4%

Table 4-89. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expecte d catch	% trips over limit	% reduction in catch from limit
1,622	14.0	46,989	179,599	0.6%	20.7%
1,712	12.8	45,677	180,911	0.6%	20.2%
1,802	12.3	44,443	182,145	0.6%	19.6%
2,027	11.0	41,536	185,052	0.5%	18.3%
2,252	10.0	38,932	187,655	0.5%	17.2%
2,477	9.0	36,548	190,039	0.4%	16.1%
2,703	8.8	34,304	192,283	0.4%	15.1%
2,928	8.3	32,178	194,410	0.4%	14.2%
3,153	6.3	30,310	196,277	0.3%	13.4%
3,378	6.0	28,796	197,791	0.3%	12.7%
3,604	5.3	27,398	199,189	0.2%	12.1%
3,829	5.3	26,086	200,501	0.2%	11.5%
4,054	5.0	24,780	201,807	0.2%	10.9%
4,279	5.0	23,530	203,057	0.2%	10.4%
4,505	4.8	22,300	204,287	0.2%	9.8%
4,730	4.5	21,138	205,449	0.2%	9.3%
4,955	4.5	20,013	206,574	0.2%	8.8%

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. Based on average 2005-2009 recreational landings, no reduction would be needed to ensure the recreational ACT was not exceeded. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person but not as a preferred alternative. Based on data from the South Atlantic during 2007-2009 (**Table 4-90**), a 9-fish bag limit would reduce catches by 2%.

Table 4-90. Reduction in harvest of dolphin provided by reduction in the bag limit. Based on data from NC to FL during 2007-2009.

Bag Limit	Headboat	Charter	Private	All sectors
10	0%	0%	0%	0.0%
9	0%	5%	1%	2.2%
8	0%	8%	2%	3.8%
7	0%	13%	3%	6.2%
6	1%	18%	5%	9.4%
5	1%	25%	7%	13.3%
4	2%	34%	11%	18.6%
3	4%	44%	17%	26.0%
2	7%	57%	26%	36.4%
1	15%	74%	45%	54.6%

In August 2009, the Dolphin Wahoo AP recommended **Alternative 1 (No Action)** at this time because there is no problem identified that needs to be addressed. The Dolphin Wahoo AP recognized that this would need to be revisited once the South Atlantic Council's SSC had provided their OFL and ABC recommendations. In April 2011, the South Atlantic Council's

SSC indicated OFL was unknown for dolphin and recommended an ABC = 14,596,216 lbs whole weight. Based on the SSC's recommended ABC, the average recreational catch (9,056,933 lbs whole weight; 2005-09) is 22% below the South Atlantic Council's preferred alternative for a recreational ACT (11,595,803lbs whole weight) and average commercial landings (822,035 lbs whole weight; 2005-09) are 23% below the South Atlantic Council's preferred alternative for a commercial ACL (1,065,524 lbs whole weight).

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-8** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-8** and the associated subalternatives are unclear. If the management measures perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.4.6.2 Economic Effects

Under **Alternative 1 (No Action),** regarding minimum size limits, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,517,000 (**Table 4-91**). **Alternative 3 (Preferred)** proposes increasing the minimum size limit of commercial landings of dolphin in South Carolina resulting in predicted gross revenue of $1,504,000 (i.e. $13,000 in foregone revenue due to the minimum size limit only). This figure corresponds to the amount of gross revenue predicted under the preferred alternatives in **Actions 20-23**. The percentage of commercially landed dolphin less than 20 inches FL for South Carolina is 1.07% (**Table 4-84**). It is assumed this means the reduction in harvests off South Carolina provided by establishing the commercial minimum size limit proposed in **Alternative 3 (Preferred)** would also be 1.07%. This is an important assumption as this alternative is used as a fixed parameter when analyzing the other actions relating to dolphin in the Comprehensive ACL Amendment.

Alternative 4 proposes increasing the minimum size limit from Florida to New England. Since the minimum size length in Florida and Georgia is already 20 inches FL, landings of dolphin in these states would be unaffected. However, updated data suggests that harvest of dolphin in South Carolina and North Carolina would be reduced by 11.23% (**Table 4-84**). In light of this information the simulation model predicts that the commercial sector would lose $107,000 in gross revenue due to the implementation of **Alternative 4**.

Alternative 5 contains two minimum size subalternatives, **5a** (22 inches fork length) and **5b** (24 inches fork length). These subalternatives would result in foregone ex-vessel gross revenue of $116,000 and $309,000, respectively (**Table 4-91**).

Alternative 7 presents several subalternative trip limits ranging from 1,000 lbs to 5,000 lbs throughout the Atlantic EEZ (South Atlantic through New England), with one subalternative proposing regional trip limits (**Subalternative 7a**). The estimated effects assume the minimum size limit under **Alternative 3 (Preferred)** is in effect. The least restrictive of the trip limits is 5,000 lbs (**Subalternative 7b**) and would result in foregone commercial gross revenue of $318,000. The most restrictive of the trip limits is 1,000 lbs (**Subalternative 7f**) and would result in foregone gross revenue in the order of $799,000. The regional trip limit (**Subalternative 7a**) would result in foregone gross revenue of $581,000. The majority of the financial burden of trip limits for the dolphin fishery would fall on participants that employ pelagic longline gear, especially in North Carolina.

Pelagic longline trips that target dolphin can be categorized as directed dolphin or directed HMS where dolphin is landed as bycatch. The pelagic longline trips that directly target dolphin usually land their catch in North Carolina and take place during the summer months. It is likely that these fishers could adapt their fishing behavior in response to trip limits by taking more trips to sustain current revenue streams. The simulation model does not account for this possibility. Information about trip costs (especially fuel costs) would be useful to estimate the economic impact of trip limits on these operations. These trips have been sampled for expense reporting over the last couple of years; however, not enough information has been collected to this date to reliably estimate the cost structure of these trips.

Pelagic longline trips that target HMS species such as swordfish and sharks may also land dolphin as bycatch. If trip limits were to affect these operations we assume that the trips would go on as usual after the trip limit was reached. Less gear and bait may be used if trip limits altered targeting behavior for dolphin; however, the most significant economic impact would be the foregone revenue from discarded dolphin, which is considered in the simulation model.

Table 4-91. Predicted ex-vessel gross revenues attributed to commercial landings of dolphin after establishment of management measures for dolphin.
Commercial ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, and no commercial sector ACT for dolphin (**Action 23**). Commercial trip limits were analyzed with the preferred minimum size limit (MSL) for dolphin as defined by **Alternative 3** in **Action 25**.

Alternative	Management Measure	Ex-vessel gross revenue attributed to commercial landings of dolphin ($)
1 (No Action)		$1,517,000
3 (Preferred)	**MSL 20 in. FL through SC**	**$1,504,000**
4	MSL 20 in FL from FL through New Eng	$1,410,000
5a	MSL 22 in FL for FL and GA	$1,401,000
5b	MSL 24 in FL for FL and GA	$1,208,000
7a	3,000 lb trip limit north of 31° N 1,000 lb trip limit south of 31° N	$923,000
7b	5,000 lb trip limit	$1,186,000
7c	4,000 lb trip limit	$1,115,000
7d	3,000 lb trip limit	$1,023,000
7e	2,000 lb trip limit	$892,000
7f	1,000 lb trip limit	$705,000

Under **Alternative 2 (Preferred)**, for-hire vessels will not be able to sell dolphin fish harvested under the bag limit, even with the appropriate permits. This will result in a loss of producer surplus relative to the no action alternative. Information is not available on the relevant costs of selling fish for for-hire vessels that is necessary to measure the loss in producer surplus associated with this alternative. Therefore, the loss in terms of foregone revenue from the sale of fish is estimated. The use of revenue will overstate the loss relative to the same loss measured in terms of producer surplus. It is assumed the average annual revenue associated with selling dolphin fish on for-hire trips is given by the amount sold by vessels with for-hire dolphin/wahoo permits from 2005 to 2009. The results and data sources are reported in **Table 4-92**.

Table 4-92. Foregone revenue due to prohibiting bag limit sales of dolphin from for-hire vessels under **Alternative 2** for **Action 25.**

	Trips				Revenue			
Year	**EFL_GA**	**FL_Keys**	**NC_SC**	**Total**	**EFL_GA**	**FL_Keys**	**NC_SC**	**Total**
2005	165	132	85	382	$12,786	$17,724	$7,002	$37,512
2006	117	178	126	421	$8,584	$32,127	$16,034	$56,745
2007	138	187	213	538	$17,082	$38,253	$28,327	$83,661
2008	184	214	180	578	$20,555	$32,867	$20,581	$74,003
2009	275	271	288	834	$21,947	$39,749	$40,887	$102,583
Avg.	176	196	178	551	$16,191	$32,144	$22,566	$70,901

Based on trips with a for-hire dolphin/wahoo (CDW) permit that caught at least one pound of dolphin, but less than the 60 fish boat limit in lbs (495lbs in GA-EFL and 533lbs in NC-SC). The trips and landings information are from the SE Logbook data and the prices are from the ALS data.

The predicted reduction in consumer surplus to the recreational sector under **Preferred Alternative 3** is documented in **Table 4-93**. The data sources and method are listed below.

Table 4-93. Reduction in economic value to the recreational sector in South Carolina with a 20 inch minimum size limit for dolphin under **Alternative 3** for **Action 25**.

	Head	Private	Charter	Total
ALT1 Landings (lbs)	10,329	160,536	55,954	226,820
ALT3 Reduction (%)	8.70%	0.00%	5.06%	
ALT3 Reduction (lbs)	899	0	2,831	3,730
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.92	10.69	12.41	
wpt/lb	$16.21	$12.01	$10.34	
dCS	$14,571	$0	$29,285	$43,856
Target (angler) trips	1,122	na	1,375	2,497
ALT3 Reduction in Target Trips	98	na	70	167
NOR per angler trip	$63	na	$128	
dPS	$6,147	na	$8,906	
dTS	$20,718	$0	$38,191	$58,909

ALT1 landings assumed to be the average annual landings of dolphin in SC from 2005 to 2009.

ALT3 % reduction from Table 4-79a of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in SC from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT3 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)[9]

[9] Dumas, C.F., J.C. Whitehead, C.E. Landry, and J.H. Herstine. 2009. "Economic Impacts and Recreation Value of the North Carolina For-Hire Fishing Fleet." North Carolina Sea Grant FRG Grant Report 07-FEG-05.

Alternative 4 would establish a recreational minimum size limit of 20 inches fork length from Florida through New England. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-94**. The data sources and method are listed below the table.

Table 4-94. Reduction in economic value to the recreational sector in North and South Carolina with a 20 inch recreational minimum size limit for dolphin (**Alternative 4**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	14,047	170,865	3,417,573	3,602,485
ALT4 Reduction (%)	15.11%	5.84%	4.56%	
ALT4 Reduction (lbs)	2,122	9,979	155,841	167,942
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.10	9.86	10.65	
wpt/lb	$18.08	$13.01	$12.05	
dCS	$38,379	$129,838	$1,877,823	
Target (angler) trips	4,582	na	30,429	35,011
ALT4 Reduction in Target Trips	692	na	1,388	2,080
NOR per angler trip	$63	na	$128	
dPS	$43,617	na	$177,608	$221,225
dTS	$81,996	$129,838	$2,055,431	$2,267,265

ALT1 landings assumed to be the average annual landings of dolphin in SC and NC from 2005 to 2009.

ALT4 % reduction from Table 4-79a of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in SC and NC from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT4 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT4 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009. The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

The target angler charter trips are from the description of the fishery.

Alternative 5 would increase the recreational minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-95** and **Table 4-96**. The data sources and method are listed below each table.

Table 4-95. Reduction in economic value to the recreational sector in Florida and Georgia with a 22-inch recreational minimum size limit for dolphin (**Alternative 5**).

	Head	Private	Charter	Total
EFL ALT1 Landings (lbs)	1,974	464,942	39,602	506,519
GA ALT1 Landings (lbs)	31	5,095	506	5,632
EFL ALT5a Reduction (%)	19.73%	17.24%	17.01%	
GA ALT5a Reduction (%)	19.73%	17.24%	17.01%	
ALT5a Reduction (lbs)	396	81,034	6,822	88,252
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.33	10.18	8.75	
wpt/lb	$17.51	$12.61	$14.67	
dCS	$6,927	$1,021,534	$100,100	$1,128,562
Target (angler) trips	13,155	na	17,296	30,451
ALT5a Reduction in Target Trips	2,596	na	2,942	5,538
NOR per angler trip	$63	na	$128	
dPS	$163,517	na	$376,582	$540,099
dTS	$170,444	$1,021,534	$476,683	$1,668,661

ALT1 landings assumed to be the average annual landings of dolphin in EFL and GA from 2005 to 2009.

ALT5a % reduction from Table 4-79b of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the EFL and GA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT5a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT5a Reduction (%) X NOR/trip. See table above for further description of sources and methods.

Table 4-96. Reduction in economic value to the recreational sector in Florida and Georgia with a 24 inch recreational minimum size limit for dolphin (**Alternative 5**).

	Head	**Private**	**Charter**	**Total**
EFL ALT1 Landings (lbs)	1,974	464,942	39,602	506,519
GA ALT1 Landings (lbs)	31	5,095	506	5,632
EFL ALT5b Reduction (%)	36.31%	35.97%	36.13%	
GA ALT5b Reduction (%)	36.31%	35.97%	36.13%	
ALT5b Reduction (lbs)	728	169,072	14,491	184,292
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.33	10.18	8.75	
wpt/lb	$17.51	$12.61	$14.67	
dCS	$12,748	$2,131,356	$212,618	$2,356,722
Target (angler) trips	13,155	na	17,296	30,451
ALT5b Reduction in Target Trips	4,777	na	6,249	11,026
NOR per angler trip	$63.00	na	$128.00	
dPS	$300,927	na	$799,878	$1,100,805
dTS	$313,676	$2,131,356	$1,012,496	$3,457,528

ALT1 landings assumed to be the average annual landings of dolphin in EFL and GA from 2005 to 2009.

ALT5b % reduction from Table 4-79b of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT5a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT5b Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Alternative 6 would reduce the recreational boat limit. This alternative applies only to charterboats and private recreational vessels, not headboats. **Subalternative 6a** would reduce the boat limit by 25%, **Subalternative 6b** would reduce the boat limit by 33%, and **Subalternative 6c** would reduce the boat limit by 50%. The reduction in consumer surplus to the recreational sector predicted under this alternative is documented in **Tables 4-97** through **4-99**. The data sources and method are listed below each table.

Table 4-97. Reduction in economic value to the recreational sector with a 25% reduction in the boat limit to 45 dolphin (**Subalternative 6a**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6a Reduction (%)	0.00%	0.00%	7.39%	
ALT6a Reduction (lbs)	0	0	259,104	259,104
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$0	$3,748,469	$3,748,469
Target (angler) trips	17,737	na	47,726	65,463
ALT6a Reduction in Target Trips	0	na	3,527	3,527
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$451,450	$451,450
dTS	$0	$0	$4,199,919	$4,199,919

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6a % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6a Reduction (%) X NOR/trip. See table above for further description of sources and methods.

Table 4-98. Reduction in economic value to the recreational sector with a 33% reduction in the boat limit to 40 dolphin (**Subalternative 6b**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6b Reduction (%)	0.00%	0.00%	10.85%	
ALT6b Reduction (lbs)	0	0	380,416	380,416
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$0	$5,503,504	$5,503,504
Target (angler) trips	17,737	na	47,726	65,463
ALT6b Reduction in Target Trips	0	na	5,178	5,178
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$662,819	$662,819
dTS	$0	$0	$6,166,322	$6,166,322

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6b % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6b Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6b Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-99. Reduction in economic value to the recreational sector with a 50% reduction in the boat limit to 30 dolphin (**Subalternative 6c**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6c Reduction (%)	0.00%	0.40%	22.40%	
ALT6c Reduction (lbs)	0	20,588	785,375	805,963
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$337,953	$11,362,072	$11,700,025
Target (angler) trips	17,737	na	47,726	65,463
ALT6c Reduction in Target Trips	0	na	10,691	10,691
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$1,368,400	$1,368,400
dTS	$0	$337,953	$12,730,472	$13,068,425

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6c % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6c Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6c Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person but not as a preferred alternative. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-100**. The data sources and method are listed below the table.

Table 4-100. Reduction in economic value to the recreational sector with a reduction in the bag limit to 9 dolphin.

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT8 Reduction (%)	0.00%	1.00%	5.00%	
ALT8 Reduction (lbs)	0	51,469	175,307	226,776
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$844,884	$2,536,177	$3,381,060
Target (angler) trips	17,737	na	47,726	65,463
ALT8 Reduction in Target Trips	0	na	2,386	2,386
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$305,446	$305,446
dTS	$0	$844,884	$2,841,623	$3,686,507

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT8 % reduction from Table 4-84 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT8 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT8 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

A summary of the reduction in economic value for **Action 25** is shown in **Table 4-101**.

Table 4-101. Summary of the reduction in economic value to the recreational sector across alternatives in **Action 25**.

Alternative	Head	Private	Charter	Total
ALT1	$0	$0	$0	$0
ALT2	$0	$0	$70,901	$70,901
ALT3	$20,718	$0	$38,191	$58,909
ALT4	$81,996	$129,838	$2,055,431	$2,267,265
ALT5a	$170,444	$1,021,534	$476,683	$1,668,661
ALT5b	$313,676	$2,131,356	$1,012,496	$3,457,528
ALT6a	$0	$0	$4,199,919	$4,199,919
ALT6b	$0	$0	$6,166,322	$6,166,322
ALT6c	$0	$337,953	$12,730,472	$13,068,425
ALT8	$0	$844,884	$2,841,623	$3,686,507

All changes are measured relative to ALT1.

Economic value for all alternatives are measured in terms of changes in consumer and producer surplus, except for ALT2 which is measured in terms of changes in revenue from the sale of dolphin fish by charter operations with for-hire dolphin/wahoo permits.

4.4.6.3 Social Effects

The effects upon the social environment would depend upon the suite of management measures chosen by the South Atlantic Council to include in the amendment. **Alternative 1 (No Action)** would likely induce few social effects. **Alternative 2 (Preferred)**, prohibiting bag limit sales of dolphin from for-hire vessels, would likely have negative social effects on for-hire crew, at least in the short term. However, the lack of prohibiting sale could also have negative social effects as fish caught recreationally could be counted toward the commercial quota. Requiring a minimum size limit from Florida through South Carolina in **Alternative 3 (Preferred)** may have some social effects north of Georgia as there is no size limit and fishermen will have new regulatory regimes to follow but may be beneficial in that management will be more consistent. **Alternative 4** may have similar social effects as it establishes the size limit from Florida through New England. These alternatives may be a viable means of meeting threshold criteria for reductions that may be implemented elsewhere in this amendment. The same is true for **Alternative 5** by establishing a more restrictive size limit. **Alternative 6** and its associated subalternatives would accomplish similar reductions for the charter sector with its decreasing boat limit moving from **Subalternatives 6a** to **6c**, respectively. **Alternative 7** would accomplish similar reductions for the commercial sector with its decreasing trip limit moving from **Subalternatives 7b** to **7f**, respectively. **Subalternative 7a** would split the trip limit near Jekyll Island with a smaller 1,000-pound limit to the south and 3,000 pound trip limit to the north. **Alternative 8** would reduce the boat limit to 9 fish and would likely have short-term negative social effects as fishermen adjust to the reductions.

4.4.6.4 Administrative Effects

The current management regime, as described **in Alternative 1 (No Action)**, is quite comprehensive as it implements a quota, bag limits, size limits, trip limits, and permits. The selection of **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would be expected to increase the administrative burden slightly due to increase monitoring and enforcement requirements. All of the action alternatives are expected to maintain the same level of administrative burden relative to each other. Administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.4.6.5 Council Conclusions

The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. The NS1 guidelines, however, do not specify that management measures need to be put in place at the same time that the new limits and targets are specified. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of management measures for snapper grouper species in this amendment. However, the South Atlantic Council decided to consider implementation of management measures for dolphin in order to ensure that the landings do not exceed the proposed ACL.

Alternative 2 (Preferred) would ensure regulations are fair and equitable and fish harvested by the recreational sector are not counted toward commercial quotas. This would also improve the accuracy of total landings. With implementation of ACLs that would restrict catches for dolphin on recreational and commercial fishermen, the South Atlantic Council is concerned that when for-hire fishermen sell their catch to dealers, that poundage will be counted toward the commercial quota resulting in early filling of the commercial ACL. In addition, sales of bag limit fish may result in double counting if catches are reported through the MRFSS/MRIP and through commercial dealers. Therefore, the Council selected **Alternative 2 (Preferred)** to prohibit the sale of bag limit caught dolphin in the for-hire sector. In the past concern has been expressed that the fish sold makes up an important part of the mate's income and if this was prohibited, the cost of a charter trip would have to be increased to cover the lost income. This could, in turn, result in a reduced number of trips as the price increases. **Alternative 3 (Preferred)** would establish a minimum size limit of 20 inches FL from Florida through South Carolina. This alternative was introduced for the South Atlantic Council's consideration to address concerns, primarily from South Carolina anglers, about the large-scale recreational harvest of "peanut" dolphin. At the time size limits were being discussed for this species in the South Atlantic region (2002), they were not considered off South Carolina because the state had its own measure. That measure has since been challenged in court, however, and overturned.

In North Carolina the vast majority of fishing for dolphin is done in open water. However, there is a short season that lasts for a couple of weeks, usually in the early fall, where the smaller dolphin come in close enough that fishermen can catch them off fishing piers. Extending the minimum size limit requirement to North Carolina would limit access to people who would not be able to catch a dolphin otherwise because they don't have the access to a boat. Moreover, this is a traditional fishery that has been taking place in North Carolina for a long time. Since there appear to be no issues with the health of the stock and to maintain access to the resource, the South Atlantic Council decided not to extend the proposed size limit to North Carolina and north.

The Dolphin Wahoo Advisory Panel (AP) supported establishing a minimum size limit of 20 inches FL from Florida through South Carolina. The Dolphin Wahoo AP also supported establishing a minimum size limit of 20 inches fork length from Florida through New England. Moreover, the Dolphin Wahoo AP recommended the South Atlantic Council consider an alternative to establish a minimum size limit of 20 inches FL from Florida through Maine with no size limit for dolphin caught from shore. The AP did not support prohibiting sale in the for-hire sector due to the loss of income to the crew members of for-hire vessels.

The South Atlantic Council's SSC did not have recommendations for this action.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of dolphin and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5 Wahoo

Fishery Management Unit

The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added Wahoo to the Fishery Management Unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; ACCSP reporting requirements; framework procedure; allowable gear; gear prohibitions in HMS closed areas; EFH/EFH-HAPCs; and the fishing year as January 1 through December 31.
2. Prohibit sale of recreationally caught wahoo in or from the Atlantic.
3. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 lbs with no transfer at sea allowed.
4. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSY proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million lbs. There is no updated MSY estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSY. Therefore, the existing MSY proxy of 1.41 – 1.63 million lbs will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSST for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M (natural mortality) should never be less than 0.5. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)

Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin Wahoo FMP:
A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} (F30%Static SPR). At their April 2011 meeting, the South Atlantic Council's SSC stated that OFL for wahoo is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to

landings. An ABC = 1,491,785 lbs whole weight was recommended based on the SSC's ABC control rule for unassessed species.

Previously, the South Atlantic Council's SSC provided the following OFL at their April 2010 meeting: Since no MSY estimate is available for wahoo, OFL was estimated from landings data (Atlantic coast landings data also obtained from the Dolphin Wahoo FMP). Similar to dolphin, wahoo landings were thought to be impacted by economic trends as well as the 2004 regulations (for wahoo, 2-fish bag limit and a 500 lb trip limit). OFL (1,101,231 lbs) was determined as the median of landings for the period 1994-2003 (used the median instead of the mean since this was a longer time series than used for dolphin). **(Table 4-102a)**.

NMFS SEFSC corrected and updated the 1994-1998 data used by the SSC. The South Atlantic Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-102b**). The South Atlantic Council also requested the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 1,202,939 lbs.

Table 4-102a. Wahoo landings (whole weight) used by the SSC in April 2010.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	814,588	90%	88,036	10%	902,624
1995	981,257	90%	109,506	10%	1,090,763
1996	844,014	91%	82,281	9%	926,295
1997	890,402	90%	93,857	10%	984,259
1998	949,035	92%	78,477	8%	1,027,512
1999	1,405,653	93%	99,159	7%	1,504,812
2000	1,083,721	94%	65,283	6%	1,149,004
2001	1,050,625	95%	61,073	5%	1,111,698
2002	1,244,854	95%	60,703	5%	1,305,557
2003	1,099,259	95%	60,720	5%	1,159,979
2004	950,112	94%	65,485	6%	1,015,597
2005	815,846	94%	47,744	6%	863,590
2006	763,145	95%	41,539	5%	804,684
2007	1,924,492	97%	59,558	3%	1,984,050
2008	631,525	94%	41,586	6%	673,111
SSC's OFL	= Median 1994-2003				1,101,231

Source: 1994-98 from **Table 26** in Dolphin Wahoo FMP (SAFMC 2003a); 1999-2008 from Dolphin Wahoo Decision Document.

Table 4-102b. Wahoo landings (whole weight) used by the SSC in April 2011.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	926,279	92%	84,966	8%	1,011,245
1995	1,109,907	91%	107,497	9%	1,217,404
1996	918,492	92%	83,288	8%	1,001,780
1997	1,055,915	92%	92,964	8%	1,148,879
1998	1,019,871	93%	77,964	7%	1,097,835
1999	1,559,673	94%	99,286	6%	1,658,959
2000	1,122,639	94%	65,834	6%	1,188,473
2001	1,159,384	95%	58,594	5%	1,217,978
2002	1,433,225	96%	58,560	4%	1,491,785
2003	1,251,164	96%	58,673	4%	1,309,837
2004	1,100,738	94%	65,118	6%	1,165,856
2005	852,671	95%	44,542	5%	897,213
2006	765,654	95%	39,824	5%	805,478
2007	2,041,154	97%	57,290	3%	2,098,444
2008	663,732	94%	40,525	6%	704,257
2009	792,687	95%	43,126	5%	835,813
SSC's OFL	**= Median 1994-2003**				1,202,939

The South Atlantic Council requested their SSC consider the Gulf of Mexico Control Rule which would use mean, mean + 0.5 to 2.0 times the SD. During their March 2011 meeting, the South Atlantic Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended that the Gulf of Mexico Council's ABC Control Rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stock. Their action changed their previous OFL/ABC recommendation for wahoo (and dolphin).

4.5.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

Alternative 1 (No Action). Do not establish an ABC control rule for wahoo.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule (**Table 4-23**).
Note: The Gulf of Mexico Control Rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for wahoo based on the South Atlantic Council SSC's ABC control rule described in **Table 4-22**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 4-24** and OFL = unknown (currently ABC is estimated to be 1,491,785 lbs ww).

4.5.1.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for wahoo. For stock and stock complexes required to have an ABC, the NS1 guidelines for the Magnuson-Stevens Act state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for wahoo. The OFL was determined to be unknown at the April 2011 South Atlantic Council's SSC meeting; therefore, ABC would not be specified under **Alternative 2**. The South Atlantic Council's SSC recommended an ABC = 1,491,785 lbs whole weight at their April 2011 meeting based on their ABC control rule.

The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would theoretically be less than **Alternatives 3,** which is based on the Gulf of Mexico Council SSC's ABC control rule (**Table 4-23**). However, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for wahoo based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3 would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule. According to **Table 4-23** the ABC control described for Tier 3a would be used in situations where landings are small relative to stock biomass and recent historical landings are without trend. Tier 3a would be used for species where no assessment is available, but landings data exist, and the probability of exceeding the OFL in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the OFL and ABC. For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternative 3**, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in a similar estimate of ABC (1,171,513 to 1,788,691 lbs whole weight; **Table 4-103**) as recommended by the South Atlantic Council's SSC through their ABC control rule (1,491,785 lbs whole weight, **Alternative 4, Preferred**). Therefore, the biological effects of **Alternative 3** would be very similar to **Alternative 4 (Preferred)**.

Table 4-103. ABC for wahoo (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009.
Note: OFL = mean + 2SD = 1,994,417 lbs.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
1,171,513	1,377,239	1,582,965	1,788,691

Establishing an ABC control rule for wahoo would not directly affect the protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.5.1.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 26** are indirect. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

Under **Alternative 1 (No Action)**, **Alternative 3** (ABC = mean + 1 SD and ABC = mean + 1.5 SD) and **Alternative 4 (Preferred)**, ex-vessel revenue derived from landings of wahoo are predicted to total $118,000 (**Table 4-104**) and thus are not expected to have short-term indirect economic effects on the commercial fleet. Under **Alternative 3** where ABC = mean and ABC = mean + .5 SD, gross revenue derived from landings of wahoo are predicted to total $111,000 and $117,000, respectively. **Alternative 3** follows Tier 3a of the Gulf of Mexico Council SSC's ABC control rule. **Alternative 2** which sets ABC equal to OFL may result in as much as $5,000 in foregone revenue.

Table 4-104. Predicted ex-vessel gross revenues attributed to landings of wahoo after establishment of ABC Control Rule for wahoo.
Commercial ACL values are based on the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**, the preferred ACL formula for wahoo (100% of ABC) in **Action 28**, and no commercial sector ACT for wahoo (**Action 29**).

Alternative	ABC Formula	Ex-vessel revenue attributed to commercial landings of wahoo
1 (No Action)		$118,000
2	ABC=OFL	$113,000
3	ABC = mean	$111,000
3	ABC = mean + 0.5 SD	$117,000
3	ABC = mean + 1 SD	$118,000
3	ABC = mean + 1.5 SD	$118,000
4 (Preferred)	**ABC = 1,491,785 ww**	**$118,000**

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. **Alternative 2** sets the ABC equal to the OFL, which may lead to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated to be as much as $283,000 for the CL model and $573,000 for the NL model (**Table 4-105**).

Alternative 3 creates a buffer between the ABC and OFL. **Table 4-105** shows that the greater the buffer, the greater the short-term loss in consumer surplus. **Alternative 3** is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), potential economic gain to the recreational sector is expected to increase. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a potential gain of $1,522,000 in consumer surplus for the CL model and a gain of $3,085,000 in economic value to the recreational sector for the NL model. If ABC = mean, **Alternative 3** may generate the largest potential increase in economic value to the recreational sector in the short-run, but may also generate the smallest long-run economic benefits relative to other alternatives. If ABC = mean, the adoption of **Alternative 3** may result in a gain of $217,000 in consumer surplus for the CL model and a gain of $439,000 in consumer surplus for the NL model. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of $894,000 in consumer surplus for the CL model and a potential gain of $1,812,000 in consumer surplus for the NL model.

Table 4-105. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for wahoo.
Recreational ACL values are based on the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27** and the preferred ACL formula for wahoo (100% of ABC) in **Action 28**.

Alternative	ABC Control Rule	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)		$2,261,000	$4,584,000
2	ABC = OFL	$2,544,000	$5,157,000
3	ABC = mean	$2,478,000	$5,023,000
3	ABC = mean + 0.5 SD	$2,913,000	$5,905,000
3	ABC = mean + 1 SD	$3,348,000	$6,787,000
3	ABC = mean + 1.5 SD	$3,783,000	$7,669,000
4 (Preferred)	**ABC = 1,491,785 ww**	**$3,155,000**	**$6,396,000**

4.5.1.3 Social Effects

As with the previous action, setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the allowable biological catch and any subsequent reduction. **Alternative 1 (No Action)** does not establish an ABC control rule for wahoo and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. Like with dolphin, the South Atlantic Council has chosen **Alternative 4 (Preferred)** which would utilize an ABC control rule established by the SSC. Again, using the best available science should have positive social effects. However, the combined effect of any of the reductions in harvest levels is difficult to assess without knowing how other actions may affect the final threshold. Certainly for those alternatives that are the most restrictive the potential of negative social effects, both short term and long term, becomes more likely even though there may be long term biological benefit.

4.5.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by a Council's SSC for consideration by a Council. Although the ABC control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.5.1.5 Council Conclusions

The South Atlantic Council SSC's final ABC Control Rule document states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the South Atlantic Council's SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.

The "decision tree" was incorporated into an alternative for the South Atlantic Council's consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the South Atlantic Council SSC's Control Rule and is prepared to make adjustments as needed in the future. In particular, the Council is aware of various approaches proposed for situations in which only catch data are available. NOAA Fisheries Service released a Technical Memorandum in May 2011 — *Calculating Acceptable Biological*

Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS) — that presents various methodologies. The South Atlantic Council's SSC intends to review the information included in this document and revise their ABC control rule as needed. Once the South Atlantic Council's SSC finalizes Level 4 of their ABC control rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the South Atlantic Council's SSC finalizes their ABC control rule.

During their April 2011 meeting the South Atlantic Council's SSC discussed trends in landings of wahoo and stated that the decline in landings post 2002 was likely a result of the bag limit change. The South Atlantic SSC recommended applying the "decision tree" discussed above and used the 3rd highest landings value between 1999 and 2008 as the recommended ABC for wahoo. Thus the South Atlantic Council selected **Alternative 4 (Preferred)**, which encompasses their SSC's ABC control rule and latest ABC recommendation, as their preferred. The South Atlantic Council's SSC also noted that wahoo landings are significant in the charter fishery and are therefore impacted by economic trends, as is the case for dolphin. The South Atlantic Council's SSC indicated that the OFL for wahoo would remain unknown since no assessment or measures of abundance are available. An assessment for wahoo is scheduled for 2014.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council's preferred alternative to set an ABC for wahoo.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.2 Action 27: Specify Allocations for Wahoo

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:

> Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.5.2.1 Biological Effects

Alternative 1 (No Action) would not establish allocations for wahoo. If an allocation is not specified then it would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an AM would be limited.

The allocations in **Alternatives 2-4** would be similar. Under **Alternative 2** the allocations would be 4% commercial/96% recreational. **Alternative 3 (Preferred)** would result in 4.3% commercial/95.7% recreational, respectively, through the use of a formula that would equal 50% * average of long catch range (lbs) 1999-2008) + 50% * average of recent catch trend (lbs) 2006-2008. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred),** would divide the recreational component of the catch into for-hire and private recreational sectors. Under **Alternative 4**, the allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. Catches by sector are shown in **Table 4-106**.

Table 4-106. Annual landings of wahoo by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	99,286	784,753	774,921	1,559,673	99,286	1,658,959	6%	94%
2000	65,834	639,889	482,750	1,122,639	65,834	1,188,473	6%	94%
2001	58,594	701,917	457,466	1,159,384	58,594	1,217,978	5%	95%
2002	58,560	676,847	756,379	1,433,225	58,560	1,491,785	4%	96%
2003	58,673	847,598	403,566	1,251,164	58,673	1,309,837	4%	96%
2004	65,118	611,130	489,608	1,100,738	65,118	1,165,856	6%	94%
2005	44,542	600,230	252,441	852,671	44,542	897,213	5%	95%
2006	39,824	546,314	219,340	765,654	39,824	805,478	5%	95%
2007	57,290	1,649,855	391,299	2,041,154	57,290	2,098,444	3%	97%
2008	40,525	457,160	206,573	663,732	40,525	704,257	6%	94%
2009	43,126	583,845	208,842	792,687	43,126	835,813	5%	95%

Note: Bag limit became effective in 2004.

There is a very small difference in the amount of ABC allocated to the commercial and recreation sectors in **Alternatives 2-4** and therefore, very little difference in the biological effects among the alternatives. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the estimates.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.5.2.2 Economic Effects

Under **Alternative 1 (No Action)**, ex-vessel gross revenue is predicted to total $118,000, which is the largest amount that the industry can earn based on historical data. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. **Alternative 2** would result in an allocation of 4% to the commercial sector. The predicted loss in gross revenue from landings of wahoo to the commercial sector is $1,000. **Alternative 3 (Preferred)** and **Alternative 4** would provide for an allocation of 4.3% to the commercial sector, which would not change commercial gross revenue in the short-term if historical fishing patterns continue into the near future .

Under **Alternative 1 (No Action)**, in which no sector allocation is specified, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. The remaining alternatives would establish a recreational allocation of 96% (**Alternative 2**) and 95.7% (**Preferred Alternative 3**). **Alternative 4** allocates 30.4% of the recreational allowance to the for-hire sector and 69.6% to the private recreational sector.

The potential gain in aggregate economic value to the recreational sector due to **Alternative 3 (Preferred)** is $894,000 for the CL model and $1,812,000 for the NL model. Using the same willingness-to-pay estimates, the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $959,000 and $2,196,000, respectively, for the CL model and $1,945,000 and $4,451,000, respectively, for the NL model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g. wahoo) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $2,922,000 under the allocation rule in **Alternative 4**. The potential gain in aggregate economic value to the recreational sector due to **Alternative 2** is $904,000 for the CL model and $1,832,000 for the NL model. The relatively large potential gains in consumer surplus are due mainly to the relatively large value of the proposed ACL in **Alternative 2** of **Action 28** with respect to average recreational landings of wahoo for 2005-2009.

Table 4-107. Predicted ex-vessel gross revenue attributed to landings of wahoo after the establishment of sector allocations. Commercial ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and no commercial sector ACT for wahoo (**Action 29**).

Alternative	**Sector Allocation**	**Ex-vessel gross revenue attributed to landings of wahoo ($)**
1 (No Action)	none	$118,000
2	Comm=4%; Rec.=96%	$117,000
3 (Preferred)	**Comm=4.3%; Rec.=95.7%**	**$118,000**
4	Comm=4.3%; FH=29.1%; Rec.=66.6%	$118,000

Table 4-108. Predicted potential economic value to the recreational sector after the establishment of sector allocations for wahoo.
Recreational ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28**.

Alternative	Sector Allocation	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)		$2,261,000	$4,584,000
2	Comm=4%; Rec=96%	$3,165,000	$6,416,000
3 (Preferred)	**Comm=4.3%; Rec=95.7%**	**$3,155,000**	**$6,396,000**
4	Comm=4.3%; FH=29.1%; Rec=66.6%	FH=$959,000 Rec=$2,196,000	FH=$1,945,000 Rec=$4,451,000

4.5.2.3 Social Effects

Alternative 1 (No Action) would maintain an overall ABC and may have few social effects. However, determining accountability may become an issue for the recreational sector. With **Alternatives 2-4** there would be a similar commercial allocation between 4% or 4.3%. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. **Alternative 3 (Preferred)** does not split the recreational sector. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

4.5.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2-4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. However, **Alternative 3 (Preferred)** would not increase administrative impacts more than the other action alternatives.

4.5.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, they still find themselves arguing over the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as “Boyles’ Law”, is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries since it considers past and present participation. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Preferred Alternative 3** as their preferred approach to establish allocations for wahoo.

The Dolphin Wahoo Advisory Panel (AP) reviewed the alternatives under this action during their April 2011 meeting and supported the South Atlantic Council’s preferred alternative for specifying sector allocations for wahoo.

The South Atlantic Council’s SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million lbs).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 1,491,785 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1,268,017 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1,118,839 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 969,660 lbs ww).

ACL values are shown in **Table 4-109**.

Table 4-109. ACL formula, ACL, and OY values (lbs whole weight) for wahoo under **Alternatives 2-5**.
Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in **Action 26**.

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**1,491,785**	**64,147**	**1,427,638**
Alternative 3	85% ABC	1,268,017	54,525	1,213,492
Alternative 4	75% ABC	1,118,839	48,110	1,070,729
Alternative 5	65% ABC	969,660	41,695	927,965

4.5.3.1 Biological Effects

The Magnuson-Stevens Act requires that by 2010, FMPs for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the Snapper Grouper FMP specified ACLs for species subject to overfishing.

Alternative 1 (No Action) would not specify an ACL for wahoo. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to the OFL, acceptable biological catch, ACL, annual catch target, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Currently, there are no quotas in place that could serve as ACLs for either the commercial or recreational sector. Therefore, **Alternative 1 (No Action)** would not meet the requirements specified in the Magnuson-Stevens Act.

Alternatives 2 (Preferred)-5 would set ACL and the OY equal to the ABC or at a percentage of the ABC and would represent the management area specified in the FMP for Dolphin and Wahoo. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discusses about the relationship between OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the OFL is unknown for wahoo, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting ACL/OY equal to a percentage of the ABC would provide greater assurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}. The NS1 guidelines indicate the ACL may typically be close to the ABC. Setting ACL/OY equal to some percentage of the ABC in **Alternatives 3-5** would provide greater assurance overfishing does not occur. **Alternatives 2 (Preferred)-5** are based on an ABC control that sets ABC below OFL and, therefore, take into consideration scientific uncertainty in the specification of OFL.

Alternative 2 (Preferred) would set the ACL =OY = ABC. The preferred alternative in **Action 26** specified an ABC based on the South Atlantic Council SSC's ABC control rule where ABC = 1,491,785 lbs whole weight. Based on the preferred allocation alternatives in **Action 27**, 4.3% (64,147 lbs whole) of the ACL would be allocated to the commercial sector and 95.7% (1,427,638 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-109**).

Alternatives 3-5 would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the Council's preferred ABC control rule is provided in **Table 4-109**. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-5** will likely be beneficial. Since the ACLs and OYs being considered are less than the current range of OY for wahoo, **Alternatives 2-5** are likely to reduce the overall amount of effort targeting wahoo. This decrease will likely reduce the likelihood of interactions between the fishery, sea turtles, and smalltooth sawfish. As the proposed ACLs and OYs decrease, the biological benefits to sea turtles and smalltooth sawfish will likely increase.

4.5.3.2 Economic Effects

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. The alternative setting ACL equal to ABC, which is represented by **Alternative 2 (Preferred)**, results in no short-term losses in gross revenues to commercial fishers landing wahoo. **Alternative 3,** which provides a 15% buffer between ACL and ABC, would result in foregone revenue of $4,000. **Alternative 4** and **Alternative 5** result in foregone commercial gross revenue of $9,000 and $15,000, respectively.

Table 4-110. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACL formulas.
Commercial ACL values are based on the preferred ABC for wahoo (1,491,785 lbs ww) in **Action 26**, the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**, and no commercial sector ACT for wahoo (**Action 29**).

Alternative	ACL Formula	Ex-vessel gross revenue attributed to commercial landings of wahoo ($)
1 (No Action)		$118,000
2 (Preferred)	**ACL=ABC**	**$118,000**
3	ACL = 85% ABC	$114,000
4	ACL = 75% ABC	$109,000
5	ACL = 65% ABC	$103,000

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model (**Table 4-111**).

Alternative 2 (Preferred) sets the ACL equal to the ABC, which leads to a predicted potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain in consumer surplus to the recreational sector was estimated at $894,000 for the CL model and $1,812,000 for the NL model.

Alternative 3 creates a buffer between the ACL and the ABC. **Table 4-111** shows that the greater the buffer, the lower the estimate of aggregate consumer surplus. The adoption of **Alternative 3** is expected to result in a gain of $421,000 in consumer surplus for the CL model and a gain of $852,000 in consumer surplus for the NL model. The adoption of **Alternative 4** is expected to result in a gain of $105,000 in consumer surplus for the CL model and a gain of $213,000 in consumer surplus for the NL model. The adoption of **Alternative 5** is anticipated to result in a loss of $210,000 in consumer surplus for the CL model and a loss of $427,000 in economic value to the recreational sector for the NL model.

Table 4-111. Predicted potential economic value to the recreational sector for different ACL formulas for wahoo.
Recreational ACL values are based on the preferred ABC for wahoo (1,491,785 lbs ww) in **Action 26** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Alternative	ACL Formula	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)	No ACL	$2,261,000	$4,584,000
2 (Preferred)	**ACL=ABC**	**$3,155,000**	**$6,396,000**
3	ACL=85% of ABC	$2,682,000	$5,436,000
4	ACL=75% of ABC	$2,366,000	$4,797,000
5	ACL=65% of ABC	$2,051,000	$4,157,000

4.5.3.3 Social Effects

Establishing an ACL for wahoo will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3** or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the **Alternatives 3** and **4** and likely have the fewest negative social effects in the short term.

4.5.3.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2-5** are minimal and would not differ much among the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures, will increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.5.3.5 Council Conclusions

Optimum yield is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. An ACL cannot exceed the ABC and may be set annually or on a multiyear basis. Annual catch limits (ACLs) in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 29** & **30** for wahoo). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Alternative 2. Establish commercial sector ACT for wahoo.

> **Subalternative 2a (Preferred).** Do not specify a commercial sector ACT.
> **Subalternative 2b.** The commercial sector ACT equals 90% of the commercial sector ACL.
> **Subalternative 2c.** The commercial sector ACT equals 80% of the commercial sector ACL.

Table 4-112. Commercial sector ACTs for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Commercial ACL	Commercial Sector ACT Subalternatives		
		2a - No ACL	2b -90%(ACL)	2c -80%(ACL)
Wahoo	64,147	N/A	57,732	51,318

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

4.5.4.1 Biological Effects

Currently, there are only size limits, trip limits, and bag limits in place to restrict harvest of wahoo in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the South Atlantic Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded.

Overall, the most biologically conservative approach to specifying AMs for wahoo, would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of wahoo are reported through dealer trip tickets and federal logbooks, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages. **Alternative 3 (Preferred)** would remove the incentive to target wahoo on commercial trips since all purchase and sale would be prohibited once the ACL is projected to be met. This alternative would also still allow some level harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of wahoo if no level of harvest is permitted after the ACL is reached.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the wahoo component of the dolphin wahoo fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting wahoo for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.5.4.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000 (**Table 4-113**). This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in **Actions 27** and **28**. If the Council had specified a commercial sector ACT, and management measures enforcing the ACT were implemented, then the commercial sector would forgo gross revenue ranging from $2,000 for **Subalternative 2b** to $5,000 for **Subalternative 2c (Table 4-113)**.

Table 4-113. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACT formulas.
Commercial ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Subalternative	ACT Formula	Ex-vessel gross revenue attributed to commercial landings of wahoo ($)
2a (Preferred)	**No ACT**	**$118,000**
2b	90% ACL	$116,000
2c	80% ACL	$113,000

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run**,** but still be bound by the figures in **Table 4-113**, since this alternative is intended to prevent the commercial sector from harvesting wahoo in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could have adverse effects on the stock.

Alternative 4 calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative will likely generate adverse short-term economic effects (i.e., lower short-term gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-term economic effects is unknown at this time since the probability the ACL will be exceeded is unknown.

4.5.4.3 Social Effects

As with dolphin, there would likely be few negative social effects from the **Alternative 1 (No Action)** as no further reductions in harvest of wahoo would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** would both impose reductions of 90% of ACL and 80% of ACL, respectively. In both cases the reductions could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season.

4.5.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place (**Alternative 2** and associated subalternatives). **Alternative 3 (Preferred)** and **Alternative 4** would require rule-making, education, monitoring and enforcement, but the administrative impacts of one relative to the other is expected to be minor.

4.5.4.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial component of the wahoo fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT (**Subalternative 2a, Preferred**). Quota monitoring in the commercial fishery and the AMs the South Atlantic Council is proposing to implement through this amendment, are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of wahoo in quantities exceeding the ACL, and thus provide a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. The South Atlantic Council saw no need to put in place measures to correct for an ACL overage post-season. The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Dolphin Wahoo Advisory Panel (AP) supported not specifying an ACT for the commercial sector but did not support setting in-season and post-season commercial AMs for wahoo (**Preferred Alternative 3** and **Alternative 4**).

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo

Alternative 1 (No Action). Do not specify new recreational AMs for wahoo.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

> **Subalternative 2a**. Do not specify an ACT.
> **Subalternative 2b.** The ACT equals 85% of the ACL.
> **Subalternative 2c.** The ACT equals 75% of the ACL.
> **Subalternative 2d (Preferred).** The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 5-year (2005-2009) average (18.4).

Table 4-114. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Wahoo	21.1	23.1	19.8	13.7	20.8	18.1	19.8	19.6	18.4

Note: The Council decided to use the 5-year average PSE because this better represented recent catches than the 3 year average.

Table 4-115. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT Subalternatives		
		5a - 85%(ACL)	5b - 75%(ACL)	5c - ACL [(1-PSE) or 0.5, whichever is greater]
Wahoo	1,427,638	1,213,492	1,070,729	1,164,953

Average recreational landings from 2005, 2006, 2008, and 2009 from **Table 4-106** = 768,686 lbs ww. Note: 2007 landings were excluded based on them being so high.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

> **Subalternative 3a**. Do not specify an AM trigger.
> **Subalternative 3b (Preferred).** If the *annual landings* exceed the ACL in a given year.
> **Subalternative 3c.** If the *mean landings* for the past three years exceed the ACL.[1, 2]
> **Subalternative 3d.** If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% _confidence interval_ estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] _Start the clock over._ In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. _Monitor following year._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). _Monitor following year and shorten season as necessary._ If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. _Monitor following year and reduce bag limit as necessary._ If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. _Shorten following season._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. _Reduce bag limit and shorten season_. If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit to 1 fish and reduce the season as necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 5h. _Payback._ If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.5.5.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for wahoo and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Table 4-115**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-114**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternatives 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after each wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season **(Subalternative 5f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the wahoo component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting wahoo for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.5.5.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a**, the baseline estimate of consumer surplus value for recreational wahoo trips is $3,155,000 using willingness-to-pay estimates from the conditional logit (CL) model and $6,396,000 using willingness-to-pay estimates from the nested logit (NL) model. If the Council prefers to specify a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to the least loss in consumer surplus to the recreational sector relative to **Alternative 1 (No Action)**, estimated at $473,000 for the CL model and $959,000 for the NL model. The potential annual short-term loss to the recreational sector for **Subalternative 2c** was estimated at $789,000 for the CL model and $1,599,000 for the NL model. **Subalternative 2d (Preferred)** results in potential annual short-term loss of consumer surplus to the recreational sector of $580,000 for the CL model and $1,177,000 for the NL model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Table 4-116. Predicted potential economic value to the recreational sector for different ACT formulas for wahoo.
Recreational ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Subalternative	**ACT Formula**	**Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)**	**Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)**
1 and 2a	No ACT	$3,155,000	$6,396,000
2b	85% ACL	$2,682,000	$5,436,000
2c	75% ACL	$2,366,000	$4,797,000
2d (Preferred)	**ACT equals [sector ACL* (1-PSE)] or [sector ACL*0.5], whichever is greater]**	**$2,575,000**	**$5,219,000**

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)-3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. Assuming these same relative probabilities apply to wahoo, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season and/or the bag limit) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c**, **5d (Preferred)**, and **5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c, 5d (Preferred)**, and **5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred)**, and **5e** in the short-term. Economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit. However, **Subalternative 5g** would require a reduction in the bag limit from two fish to one fish as well as a reduction season length. Thus, the adverse indirect economic effects resulting from **Subalternative 5g** are expected to be greater than under **Subalternative 5f** in the short-term**.**

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternative 5f** or **Subalternative 5g**. The payback that would be implemented under **Subalternative 5h** would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year. **Subalternative 5g** would reduce the bag limit as well as the fishing season and thus may afford nearly as much protection to the stock as **Subalternative 5h**. As such, the adverse indirect economic effects under **Subalternative 5g** are expected to be nearly as great as under **Subalternative 5h**.

4.5.5.3 Social Effects

The social effects of establishing accountability measures for wahoo are assumed to be similar to those for dolphin and other recreational fisheries. **Alternative 1 (No Action)** would not establish ACTs or AMs for the wahoo recreational sector which may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a**, which may not have any negative social effects through further harvest reductions. **Subalternatives 2b and 2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the less restrictive of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Alternative 4** **Subalternative 4a (Preferred)** would not specify an in-season AM which could have beneficial social effects as there would be no closure as when the ACL is projected to be met in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.5.5.4 Administrative Effects

Under **Action 30**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** (and associated subalternatives) to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts. The tracking of recreational landings can be challenging and would likely impose a burden on the administrative environment. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.5.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assess the AM alternatives for the recreational sector. First, the Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the wahoo fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would further account for uncertainty in the recreational estimates. Hence, the South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational wahoo fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. The ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in a particular fishery.

The South Atlantic Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings were greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings were greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data after each wave. There would likely be considerable uncertainty in imposing in-season AMs in the recreational sector. Therefore, the Council chose to focus on post-season AMs for the recreational sector.

Alternative 5 and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Dolphin Wahoo Advisory Panel (AP) supported the specification of a recreational ACT but did not support the South Atlantic Council's preferred approach to setting other recreational AMs for wahoo. Instead, the AP recommended that, if required in the future, the bag limit should be reduced (e.g., 2 per person or 6 per boat whichever is less) to achieve the necessary reduction in landings. In addition, the Dolphin Wahoo AP suggested the development of a method for notifying the sector (commercial, for-hire and private recreational) when 90% of their quota is being met. The Dolphin Wahoo AP also recommended that the South Atlantic Council modify their proposed approach to only adjust bag limits and deduct overages if the total ACL (commercial and recreational) is exceeded. The South Atlantic Council discussed this approach during their June 2011 meeting. However, given that this was not among the alternatives that had been analyzed, the South Atlantic Council could not consider it. However, the South Atlantic Council intends to evaluate this approach further and determine its applicability.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.6 Action 31: Establish Management Measures for Wahoo

Note: The South Atlantic Council's preferred recreational ACT (1,164,953 lbs whole weight) does not require a reduction based on average recreational landings (2005-2009, excluding 2007); in fact, the average catch (768,686 lbs whole weight) is 34% below the ACT (**Table 4-106**). The commercial sector will be closed when the commercial ACL is met or projected to be met. Average commercial landings (42,004 lbs ww) during 2005-2009 (excluding 2007) are well below the South Atlantic Council's preferred alternative for a commercial ACL (64,147 lbs whole weight).

Alternative 1 (No Action) (Preferred). Retain current management measures for wahoo.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.
- 500-pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.
- Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.
- For a commercial permitted vessel fishing north of 39^{o}N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/vessel per day in the recreational fishery.

Subalternative 2a. Establish a boat limit of 12 wahoo per boat/vessel per day.
Subalternative 2b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Subalternative 2c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Subalternative 2d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Subalternative 2e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Subalternative 2f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Subalternative 2g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Subalternative 2h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Subalternative 2i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Subalternative 2j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Subalternative 2k. Establish a boat limit of 2 wahoo per boat/vessel per day.

Table 4-117. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

							%Recreational Reduction from various time periods			
Wahoo	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL (4.3%)**	**Rec ACL (95.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**	**05, 06, 08, 09**
SSC ABC Control Rule	Unknown	1,491,785	1,491,785	64,147	1,427,638	1,164,953	-12%	-8.5%	-11%	-34%
GMFMC Tier 3a*	1,994,417	1,788,691	1,788,691	76,914	1,711,777	1,473,840	-31%	-28%	-30%	-48%
Mean + 1.0 Std.Dev.		1,582,965	1,582,965	68,067	1,514,898	1,304,327	-22%	-18%	-21%	-41%
Mean + 0.5 Std.Dev.		1,377,239	1,377,239	59,221	1,318,018	1,134,814	-10%	-6%	-9%	-32%
Mean		1,171,513	1,171,513	50,375	1,121,138	965,300	6%	10%	7%	-20%
Average landings for time period from **Table 4-106**.							1,023,180	1,065,807	1,036106	768,686

Note: The South Atlantic Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

4.5.6.1 Biological Effects

Alternative 1 (Preferred) (No Action) would retain the management measures currently in place including: prohibition on sale of recreationally caught wahoo in or from the Atlantic EEZ; 500-pound commercial trip limit for wahoo (landed head and tail intact); and recreational bag limit of 2 wahoo per person per day. The South Atlantic Council's preferred recreational ACT (1,164,953 lbs whole weight) does not require a reduction in harvest based on average recreational landings (2005-2009, excluding 2007 (**Table 4-117**). Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented in 2004, and the South Atlantic Council concluded this was more of a sampling factor than actual catches. Furthermore, the South Atlantic Council's preferred ACL does not require a reduction in harvest based on average commercial landings (2005-2009, excluding 2007 (**Table 4-117**).
The AMs under **Actions 29** and **30** include alternatives such as closing the fishery when landings approach an ACL to ensure overfishing does not occur. The South Atlantic Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded.

Alternative 2 would establish a boat limit for private, charter, and headboat recreational fishermen ranging from 2 to 12. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit (**Table 4-118**). Restricting the vessel limit to 2-fish per vessel (**Subalternative 2k)** would have the greatest biological effect and would provide the greatest assurance the ACL would not be exceeded, and would provide an estimated 26% reduction in wahoo harvest in the recreational fishery. However, based on 2005-2009 landings data (excluding 2007) no reduction in recreational landings is needed to prevent the ACT from being exceeded.

Table 4-118. Reduction (percent) in harvest of wahoo for Atlantic states provided by a reduction in the vessel limit.

Vessel limit	Charter Reduction	Private Reduction	All Reduction
12	1.00	0.00	0.75
10	1.45	0.00	1.09
9	1.90	0.00	1.42
8	2.56	0.68	2.10
7	3.79	1.69	3.27
6	5.80	3.38	5.20
5	8.47	5.41	7.71
4	12.15	7.43	10.98
3	17.28	11.49	15.84
2	28.43	17.23	25.65
1	48.72	42.23	47.11

There is likely to be no additional biological benefit to protected species from **Alternative 1 (Preferred) (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. The subalternatives under **Alternative 2** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from the subalternatives under **Alternative 2** are unclear. If the alternative perpetuates the existing amount of fishing effort it is unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if this alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.5.6.2 Economic Effects

Alternative 2 and its subalternatives would establish a boat limit between 2 and 12 wahoo per boat/vessel per day in the recreational sector. The reductions in consumer surplus to the recreational sector predicted with this alternative are documented in **Tables 4-119 through 4-129**. A summary of the changes in economic value to the recreational sector across all alternatives under **Action 31** is presented in **Table 4-130**.

Table 4-119. Change in economic value to the recreational sector with a 12-wahoo boat limit (**Subalternative 2a**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.00%	
ALT2 Reduction (lbs)	0	0	2,255	2,255
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$10,799	$10,799
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	67	67
NOR per angler trip	$63	na	$128	
dPS	$0	na	$8,548	$8,548
dTS	$0	$0	$19,346	$19,346

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-120. Change in economic value to the recreational sector with an 11-wahoo boat limit (**Subalternative 2b**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.23%	
ALT2 Reduction (lbs)	0	0	2,762	2,762
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$13,228	$13,228
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	82	82
NOR per angler trip	$63	na	$128	
dPS	$0	na	$10,471	$10,471
dTS	$0	$0	$23,699	$23,699

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-121. Change in economic value to the recreational sector with a 10-wahoo boat limit (**Subalternative 2c**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.45%	
ALT2 Reduction (lbs)	0	0	3,269	3,269
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$15,658	$15,658
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	97	97
NOR per angler trip	$63	na	$128	
dPS	$0	na	$12,394	$12,394
dTS	$0	$0	$28,052	$28,052

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-122. Change in economic value to the recreational sector with a 9-wahoo boat limit (**Subalternative 2d**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.90%	
ALT2 Reduction (lbs)	0	0	4,284	4,284
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$20,517	$20,517
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	127	127
NOR per angler trip	$63	na	$128	
dPS	$0	na	$16,241	$16,241
dTS	$0	$0	$36,758	$36,758

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-123. Change in economic value to the recreational sector with a 8-wahoo boat limit (**Subalternative 2e**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.68%	2.56%	
ALT2 Reduction (lbs)	0	4,958	5,772	10,729
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$14,035	$27,644	$41,679
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	171	171
NOR per angler trip	$63	na	$128	
dPS	$0	na	$21,882	$21,882
dTS	$0	$14,035	$49,527	$63,561

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-124. Change in economic value to the recreational sector with a 7-wahoo boat limit (**Subalternative 2f**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	1.69%	3.79%	
ALT2 Reduction (lbs)	0	12,321	8,545	20,866
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$34,881	$40,926	$75,807
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	253	253
NOR per angler trip	$63	na	$128	
dPS	$0	na	$32,396	$32,396
dTS	$0	$34,881	$73,323	$108,203

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-125. Change in economic value to the recreational sector with a 6-wahoo boat limit (**Subalternative 2g**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	3.38%	5.80%	
ALT2 Reduction (lbs)	0	24,642	13,076	37,718
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$69,762	$62,631	$132,393
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	387	387
NOR per angler trip	$63	na	$128	
dPS	$0	na	$49,577	$49,577
dTS	$0	$69,762	$112,209	$181,970

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-126. Change in economic value to the recreational sector with a 5-wahoo boat limit (**Subalternative 2h**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	5.41%	8.47%	
ALT2 Reduction (lbs)	0	39,442	19,096	58,537
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$111,660	$91,463	$203,123
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	566	566
NOR per angler trip	$63	na	$128	
dPS	$0	na	$72,400	$72,400
dTS	$0	$111,660	$163,864	$275,523

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-127. Change in economic value to the recreational sector with a 4-wahoo boat limit (**Subalternative 2i**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	7.43%	12.15%	
ALT2 Reduction (lbs)	0	54,168	27,392	81,561
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$153,352	$131,202	$284,553
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	811	811
NOR per angler trip	$63	na	$128	
dPS	$0	na	$103,856	$103,856
dTS	$0	$153,352	$235,058	$388,410

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-128. Change in economic value to the recreational sector with a 3-wahoo boat limit (**Subalternative 2j**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	11.49%	17.28%	
ALT2 Reduction (lbs)	0	83,768	38,958	122,726
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$237,148	$186,598	$423,746
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	1,154	1,154
NOR per angler trip	$63	na	$128	
dPS	$0	na	$147,707	$147,707
dTS	$0	$237,148	$334,305	$571,453

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-129. Change in economic value to the recreational sector with a 2-wahoo boat limit (**Subalternative 2k**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	17.23%	28.43%	
ALT2 Reduction (lbs)	0	125,615	64,096	189,711
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$355,619	$307,001	$662,620
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	1,899	1,899
NOR per angler trip	$63	na	$128	
dPS	$0	na	$243,015	$243,015
dTS	$0	$355,619	$550,016	$905,635

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

A summary of the boat limit impacts is shown in **Table 4-130**.

Table 4-130. Summary of the change in economic value to the recreational sector across alternatives in **Action 31**.

Alternative	Head	Private	Charter	Total
ALT1	$0	$0	$0	$0
ALT2a	$0	$0	$19,346	$19,346
ALT2b	$0	$0	$23,699	$23,699
ALT2c	$0	$0	$28,052	$28,052
ALT2d	$0	$0	$36,758	$36,758
ALT2e	$0	$14,035	$49,527	$63,561
ALT2f	$0	$34,881	$73,323	$108,203
ALT2g	$0	$69,762	$112,209	$181,970
ALT2h	$0	$111,660	$163,864	$275,523
ALT2i	$0	$153,352	$235,058	$388,410
ALT2j	$0	$237,148	$334,305	$571,453
ALT2k	$0	$355,619	$550,016	$905,635

All changes are measured relative to ALT1.

Economic value for all alternatives are measured in terms of changes in consumer and producer surplus.

4.5.6.3 Social Effects

The social effects from **Alternative 1 (No Action) (Preferred)** may be minimal as it would require no changes in regulation. **Alternative 2** would impose varying degrees of reduction in catch depending upon which subalternative is chosen with the most restrictive being **Subalternative 2k** with a 2-fish limit which would impose a 26% reduction and may impose substantial negative social effects. Although fishermen would likely prefer larger bag limits, without sufficient protection ACLs could be exceeded and early closures could occur as a result thereby imposing further negative impacts upon the sector.

4.5.6.4 Administrative Effects

Under **Preferred Alternative 1 (No Action)**, no new administrative impacts are expected. Under the status quo, there are currently administrative impacts associated with monitoring and enforcing the commercial trip limit and the recreational bag limit. **Alternative 2** proposes to change the recreational bag limit, but this is not expected to have an impact on monitoring or enforcement. **Alternative 2** would require rulemaking, education and outreach which would result in minor administrative impacts.

4.5.6.5 Council Conclusions

The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. The NS1 guidelines, however, do not specify that management measures need to be put in place at the same time that the new limits and targets are specified. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of management measures for snapper grouper species in this amendment. However, the South Atlantic Council decided to consider implementation of management measures for wahoo to ensure that landings do not exceed the proposed ACL.

The South Atlantic Council considered a wide range of boat limits for the recreational wahoo fishery. However, the current level of landings is below the proposed ACL. Therefore the South Atlantic Council reasoned that no harvest reduction was necessary at this time.

The Dolphin Wahoo Advisory Panel (AP) also recommended **Alternative 1 (No Action)** as their preferred alternative because they did not perceive any problem that needed to be addressed.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded no additional management measures are needed at this time. The Council concluded that **Alternative 1 (No Action) (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.6 Sargassum FMP

4.6.1 Acceptable Biological Catch Control Rule and ABC for Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. It is a critical component of the ecosystem providing essential habitat to numerous fish species and protected resources. Because of its ecological importance, the South Atlantic Council's SSC believes *Sargassum* should be labeled and treated as an "ecosystem component species."

Since *Sargassum* has a FMP (SAFMC 2002), an ABC is required. The Sargassum FMP includes an estimate of the MSY that could be used in determination of an ABC, but the South Atlantic Council's SSC stated that the MSY was not developed through a traditional stock assessment method but was instead based on informal methods involving aerial photography and estimates of doubling time. As a result, the SSC considered the MSY value to be extremely uncertain and unreliable. Based upon the recommendation of its stock assessment experts, the SSC chose not to use the MSY value previously reported for ABC calculations.

At the second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes one category that labels a catch as "nil," where the stock is not caught in any significant amounts and can be treated as ecosystem component stocks. The framework also includes a category that categorizes a catch as "small," where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, the framework allows for setting the ABC greater than or equal to the historical average catch.

Historically the *Sargassum* fishery can be classified as "small," where overfishing has not been a concern. The average catch from 1976 to 2009 equaled 12,800 lbs wet weight. The SSC therefore recommended an ABC for *Sargassum* of 12,800 lbs wet weight. Furthermore, the previous OY set by the South Atlantic Council in the FMP was 5,000 lbs. The SSC understood that the OY was set at that level out of concern for the ecosystem services provided by *Sargassum*. For this reason, the SSC recommended that the South Atlantic Council establish an ACL/ACT equal to the previous OY value of 5,000 lbs.

However, given that there have been no landings over the past twelve years, the *Sargassum* fishery would be placed in the "nil" category using Methot's framework adopted by the SSC. Under this framework, *Sargassum* would be labeled an "ecosystem component species" and would not require an ABC. As stated at the beginning of this section, the SSC recommended that the South Atlantic Council take the actions necessary to reclassify *Sargassum* as such. However, since this species is currently managed under a Fishery Management Plan, the setting of an ABC is required.

The following restrictions are in place for *Sargassum* in the South Atlantic: (1) harvest and possession of *Sargassum* is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude), (2) all harvest is prohibited within

100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border, (3) harvest is limited to the months of November through June, (4) official observers are required on any harvesting trip, (5) an annual quota of 5,000 lbs landed wet weight, and (6) nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Therefore, an ACL is in place for *Sargassum* in the form of a 5,000-pound commercial quota, which is also considered equivalent to the OY for the species. In addition to the current restrictions, the AM for *Sargassum* restricts all harvest of the species after the quota is met or is projected to be met.

4.7 Golden Crab FMP

4.7.1 Acceptable Biological Catch Control Rule and ABC

It is widely argued that the golden crab is an underutilized resource and that the fishery exploits only a portion of the species' range. The South Atlantic Council's SSC recommended an ABC for golden crab in April 2010 based on the control rule derived at that meeting. At their June 2010 meeting the South Atlantic Council rejected the SSC's control rule from April 2010 and removed the ABC recommendations based on that control rule.

The South Atlantic Council agreed with the SSC comments from April 2010 that there was likely additional information that could be compiled for golden crab to better support fishing level recommendations. One of the concerns was that there was a wide range of prior estimates of productivity and acceptable yield. At their August 2010 meeting, the SSC considered additional information on golden crab. These data included additional landings, catch per unit effort, mean sizes, and history and background of past MSY values.

At the second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based the status of the stock relative to its fishery. The "small" category applies to situations where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, Methot suggests setting the ABC greater than or equal to the historical average catch. Therefore, the SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into Methot's range of unassessed stock categories. The SSC concluded that the golden crab fishery is small; the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.

The SSC recommended that ABC be set at 2 million lbs with a precautionary note that more data are needed. Issues such as an updated, possibly a benchmark assessment, with other models including the surplus production model were suggested, along with improvements in data collection.

4.7.2 Action 32: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Golden Crab

Alternative 1 (No Action). Do not specify an ACL for Golden Crab.

Alternative 2 (Preferred). ACL= OY=ABC (currently estimated to be 2 million lbs).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1.7 million lbs).

Alternative 4. ACL = OY =75% of the ABC (currently estimated to be 1.5 million lbs).

Alternative 5. ACL = OY =65% of the ABC (currently estimated to be 1.3 million lbs).

4.7.2.1 Biological Effects

The Magnuson-Stevens Act required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) specified ACLs for species subject to overfishing.

Alternative 1 (No Action), which includes restrictions associated with trapping gear and a requirement that retention of females be limited to 0.5% of the catch by number, would not specify an ACL for golden crab. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Currently, there are no quotas in place that could serve as ACLs. Therefore, **Alternative 1 (No Action)** would not meet the requirements specified in the Magnuson-Stevens Act.

Alternatives 2 (Preferred)-5 would set ACL equal to ABC or some portion of ABC. The Council's SSC specified an ABC of 2 million lbs for golden crab at their August 2010 meeting. The rationale for setting the ABC at 2 million lbs is that golden crab is a small fishery that is not likely fully exploited, so setting ABC above historical catch is appropriate. Furthermore, the South Atlantic Council's SSC pointed out Harper et al. (2000) and Powers (2001) provide estimates of a maximum sustainable yield (MSY) of about 2.5 million lbs. Therefore, ABC would equal about 80%MSY, which is the SSC felt was consistent with the range of P* they have used in their ABC control rule.

Alternative 2 (Preferred) would set the ACL equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels.

Alternative 2 (Preferred) as well as **Alternatives 3-5** would set the OY equivalent to the ABC. Taking no action on specifying OY could have negative biological effects as it could allow OY to be greater than the ABC. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

Similar to the relationship between OFL and ABC, OY is prescribed on the basis of the MSY from the fishery, as reduced by relevant economic, social or ecological factors. In the case of an overfished fishery, OY provides for rebuilding to a level consistent with producing MSY in such a fishery. For overfished stocks, ABC must also be set to reflect the annual catch that is consistent with the rebuilding plan for that stock. In NS1, use of the phrase, "achieving, on a continuing basis, the optimum yield from each fishery" means producing, from each stock, stock complex or fishery a long-term series of catches such that the average catch is equal to OY, overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

Alternatives 1 (No Action)-5 are unlikely to have any adverse affects on protected species. Previous ESA consultations determined the golden crab fishery was not likely to adversely affect any ESA-listed species. **Alternatives 1 (No Action)-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species.

4.7.2.2 Economic Effects

Under **Alternative 1 (No Action)** there is no upper limit placed on how much golden crab can be landed by the 11 permitted vessels in the fishery. Although current landings are moderate (around 570,000 lbs), rising demand and the adoption of new technologies such as re-circulating seawater systems are likely to increase production, potentially increasing the risk of overfishing.[10] The rate of technological growth is presently unknown.

Alternatives 2 (Preferred) to **5** call for the adoption of progressively more conservative ACLs. Given the moderate landings occurring in the golden crab fishery at this time, direct adverse economic effects are expected to be minimal in the short-term under **Alternatives 2 (Preferred)** to **5** relative to **Alternative 1 (No Action)**. Given that lack of an ACL could lead to overfishing

[10] Re-circulating systems reduce mortality markedly, increase product quality, and allow for greater take of live golden crab.

in the future, **Alternatives 2 (Preferred)** to **5** would yield greater long-term economic benefits than **Alternative 1 (No Action)**. **Alternative 2 (Preferred)** provides the greatest long-term economic benefits while **Alternative 5** provides the smallest long-term economic benefits when making a comparison between **Alternatives 2 (Preferred)-5**, with **Alternatives 3** and **4** falling in between. If there is uncertainty regarding identification of the ACL and there is no buffer established between ACL and ABC, overfishing is more likely to occur. Typically, the higher the risk of overfishing, the lower the long-term economic benefits and the higher the short-term economic benefits. **Alternative 2 (Preferred)** seems economically optimal given the relatively small amount of landings (and low risk of overfishing) compared to the recommended ABC of 2 million pounds and allows for the golden crab fishery to expand.

Expansion of harvest in the golden crab fishery is expected over the next 5-10 years. Several golden crab fishery participants have implemented a re-circulating seawater system that allows them to decrease mortality significantly and land greater amounts of golden crab live and in better conditions than packing them with ice. As a result, more and higher quality crabs are being marketed and many are being sold internationally. Subsequently, ex-vessel prices have increased significantly. This has attracted the attention of new participants looking to purchase one of the 11 permits in the fishery to begin fishing in one of the 3 fishing zones. However, historical participants have expressed concerns that new entrants could harvest large amounts of crab, and/or harm the bottom habitat because they are unfamiliar with it.

Consequently, several golden crab fishery participants have asked the South Atlantic Council to pursue a catch share program for the fishery to: 1) increase the barriers to entry and thereby help protect the sensitive coral habitat golden crab live near; 2) create a system that will enable greater enforcement and monitoring; and 3) provide for a management system that encourages greater financial security and stability. The South Atlantic Council is developing Golden Crab Amendment 6 to explore the possibility of a catch share program for the fishery.

Table 4-131 shows the anticipated single year changes in landings and gross revenue relative to **Alternative 1 (No Action)** under different annual growth in production scenarios. For simplicity, three annual growth-in-production scenarios were considered, ranging from 5% to 15%. **Alternative 1 (No Action)** assumes that the status quo catch is the 5-year average ranging from 2005-2009. **Table 4-131** shows that the one-year projected landings under the various scenarios were not binding relative to the proposed ACLs; thus, the relative low changes in expected landings and revenue. Landings and gross revenue were derived from Crosson (2010).[11]

[11] Crosson, Scott B. 2010. Trends in the South Atlantic Golden Crab Fishery. NOAA Technical Memorandum NOAA Fisheries Service-SEFSC-608.

Table 4-131. Anticipated change in golden crab landings and gross revenue for alternatives under **Action 31**.

Alternatives	**ACL**	**5% Growth Scenario**		
		Expected landings (lbs)	**Change in landings relative to Alt 1 (lbs)**	**Change in gross revenue relative to Alt 1 ($)**
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**598,604**	**28,505**	**47,033**
Alternative 3	1,700,000	598,604	28,505	47,033
Alternative 4	1,500,000	598,604	28,505	47,033
Alternative 5	1,300,000	598,604	28,505	47,033
Alternatives	**ACL**	**10% Growth Scenario**		
		Expected landings (lbs)	**Change in landings relative to Alt 1 (lbs)**	**Change in gross revenue relative to Alt 1 ($)**
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**627,109**	**57,010**	**94,066**
Alternative 3	1,700,000	627,109	57,010	94,066
Alternative 4	1,500,000	627,109	57,010	94,066
Alternative 5	1,300,000	627,109	57,010	94,066
Alternatives	**ACL**	**15% Growth Scenario**		
		Expected landings (lbs)	**Change in landings relative to Alt 1 (lbs)**	**Change in gross revenue relative to Alt 1 ($)**
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**655,614**	**85,515**	**141,100**
Alternative 3	1,700,000	655,614	85,515	141,100
Alternative 4	1,500,000	655,614	85,515	141,100
Alternative 5	1,300,000	655,614	85,515	141,100

4.7.2.3 Social Effects

Establishing an ACL for golden crab will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 2 (Preferred)**, **3 or 4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector with **Alternative 2 (Preferred)** being the least restrictive. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable.

4.7.2.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of action alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.7.2.5 Council Conclusions

Optimum yield is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater insurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible. An ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate. However, the South Atlantic Council opted to set ACTs for the recreational sector only since recreational landings have a much higher associated uncertainty than commercial landings. Since there is no recreational component in the golden crab fishery, no measures are being put in place to account for management uncertainty. The South Atlantic Council reasoned that this is a small fishery and the current quota monitoring system adequately keeps track of the landings. Similar to the approach for other species in this amendment, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Golden Crab Advisory Panel did not meet to consider the actions the South Atlantic Council is proposing in this amendment. However, the few active members in the fishery have been active participants in the development of this amendment and have stated their support for the South Atlantic Council's approach to managing the fishery.

The SSC did not have any recommendations on the specification of ACL as this is a management limit. However, the SSC discussed the golden crab fishery at length during their August 2010 meeting in Charleston, South Carolina while they formulated an ABC recommendation (See **Section 2.6.1**). The SSC report from that meeting states:

The SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into the range of unassessed stock categories discussed the previous day (nil-no fishery, small fishery, moderate fishery, or moderate-high fishery). The SSC *concluded that this is a small fishery, but the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.*

The SSC further discussed requesting an annual data update for unassessed stocks, including golden crab. The update should include landings, areas fished, size composition, etc. The SSC would evaluate the information and suggest changing the ABC if necessary.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of golden crab and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Golden Crab Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.7.3 Action 33: Establish Accountability Measures for Golden Crab

Alternative 1 (No Action). Do not establish accountability measures for Golden Crab.

Alternative 2 (Preferred). After the ACL is met or projected to be met, all harvest, purchase, and sale of golden crab is prohibited.

Alternative 3 (Preferred). If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

4.7.3.1 Biological Effects

Alternative 1 (No Action) is the least biologically beneficial AM alternative for golden crab, and is not legally feasible since no AM would be established for the species as required under the Magnuson-Stevens Act. The most biologically beneficial of the alternatives would be **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** combined. These alternatives together would close the entire golden crab fishery when the ACL is projected to be met, and also correct for any overages through a post-season AM if the fishery is declared overfished. **Alternative 2 (Preferred)** would require in-season monitoring. In the case of golden crab all landings are reported through dealer reports; therefore, in-season monitoring would likely project, with a reasonable level of accuracy, when the ACL would be met. The more accurate this projection is the lower the risk of closing the fishery too soon or too late would be.

Alternative 3 (Preferred) would provide protection to golden crab in the form of an ACL or ACT reduction following the year in which an ACL overage occurred (but only if the species was assessed as overfished). The ACL or would be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. If the ACL is repeatedly exceeded and subsequent year's seasons are repeatedly shortened, a derby fishery for golden crab could develop. Currently, the South Atlantic Council is developing a catch share program from golden crab that would address the potential development of a derby fishery.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the golden crab fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)** and **3 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2 (Preferred)** and **3 (Preferred)** are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.7.3.2 Economic Effects

Failure to implement an AM for the golden crab fishery under **Alternative 1 (No Action)** could result in overages and the smallest long-term economic benefits relative to the other alternatives since the risk of overfishing is the greatest. **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would likely generate greater adverse economic effects in the short-term but greater long-term economic benefits relative to **Alternative 1 (No Action)** since they provide a hedge against overfishing. **Alternative 2 (Preferred)** would be precautionary but would not likely generate the greatest long-term economic benefits since it does not provide a mechanism for addressing overages, if these occur. While **Alternative 2 (Preferred)** would have less adverse short-term economic effects, **Alternative 3 (Preferred)** may have greater long-term positive economic effects, but could adversely affect market and financial stability in the short term if an overage occurs. Since **Action 33** is administrative in nature, and thus does not directly affect participants in the golden crab fishery, the effects under **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** are indirect.

4.7.3.3 Social Effects

Alternative 1 (No Action) would not establish accountability measures for Golden Crab and could make it difficult to manage if overages were to occur. **Alternative 2 (Preferred)**, would prohibit all harvest, purchase, and sale of golden crab after the ACL is projected to be met. This alternative would not provide for any accountability for any overages like **Alternative 3 (Preferred)** would provide. The combination of **Alternatives 2 (Preferred) and 3 (Preferred)** may have more long term positive social effects, but could have negative short term effects that affect market viability.

4.7.3.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. The primary burden on the administrative environment from **Preferred Alternatives 2** and **3** would result from the need to track landings during the fishing season and orchestrate the subsequent implementation of AMs when needed. This administrative burden is likely to be minimal.

4.7.3.5 Council Conclusions

Similar to the approach they have taken with other species in this amendment, the South Atlantic Council chose not to specify a commercial ACT for the golden crab fishery because the current quota monitoring system seems adequate to account for any management uncertainty. Hence the AMs the South Atlantic Council is proposing for this fishery only specify actions that would come into play when the ACL is met or projected to be met.

Alternative 2 (Preferred) would prohibit all harvest, purchase, and sale of golden crab after the ACL is met or projected to be met. **Alternative 3 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision, but only if the species was declared overfished. The South Atlantic Council chose to make this distinction to be consistent with how they chose to address paybacks in other FMPs (e.g., CMP species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Golden Crab Advisory Panel did not meet to consider the actions the South Atlantic Council is proposing in this amendment. However, the few active members in the fishery have been active participants in the development of this amendment and have stated their support for the South Atlantic Council's approach to managing the fishery.

The SSC did not have any recommendations on this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternatives 2** and **3** best meet the purpose and need to implement measures expected to prevent overfishing of golden crab and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Golden Crab Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.0 Cumulative Effects

As directed by the National Environmental Policy Act (NEPA), federal agencies are mandated to assess not only the indirect and direct impacts, but the cumulative impacts of proposed actions as well. NEPA defines a cumulative impact as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time"* (40 C.F.R. 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect is when the combined effects are greater than the sum of the individual effects.

Various approaches for assessing cumulative effects have been identified, including checklists, matrices, indices, and detailed models (MacDonald 2000). The Council on Environmental Quality (CEQ) offers guidance on conducting a Cumulative Effects Analysis (CEA) in a report titled "Considering Cumulative Effects under the National Environmental Policy Act". The report outlines 11 items for consideration in drafting a CEA for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope of the analysis.
3. Establish the timeframe for the analysis.
4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.
5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.
6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.
7. Define a baseline condition for the resources, ecosystems, and human communities.
8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
9. Determine the magnitude and significance of cumulative effects.
10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
11. Monitor the cumulative effects of the selected alternative and adapt management.

This CEA for the biophysical environment will follow a modified version of the 11 steps. Cumulative effects for the socio-economic environment will be analyzed separately.

5.1 Biological

SCOPING FOR CUMULATIVE EFFECTS

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The Council on Environmental Quality (CEQ) cumulative effects guidance states that this step is done through three activities. The three activities and the location in the document are as follows:

I. The direct and indirect effects of the proposed actions **(Section 4.0)**;
II. Which resources, ecosystems, and human communities are affected **(Section 3.0)**; and
III. Which effects are important from a cumulative effects perspective **(information revealed in this Cumulative Effects Analysis (CEA)**?

2. Establish the geographic scope of the analysis.

The immediate impact area would be the Federal 200-mile limit of the Atlantic off the coasts of Maine through east Florida to Key West, which is also the areas of jurisdiction for the South Atlantic Fishery Management Council, Mid Atlantic Fishery Management Council, and New England Fishery Management Council. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. Therefore, the proper geographical boundary to consider effects on the biophysical environment is larger than the entire Atlantic exclusive economic zone. The ranges of affected species are described in **Section 3.2.1**. The most measurable and substantial effects would be limited to the Atlantic region from Maine to Florida.

3. Establish the timeframe for the analysis.

Establishing a timeframe for the CEA is important when the past, present, and reasonably foreseeable future actions are discussed. It would be advantageous to go back to a time when there was a natural, or some modified (but ecologically sustainable) condition. However, data collection for many fisheries began when species were already fully exploited. Therefore, the timeframe for analyses should be initiated when data collection began for the various fisheries. In determining how far into the future to analyze cumulative effects, the length of the effects will depend on the species and the alternatives chosen. Long-term evaluation is needed to determine if management measures have the intended effect of improving stock status. Monitoring should continue indefinitely for all species to ensure that management measures are adequate for preventing overfishing in the future.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern (the cumulative effects to the human communities are discussed in Section 4).

Listed are other past, present, and reasonably foreseeable actions occurring in the South Atlantic region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical environment.

I. Fishery-related actions affecting species in the Comprehensive ACL Amendment.

A. Past

The reader is referred to **Appendix D** for past regulatory activity for the species addressed in the Comprehensive ACL Amendment. These include bag and size limits, spawning season closures, commercial quotas, gear prohibitions and limitations, area closures, and a commercial limited access system.

Amendment 13C to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2006) became effective October 23, 2006. The amendment addresses overfishing for snowy grouper, golden tilefish, black sea bass, and vermilion snapper. The amendment also allows for a moderate increase in the harvest of red porgy as stocks continue to rebuild.

Amendment 14 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2007) was implemented on February 12, 2009. Implementing regulations for Amendment 14 established eight Type 2 Marine Protected Areas (MPAs) (see **Figure 5-1**) within which, all fishing for snapper grouper species is prohibited as is the use of shark bottom longline gear. Within the MPAs trolling for pelagic species is permitted. The MPAs range in area from 50 to 506 square nautical miles and are located off of North Carolina, South Carolina, Georgia and Florida. The MPAs are expected to enhance the optimum size, age, and genetic structure of slow-growing, long-lived, deepwater snapper grouper species. A Type 2 MPA is an area within which fishing for or retention of snapper grouper species is prohibited but other types of legal fishing, such as trolling, are allowed. The prohibition on possession does not apply to a person aboard a vessel that is in transit with fishing gear appropriately stowed. MPAs are being used as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish).

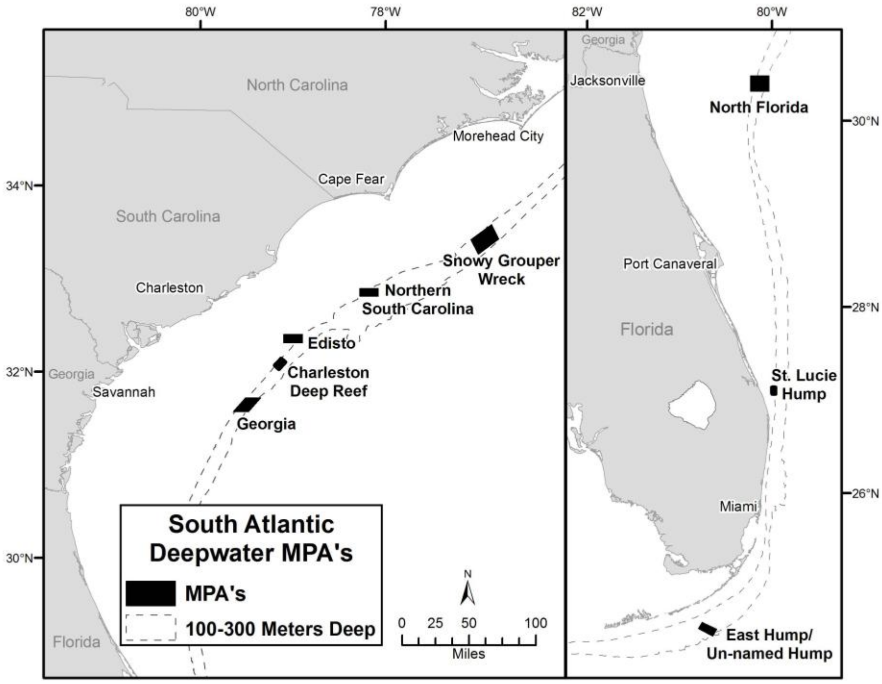


Figure 5-1. Marine protected areas implemented under Snapper Grouper Amendment 14 (SAFMC 2007).

The final rule for Amendment 16 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2009a), which was partially approved by the Secretary of Commerce, published on June 29, 2009. Amendment 16 includes provisions to extend the shallow water grouper spawning season closure, create a five month seasonal closure for vermilion snapper, require the use of dehooking gear if needed, reduce the aggregate bag limit from five to three grouper, and reduce the bag limit for black grouper and gag to one gag or black grouper combined within the aggregate bag limit. The expected effects of these measures include significant reductions in landings and overall mortality of several shallow water snapper grouper species including, gag, black grouper, red grouper, and vermilion snapper.

On September 1, 2009, Amendment 15B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2008b) was approved by the Secretary. Management measures in Amendment 15B that affect species in the Comprehensive ACL Amendment include prohibition of the sale of bag limit caught snapper grouper species for fishermen not holding a Federal commercial permit for South Atlantic snapper grouper, an action to adopt, when implemented, the Atlantic Coastal Cooperative Statistics Program release, discard and protected species module to assess and monitor bycatch, allocations for snowy grouper, and management reference points for golden tilefish.

Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1; SAFMC 2010c), implemented in July, 2010 consists of regulatory actions that focus on deepwater coral ecosystem conservation and non-regulatory actions that update existing essential fish habitat (EFH) information.

Management actions in CE-BA 1 include the establishment of deepwater Coral HAPCs (CHAPCs) to protect what is currently thought to be the largest contiguous distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. Actions in the amendment prohibit the use of bottom damaging fishing gear and allow for the creation of allowable fishing zones within the CHAPCs in the historical fishing grounds of the golden crab and deepwater shrimp fisheries. CE-BA 1 also provides spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).

The final rule for Amendment 17B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2010b) was published on December 30, 2010, and includes a deepwater snapper grouper closure seaward of 240 ft in addition to establishing annual catch limits and accountability measures for species experiencing overfishing.

The final rule for Amendment 17A to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2010a) was published on December 3, 2010, extending the prohibition of red snapper in federal waters throughout the South Atlantic exclusive economic zone**.** Amendment 17A addresses management measures to end overfishing of red snapper and rebuild the stock, including ACLs and AMs. Amendment 17A also includes a regulation requiring the use of non-stainless circle hooks north of 28 degrees N. latitude.

The Council voted to approve Regulatory Amendment 10 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 10; SAFMC 2011a) during its December 2010 meeting for submission to the Secretary of Commerce, with the preferred management alternative to eliminate the large area closure established through Amendment 17A for all snapper grouper species off the coasts of southern Georgia and north/central Florida. The regulatory amendment modified measures implemented in Amendment 17A to end overfishing for red snapper. The amendment was based on updated stock assessment information for red snapper (SEDAR 24) and was approved by the Secretary of Commerce in April 2011. The Final Rule was effective on May 31, 2011.

Regulatory Amendment 9 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 9; SAFMC 2011b) was approved by the Council in March 2011 and the Final Rule published June 15, 2011. The amendment, as approved by the Secretary of Commerce, reduced the bag limit for black sea bass from 15 fish per person to 5 fish per person (effective June 22, 2011), established trip limits on vermilion snapper and gag (effective July 15, 2011), and increased the trip limit for greater amberjack (effective July 15, 2011).

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat of the South Atlantic Region (SAFMC 2002) protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. *Sargassum* provides habitat to a wide variety of marine organisms including invertebrates, fish, sea turtles and marine birds. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

Approved in 2004, the FMP for the Dolphin and Wahoo Fishery of the Atlantic (SAFMC 2003a) established historical allocations for dolphin and wahoo between the commercial and recreational sectors. Recognizing the significant importance of the dolphin wahoo fishery to the recreational fishing community in the Atlantic, the goal of the plan is to maintain the current harvest levels of dolphin and ensure that no new fisheries develop.

Approved in 1996, the FMP for the Golden Crab Fishery of the South Atlantic Region (SAFMC 1995) was developed cooperatively with fishermen to create a sustainable fishery through the establishment of a limited entry system, fishing zones, and protective measures for the crabs. Amendment 3 to the FMP (SAFMC 2000b) extended the authorization to use wire cable for mainlines attached to golden crab traps to December, 31, 2002; modified escape panel sizes for traps; addressed permit renewal requirements including removal of the 5,000 pound harvest requirement for renewing biannual permits and addressed the minimum harvest requirement for permit holders in the Southern Zone; allowed up to a 20% increase in vessel size from the vessel size of the original permit; created a sub-zone within the Southern Zone with specified conditions; allowed two new vessels to be permitted to fish only in the Northern Zone using an earlier list of those wanting to enter the fishery; specified status determination criteria; and modified the FMP framework to allow modifications to the sub-zone.

B. Present

In addition to fishery management issues being addressed in this amendment, several other amendments have been developed concurrently and are in the process of approval and implementation. Current management measures, including quota closures, seasonal closures, and area closures are described in the respective sections addressing various species in this document.

C. Reasonably Foreseeable Future

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; under review) contains actions to establish ACLs and AMs for octocorals, transfer management of octocorals to the state of Florida, modify regulations in special management zones, and amend FMPs to designate new essential fish habitat-habitat areas of particular concern. The Council sent CE-BA 2 for review by the Secretary of Commerce on July 15, 2011.

Amendment 10 to the FMP for the Spiny Lobster Fishery in the Gulf of Mexico and South Atlantic (Spiny Lobster Amendment 10; under review) was developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs as well as management actions for spiny lobster. The Councils sent Spiny Lobster 10 for review by the Secretary of Commerce on July 20, 2011.

Amendment 18 to the FMP for the Coastal Pelagic Resources in the Atlantic and Gulf of Mexico (Mackerel Amendment 18; under review) was developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs for species in the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico. The Councils sent Mackerel 18 for review by the Secretary of Commerce in September 2011.

Regulatory Amendment 11 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under review) eliminates the deepwater closure (beyond 240 feet) that was implemented through Amendment 17B to protect speckled hind and warsaw grouper. Regulatory Amendment 11 was sent for formal review on September 28, 2011.

Amendment 18A to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under development), includes actions to limit effort in the black sea bass fishery through an endorsement program, limit bycatch in the commercial pot fishery, revise MSA parameters based on the latest stock assessment (SEDAR 25), and improve the accuracy and timing of fisheries statistics.

Amendment 18B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under development) includes actions to limit participation in the golden tilefish fishery through establishment of an endorsement program, change the golden tilefish fishing year, revise MSA parameters based on the latest stock assessment (SEDAR 25).

Amendment 20A (under development) would update the Individual Transferable Quota program for wreckfish.

Amendment 24 (under development) would establish a rebuilding plan for red grouper, establish MSY, OY, ACL and AMs.

Amendment 6 to the Golden Crab FMP (under development) would consider a possible catch share program for this fishery.

II. Non-Council and other non-fishery related actions, including natural events affecting snapper grouper species, dolphin, wahoo, and golden crab.

A. Past
B. Present
C. Reasonably foreseeable future

In terms of natural disturbances, it is difficult to determine the effect of non-Council and non-fishery related actions on stocks included in the Comprehensive ACL Amendment. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect recruitment. This natural variability in year class strength is difficult to predict as it is a function of many interactive and synergistic factors that cannot all be measured (Rothschild 1986). Furthermore, natural factors such as storms, red tide, cold water upwelling, etc. can affect the survival of juveniles and adults ; however, it is very difficult to quantify the magnitude of mortality these factors may have on a stock. Alteration of preferred habitats for species could affect survival at any stage in their life cycles. However, estimates of the abundance, which utilize any number of preferred habitats, as well as, determining the impact habitat alteration may have on a stock, is problematic.

The snapper grouper ecosystem includes many species, which occupy the same habitat at the same time. Dolphin and wahoo are also taken when fishermen target snapper grouper species. Other natural events such as spawning seasons, and aggregations of fish in spawning condition can make some species especially vulnerable to targeted fishing pressure. Such natural behaviors are discussed in further detail in **Section 3.2** of this document, and is hereby incorporated by reference. Golden crab are specifically targeted and there is not interaction with snapper grouper or dolphin wahoo fisheries. Furthermore, there is currently no fishery for *Sargassum*.

The BP/Deepwater Horizon oil spill event, which occurred in the Gulf of Mexico on April 20, 2010, is not expected to impact fisheries operating in the Atlantic. Oil from the spill site has not been detected in the Atlantic region, and is not likely to pose a threat to Atlantic species included in the Comprehensive ACL Amendment.

Finally, the space industry in Florida centered on Cape Canaveral is experiencing severe difficulties due to the ramping down and cancellation of the Space Shuttle Program. This program's loss coupled with additional fishery closures will negatively impact this region. However, declining economic conditions due to decline in the space industry may lessen the pace of waterfront development and associated adverse social and economic pressures on fishery infrastructure.

AFFECTED ENVIRONMENT

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

In terms of the biophysical environment, the resources/ecosystems identified in earlier steps of the CEA are the fish populations directly or indirectly affected by the regulations. This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components. Information on species most affected by this amendment are provided in **Section 3.2.1** of this document.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

This step is important in outlining the current and probable stress factors on species identified in the previous steps. The goal is to determine whether these species are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Fish populations

The Comprehensive ACL Amendment addresses species in FMPs that are not undergoing overfishing. This document specifies thresholds for these species to ensure future overfishing does not occur and to ensure these stocks can be maintained at sustainable levels.

Climate change

Global climate changes could have significant effects on Atlantic fisheries. However, the extent of these effects is not known at this time, specifically for the Atlantic. Possible impacts include temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (IPCC 2007; Kennedy et al. 2002).

Actions from this amendment could decrease the carbon footprint from fishing if some fishermen stop or reduce their number and duration of trips due to the establishment of catch limits that could restrict fishing effort to ensure overfishing does not occur. It is unclear how climate change would affect species in the Atlantic. Climate change can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Climate change may significantly impact species in the future, but the level of impacts cannot be quantified at this time, nor is the timeframe known in which these impacts will occur. Actions in this document are expected to reduce or cap harvest of species managed by the Council; thus these actions may partially mitigate the negative impacts of global climate change on these species.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects. SEDAR assessments show trends in biomass, fishing mortality, fish weight, and fish length going back to the earliest periods of data collection. Most species addressed by the Comprehensive ACL Amendment have not been assessed through the SEDAR process. For a detailed discussion of the baseline conditions of species addressed in this document the reader is referred to **Section 3.3**.

DETERMINING THE ENVIRONMENTAL CONSEQUENCES OF CUMULATIVE EFFECTS

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Table 5-1. The cause and effect relationship of fishing and regulatory actions for snapper grouper species within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	**Cause**	**Observed and/or Expected Effects**
1960s-1983	Growth overfishing of many reef fish species.	Declines in mean size and weight of many species including black sea bass.
August 1983	4" trawl mesh size to achieve a 12" TL commercial vermilion snapper minimum size limit (SAFMC 1983).	Protected youngest spawning age classes.
Pre-January 12, 1989	Habitat destruction, growth overfishing of vermilion snapper.	Damage to snapper grouper habitat, decreased yield per recruit of vermilion snapper.
January 1989	Trawl prohibition to harvest fish (SAFMC 1988).	Increase yield per recruit of vermilion snapper; eliminate trawl damage to live bottom habitat.
Pre-January 1, 1992	Overfishing of many reef species including vermilion snapper, and gag.	Spawning stock ratio of these species is estimated to be less than 30% indicating that they are overfished.
January 1992	<u>Prohibited gear</u>: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC. <u>Size/Bag limits</u>: 10" TL vermilion snapper (recreational only); 12" TL vermilion snapper (commercial only); 10 vermilion snapper/person/day; aggregate grouper bag limit of 5/person/day; and 20" TL gag, red, black, scamp, yellowfin, and yellowmouth grouper size limit (SAFMC 1991).	Protected smaller spawning age classes of vermilion snapper.
Pre-June 27, 1994	Damage to *Oculina* habitat.	Noticeable decrease in numbers and species diversity in areas of *Oculina* off FL
July 1994	Prohibition of fishing for and retention of snapper grouper species (HAPC renamed OECA; SAFMC 1993)	Initiated the recovery of snapper grouper species in OECA.
1992-1999	Declining trends in biomass and overfishing continue for a number of snapper grouper species including vermilion snapper and gag.	Spawning potential ratio for vermilion snapper and gag is less than 30% indicating that they are overfished.
February 24, 1999	Gag and black: 24" total length (recreational and commercial); 2 gag or black grouper bag limit within 5 grouper aggregate; March-April commercial closure. Vermilion snapper:" total length (recreational). Aggregate bag limit of no more than 20 fish/person/day for all snapper grouper species without a bag limit (1998a).	F for gag vermilion snapper remains declines but is still above F_{MSY}.

Time period/dates	Cause	Observed and/or Expected Effects
October 23, 2006	Snapper grouper FMP Amendment 13C (SAFMC 2006)	Commercial vermilion snapper quota set at 1.1 million lbs gutted weight; recreational vermilion snapper size limit increased to 12" TL to prevent vermilion snapper overfishing
Effective February 12, 2009	Snapper grouper FMP Amendment 14 (SAFMC 2007)	Use marine protected areas (MPAs) as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (e.g., speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). Gag vermilion snapper occur in some of these areas.
Effective March 20, 2008	Snapper grouper FMP Amendment 15A (SAFMC 2008a)	Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Effective Dates Dec 16, 2009, to Feb 16, 2010.	Snapper grouper FMP Amendment 15B (SAFMC 2008b)	End double counting in the commercial and recreational reporting systems by prohibiting the sale of bag-limit caught snapper grouper, and minimize impacts on sea turtles and smalltooth sawfish.
Effective July 29, 2009	Snapper grouper FMP Amendment 16 (SAFMC 2009a)	Protect spawning aggregations and snapper grouper in spawning condition by increasing the length of the spawning season closure, decrease discard mortality by requiring the use of dehooking tools, reduce overall harvest of gag and vermilion snapper to end overfishing.
Effective January 4, 2010	Red Snapper Interim Rule (NMFS 2010)	Prohibit commercial and recreational harvest of red snapper from January 4, 2010, to June 2, 2010 with a possible 186-day extension. Reduce overfishing of red snapper while long-term measures to end overfishing are addressed in Amendment 17A.
Effective dates are as follows: Prohibition on the harvest and possession of red snapper (December 3, 2010); area closure for South	Snapper Grouper FMP Amendment 17A (SAFMC 2010a)	SFA parameters for red snapper; ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; accountability measures. Establish rebuilding plan for red snapper.

Time period/dates	Cause	Observed and/or Expected Effects
Atlantic snapper grouper (January 3, 2011); and circle hook requirement (March 3, 2011).		
Effective January 3, 2011	Emergency Rule	Delayed the implementation of the snapper grouper area closure until June 1st, 2011
Effective January 31, 2011	Snapper Grouper Amendment 17B (SAFMC 2010b)	ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; AMs, for species undergoing overfishing.
Effective July 22, 2010	Comprehensive Ecosystem-Based Amendment 1 (Amendment 19 to the Snapper Grouper FMP)	Provided spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).
Effective may 31, 2011	Regulatory Amendment 10	Eliminated the area closure established through Amendment 17A for all snapper grouper species off the coasts of southern Georgia and north/central Florida.
Effective July 15, 2011	Regulatory Amendment 9	Control derby fisheries for black sea bass, vermilion snapper, gag, and greater amberjack.
Target 2012	Snapper Grouper FMP Amendment 18A	Prevent overexploitation in the black sea bass commercial sector, improve data collection timeliness and data quality.
Target 2012	Snapper Grouper FMP Amendment 18B	Prevent overexploitation in the golden tilefish commercial sector.
Target 2011	Comprehensive ACL Amendment (Amendment 23 to the Snapper Grouper FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Target 2012	Amendment 20A (Wreckfish)	Review the current ITQ program and update the ITQ program as necessary to comply with MSA LAPP requirements.
Target 2012	Amendment 24	Rebuilding plan for red grouper

Table 5-2. The cause and effect relationship of fishing and regulatory actions for dolphin and wahoo within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	**Cause**	**Observed and/or Expected Effects**
June 28, 2004	Fishery Management Plan (SAFMC 2003a)	Required vessel owners to obtain commercial vessel, and charter vessel/headboat permits, require dealers to obtain permits, establish bag limits and a minimum size limit (dolphin only), and prohibit sale without a commercial vessel permit; specify allowable gear.
July 22, 2010	Comprehensive Ecosystem-Based Amendment 1 (Amendment 1 to the Dolphin Wahoo FMP)	Provided spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).
Target 2011	Comprehensive ACL Amendment (Amendment 2 to the Dolphin Wahoo FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.

Table 5-3. The cause and effect relationship of fishing and regulatory actions for golden crab within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
September 1996	Fishery Management Plan (SAFMC 1995)	Establish a management program with regulations on traps, limits on participants in fishery, establish permit system, identification of locations where gear can be fished.
June 3, 2002	Amendment 3 (SAFMC 2000b)	Modify escape panel sizes for traps, address permit renewal and minimum harvest requirements.
July 2010	Amendment 4 (SAFMC 2010c)	Established Allowable Golden Crab Fishing Areas within the Deepwater Coral HAPCs
Target 2011	Comprehensive ACL Amendment (Amendment 5 to the Golden Crab FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Target 2012	Amendment 6	Would establish a catch-share program for the golden crab fishery.

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat of the South Atlantic Region (SAFMC 2002) protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

9. Determine the magnitude and significance of cumulative effects.

Proposed management actions, as summarized in **Section 2** of this document, would remove some species from South Atlantic Snapper Grouper FMU; consider multi-species groupings for specifying ACLs, ACTs, and AMs; establish ABC control rules; ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing; consider designating some snapper grouper species as ecosystem component species; specify allocations among the commercial, recreational, and for-hire sectors for species not undergoing overfishing; and modify management measures to limit total mortality to the ACL. Detailed discussions of the magnitude and significance of the preferred alternatives appear in **Section 4.0** of this consolidated document. Also included is a brief discussion of their combined effects on the snapper grouper, dolphin wahoo, and golden crab fishery management units (FMUs), and the ecosystem.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects on the biophysical environment are expected to be positive. Avoidance, minimization, and mitigation are not applicable.

11. Monitor the cumulative effects of the selected alternative and adopt management.

The effects of the proposed action are, and will continue to be, monitored through collection of data by NOAA Fisheries Service, states, stock assessments and stock assessment updates, life history studies, and other scientific observations.

5.2 Socioeconomic

Participation in and the economic performance of the fisheries addressed in this document have been affected by a combination of regulatory, biological, social, and external economic factors. Regulatory measures have obviously affected the quantity and composition of harvests of species addressed in this document, through the various size limits, seasonal restrictions, trip or bag limits, and quotas. Gear restrictions, notably fish trap and longline restrictions, have also affected snapper grouper harvests and economic performance. The limited access program implemented in 1998/1999 substantially affected the number of participants in the snapper grouper fishery. The 1996 FMP for the Golden Crab Fishery (SAFMC 1995) established a limited entry system, fishing zones, and protective measures for the crabs. Approved in 2004, the FMP for the Dolphin and Wahoo Fishery of the Atlantic (SAFMC 2003a) established historical allocations for dolphin and wahoo between the commercial and recreational sectors with the goal of maintaining harvest at levels observed in the 1990a and ensuring that no new fisheries develop.

Amendment 3 to the Golden Crab FMP (SAFMC 2000b) extended the authorization to use wire cable for mainlines attached to golden crab traps to December, 31, 2002; modified escape panel sizes for traps; addressed permit renewal requirements including removal of the 5,000 pound harvest requirement for renewing biannual permits and addressed the minimum harvest requirement for permit holders in the Southern Zone; allowed up to a 20% increase in vessel size from the vessel size of the original permit; created a sub-zone within the Southern Zone with specified conditions; allowed two new vessels to be permitted to fish only in the Northern Zone using an earlier list of those wanting to enter the fishery; specified status determination criteria; and modified the FMP framework to allow modifications to the sub-zone.

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat (SAFMC 2002) of the South Atlantic Region protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. *Sargassum* provides habitat to a wide variety of marine organisms including invertebrates, fish, sea turtles and marine birds. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

Biological forces that either motivate certain regulations or simply influence the natural variability in fish stocks have likely played a role in determining the changing composition of the fisheries addressed by this document. Additional factors, such as changing career or lifestyle preferences, stagnant to declining prices due to imports, increased operating costs (gas, ice, insurance, dockage fees, etc.), and increased waterfront/coastal value leading to development pressure for other than fishery uses have impacted both the commercial and recreational fishing sectors.

Given the variety of factors that affect fisheries, persistent data issues, and the complexity of trying to identify cause-and-effect relationships, it is not possible to differentiate actual or cumulative regulatory effects from external cause-induced effects. For each regulatory action, expected effects are projected. However, these projections typically only minimally, if at all, are capable of incorporating the variety of external factors, and evaluation in hindsight is similarly incapable of isolating regulatory effects from other factors, as in, what portion of a change was due to the regulation versus due to input cost changes, random species availability variability, the sale of a fish house for condominium development, or even simply fishermen behavioral changes unrelated to the regulation.

In general, it can be stated, however, that the regulatory environment for all fisheries has become progressively more complex and burdensome, increasing, in tandem with other adverse influences, the pressure on economic losses, business failure, occupational changes, and associated adverse pressures on associated families, communities, and industries. Some reverse of this trend is possible and expected. The adoption of limited access privilege programs for the snapper grouper fishery would allow a simplified regulatory environment since trip or seasonal restrictions may no longer be needed and effort issues should be addressed by internal access-rights transfer, while rebuilding plans and the recovery of stocks would allow harvest increases. However, certain pressures would remain, such as total effort and total harvest considerations, increasing input costs, import induced price pressure, and competition for coastal access.

A description of the human environment, including a description of the commercial and recreational snapper grouper fishery, dolphin and wahoo fishery, golden crab fishery as well as associated key fishing communities is contained in **Section 3.8** and incorporated herein by reference. There is currently no fishery for *Sargassum*. A description of the history of management of the fisheries addressed in this document is contained in Appendix D and is incorporated herein by reference. A description of the cumulative effects of actions in Amendments 17A and 17B, which established ACLs and AMs for snapper grouper species are contained in those amendments and incorporated herein by reference (SAFMC 2010a; SAFMC 2010b).

A detailed description of the expected social and economic impacts of the actions in this document is contained elsewhere in Sections 4 and 5 and is incorporated herein by reference. In general, the actions in the Comprehensive ACL Amendment are expected to establish ACLs and AMs for species in four FMPs that are not experiencing overfishing. Actions in the Comprehensive ACL Amendment, however, are expected to have different effects in different areas. At any rate, the actions contained in this document are expected to prevent overfishing from occurring and to support the achievement of OY in the respective fisheries over time, resulting in social and economic gains.

Current and future amendments are expected to add to this cumulative effect. ACLs, AMs and management measures are being developed in CE-BA 2 (SAFMC under review), Amendment 18 to the Coastal Migratory Pelagics FMP (SAFMC under review), and Amendment 10 to the Spiny Lobster FMP (SAFMC under review). CE-BA 2 contains actions to establish ACLs and AMs for octocorals, transfer management of octocorals to the state of Florida, modify regulations in special management zones, and amend FMPs to designate new essential fish habitat-habitat areas of particular concern. Amendment 18 to the Coastal Migratory Pelagics FMP is being developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs for species in the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico. Amendment 10 to the Spiny Lobster FMP is being developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs as well as management actions for spiny lobster including tailing permits, the use of undersized lobster as an attractant, and gear markings on trap lines.

Furthermore, additional actions are being considered for snapper grouper species in Amendment 18A, Amendment 18B, Amendment 24, and Regulatory Amendment 9 (SAFMC 2011b) . Snapper Grouper Amendment 18A (SAFMC under development) will examine limiting participation and effort in the golden tilefish and black sea bass pot fisheries, among other actions. While restrictions of this nature would in theory allow status quo total harvests for the respective species to continue, these restrictions may result in the redistribution of harvests among traditional users, resulting in some participants who are able to increase their harvests, and associated social and economic benefits, and some participants who suffer reduced harvests, with associated losses in benefits. For those who would be expected to experience a possible reduction in harvests, these reductions may occur on top of declining benefits as a result of other recent or developing management action.

Snapper Grouper Amendments 20A and 20B (SAFMC under development) will include a formal review of the current wreckfish individual transferable quota (ITQ) program and will update/modify that program according to recommendations from the review. Depending on the actual management measures adopted, this amendment could provide increased or decreased opportunities for those whose fishing operations have been restricted by the present and past snapper grouper amendments.

Amendment 18 to the Coastal Migratory Pelagics FMP (SAFMC under review) will establish ACLs, AMs, and ACTs for king mackerel, Spanish mackerel, and cobia, and Spiny Lobster Amendment 10 (SAFMC under review) will establish ACLs, AMs, and ACTs for lobsters. Snapper grouper fishermen, and associated businesses and communities, who also participate in these fisheries could potentially face limited prospects for continued participation in multiple fisheries, at least in the short-term, as a result of these amendments.

Snapper Grouper Amendment 24 (SAFMC under development) will establish a rebuilding program for red grouper, which has recently been determined to be overfished and experiencing overfishing. Regulatory Amendment 9 (SAFMC 2011b) addressed trip limits for vermilion snapper, gag, and greater amberjack. Regulatory Amendment 9 also modified the bag limit for black sea bass.

The cumulative social and economic effects of past, present, and future amendments may be described as limiting fishing opportunities in the short-term. However, these amendments are expected to improve prospects for sustained participation in the respective fisheries over time.

6.0 Other Things to Consider

6.1 Unavoidable Adverse Impacts

There are several unavoidable adverse effects on the socioeconomic environment that may result from the implementation of the Comprehensive ACL Amendment. A brief summary of those effects follows.

6.2 Effects of the Fishery on Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require NMFS and the Councils to describe and identify EFH for each life stage of each managed species. The Act also directs NMFS and the Councils to identify actions to encourage the conservation and enhancement of EFH and identify measures to minimize to the extent practicable the adverse effects of fishing on EFH.

The biological and administrative impacts of the proposed actions are described in **Section 4.0**, including impacts on habitat. If the species in the preferred alternatives are removed from the FMU the EFH identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, taking into account the considerable overlap of the distribution and life history habitat requirements of the remaining species in the Snapper Grouper FMU, and other fisheries managed by the SAFMC, no individual habitat type or geographic area previously identified as EFH would lose that designation.

No actions proposed in this document are anticipated to have any adverse impact on EFH or EFH-Habitat Areas of Particular Concern (HAPC) for managed species including species in the snapper grouper complex. No additional impacts of fishing on EFH were identified during the public hearing process. Therefore the South Atlantic Council has determined no new measures to address impacts on EFH are necessary at this time.

Although the proposed actions are not considered to have an adverse impact on EFH requiring consultation, having particular habitat types designated as EFH for multiple life stages of multiple species provides a relative indicator of the overall value of a particular habitat which serve to strengthen the basis of NMFS EFH Conservation Recommendations. However, because the proposed action will not result in any individual habitat type or geographic area previously identified as EFH to lose that designation, the Councils' intent to protect and conserve EFH and NMFS's authority to implement that conservation mandate through the EFH consultation process is not considered to be eliminated.

The South Atlantic Council's adopted habitat policies, which may directly affect the area of concern, are available for download through the Habitat/Ecosystem section of the South Atlantic Council's website:
http://www.safmc.net/EcosystemManagement/HabitatProtection/HabitatPolicies/tabid/245/Default.aspx.

NOTE: The Final EFH Rule, published on January 17, 2002, (67 FR 2343) replaced the interim Final Rule of December 19, 1997 on which the original EFH and EFH-HAPC designations were made. The Final Rule directs the Councils to periodically update EFH and EFH-HAPC information and designations within fishery management plans. As was done with the original Habitat Plan, a series of technical workshops were conducted by South Atlantic Council habitat staff and a draft plan that includes new information has been completed pursuant to the Final EFH Rule.

6.3 Damage to Ocean and Coastal Habitats

The alternatives and proposed actions are not expected to have any adverse effect on the ocean and coastal habitat.

Management measures implemented in the original Snapper Grouper Fishery Management Plan through Amendment 7 (SAFMC 1994a) combined have significantly reduced the impact of the snapper grouper fishery on essential fish habitat (EFH). The South Atlantic Council has reduced the impact of the fishery and protected EFH by prohibiting the use of poisons and explosives; prohibiting use of fish traps and entanglement nets in the exclusive economic zone; banning use of bottom trawls on live/hard bottom habitat north of Cape Canaveral, Florida; restricting use of bottom longline to depths greater than 50 fathoms north of St. Lucie Inlet; and prohibiting use of black sea bass pots south of Cape Canaveral, Florida. These gear restrictions have significantly reduced the impact of the fishery on coral and live/hard bottom habitat in the South Atlantic Region.

Additional management measures in Amendment 8 (SAFMC 1997a), including specifying allowable bait nets and capping effort, have protected habitat by making existing regulations more enforceable. Establishing a controlled effort program limited overall fishing effort and to the extent there is damage to the habitat from the fishery (e.g. black sea bass pots, anchors from fishing vessels, impacts of weights used on fishing lines and bottom longlines), limited such impacts.

In addition, measures in Amendment 9 (SAFMC 1998b), that include further restricting longlines to retention of only deepwater species and requiring that black sea bass pot have escape panels with degradable fasteners, reduce the catch of undersized fish and bycatch and ensure that the pot, if lost, will not continue to "ghost" fish. Amendment 13C (SAFMC 2006) increased mesh size in the back panel of pots, which has reduced bycatch and retention of undersized fish. Amendment 15B (SAFMC 2008b) implemented sea turtle bycatch release equipment requirements, and sea turtle and smalltooth sawfish handling protocols and/or guidelines in the permitted commercial and for-hire snapper grouper fishery.

Amendment 16 (SAFMC 2009a), implemented an action to reduce bycatch by requiring fishermen to use dehooking devices. Limiting the overall fishing mortality reduces the likelihood of over-harvesting of species with the resulting loss in genetic diversity, ecosystem diversity, and sustainability.

Measures adopted in the Coral and Shrimp FMPs have further restricted access by fishermen that had potential adverse impacts on essential snapper grouper habitat. These measures include the designation of the *Oculina* Bank HAPC and the rock shrimp closed area (see the Shrimp and Coral FMP/Amendment documents for additional information).

The South Atlantic Council's Comprehensive Habitat Amendment (SAFMC 1998d) contains measures that expanded the *Oculina* Bank Habitat of Particular Concern (HAPC) and added two additional satellite HAPCs. Amendment 14 (SAFMC 2007), established marine protected areas where fishing for or retention of snapper grouper species would be prohibited. Furthermore, the Comprehensive Ecosystem Based Amendment 1 (CE-BA 1) (SAFMC 2010c) established deepwater coral habitat of particular concern to protect what is believed to be the largest distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. CE-BA 1 also created allowable gear areas for the golden crab fishery and shrimp fishery access areas for the deepwater shrimp fishery. The establishment of these areas allows for the continuation of these fisheries in their historical fishing grounds with little or no negative impacts to protected deepwater coral habitat.

Management measures implemented in the Golden Crab FMP (SAFMC 1995) has reduced the impact of the golden crab fishery on EFH. The Golden Crab FMP set up a management program for the golden crab fishery in the South Atlantic EEZ, established a limited entry system, and divided the fishery into three zones.

The Dolphin Wahoo FMP (SAFMC 2003a) has reduced the impact of the dolphin and wahoo fishery on EFH. The Dolphin Wahoo FMP closed the longline fisheries for dolphin and wahoo in areas closed to the use of such gear for highly migratory pelagic species, and specified EFH and EFH habitat areas of particular concern.

6.4 Relationship of Short-Term Uses and Short-Term Productivity

The relationship between short-term uses and long-term productivity will be affected by the Comprehensive ACL Amendment. The proposed actions could reduce the harvest of species in FMPs for Snapper Grouper and prevent increased harvest from occurring for species in FMPs for Dolphin Wahoo, Golden Crab, and Sargassum. The Comprehensive ACL Amendment would establish annual catch levels (ACLs) and accountability measures (AMs) for federally managed species as required by the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act. The ACLs are set at levels that prevent overfishing, and the AMs are management controls established to ensure that ACLs are not exceeded, or they may correct for overages if ACLs are exceeded during a fishing season.

The Comprehensive ACL Amendment would also remove snapper species which have small landings or are predominantly taken in state waters. Rare species, which are being considered for removal, currently constitute a minor portion of the overall snapper grouper landings. Species which are predominantly taken in state waters can be more appropriately managed by the states. Therefore, removal of species from the snapper grouper FMU is likely to cause changes in the short-term with respect to who manages some species. Actions in this Comprehensive ACL Amendment are expected to benefit the long-term productivity of these species.

6.5 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are defined as commitments that cannot be reversed, except perhaps in the extreme long-term, whereas irretrievable commitments are lost for a period of time. There are no irreversible commitments in the Comprehensive ACL Amendment. Action 1 would remove some snapper grouper species from the FMU, which have small landings or are predominantly caught in state waters. Removal of species from the FMU does not mean the species cannot be added back into the FMU at a future date if it is determined landings have substantially increased or a species is not being effectively managed by a state.

While the proposed actions would result in irretrievable losses in consumer surplus and angler expenditures, failing to take action could compromise the long-term sustainability of the stocks. Since the FMPs for Snapper Grouper, Dolphin Wahoo, and Golden Crab and their implementing regulations are always subject to future changes, proceeding with the development of this amendment does not represent an irreversible or irretrievable commitment of resources. NOAA Fisheries Service always has discretion to amend its regulations and may do so at any time, subject to the Administrative Procedures Act.

6.6 Unavailable or Incomplete Information

The Council on Environmental Quality, in its implementing regulations for the National Environmental Policy Act (NEPA), addressed incomplete or unavailable information at 40 CFR 1502.22 (a) and (b). There are two tests to be applied: 1) Does the incomplete or unavailable information involve "reasonable foreseeable adverse effects…;" and 2) is the information about these effects "essential to a reasoned choice among alternatives…".

Stock assessments have been conducted for gag, red grouper, red porgy, black grouper, golden tilefish, red snapper, vermilion snapper, black sea bass, greater amberjack, and mutton snapper, which are addressed in this document, using the best available data available. Status determinations for these species were derived from the Southeast Data Assessment and Review (SEDAR) process, which involves a series of three workshops designed to ensure each stock assessment reflects the best available scientific information. The findings and conclusions of each SEDAR workshop are documented in a series of reports, which are ultimately reviewed and discussed by the South Atlantic Council and their Scientific and Statistical Committee (SSC). SEDAR participants, the South Atlantic Council advisory committees, the South Atlantic Council, and NOAA Fisheries Service staff reviewed and considered any concerns about the adequacy of the data. The South Atlantic Council's SSC determined that these assessments are based on the best available data.

The South Atlantic Council's Snapper Grouper Committee acknowledged, while stock assessment findings can be associated with different degrees of uncertainty, there is no reason to assume such uncertainty leads to unrealistically optimistic conclusions about stock status. Rather, the stocks could be in worse shape than indicated by the stock assessment. Uncertainty due to unavailable or incomplete information should not be used as a reason to avoid taking action. Therefore, there are reasonable foreseeable significant adverse effects of not taking action to end overfishing. Failure to take action could result in a worsening of stock status, persistent foregone economic benefits, and more severe corrective actions to end overfishing in the future.

Many species addressed in this amendment have not had a formal SEDAR stock assessment due to data limitations or are scheduled to be assessed in the future. Where information is unavailable or incomplete, acceptable biological catch control rules and annual catch limits are designed to adopt a conservative approach to increase the probability overfishing does not occur. None of the impacts of decisions made despite the above mentioned unavailable and incomplete information would be catastrophic in nature as described in Section 1502.22(4) of implementing regulations for the NEPA.

7.0 List of Preparers

Name	Title	Agency	Division	Location
David Dale	EFH Specialist	NMFS	HC	SERO
Rick DeVictor	Environmental Impact Scientist	NMFS	SF	SERO
Myra Brouwer	Fishery Scientist	SAFMC	N/A	SAFMC
Nick Farmer	Data Analyst	NMFS	SF	SERO
Roger Pugliese	Sr. Fishery Biologist	SAFMC	N/A	SAFMC
Andy Herndon	Biologist	NMFS	PR	SERO
Stephen Holiman	Economist	NMFS	SF	SERO
Michael Jepson	Anthropologist	NMFS	SF	SERO
David Keys	Regional NEPA Coordinator	NMFS	F/SER	SER
Mike Travis	Economist	NMFS	SF	SERO
Jack McGovern	Fishery Scientist	NMFS	SF	SERO
Nikhil Mehta	Fishery Biologist	NMFS	SF	SERO
Kate Michie	Fishery Management Plan Coordinator	NMFS	SF	SERO
John Carmichael	Data Analyst	SAFMC	N/A	SAFMC
Kate Quigley	Economist	SAFMC	N/A	SAFMC
Monica Smit-Brunello	Attorney Advisor	NOAA	GC	SERO
Karla Gore	Fishery Biologist	NMFS	SF	SERO
Jim Berkson	Ecologist	NMFS	Ecology	SEFSC
Gregg Waugh	Deputy Director	SAFMC	N/A	SAFMC
Larry Perruso	Economist	SEFSC	Social Sciences	SEFSC
David Carter	Economist	SEFSC	Social Sciences	SEFSC
Juan Agar	Economist	SEFSC	Social Sciences	SEFSC

NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, GC = General Counsel

Comprehensive ACL Interdisciplinary Plan Team Members

Team Leads

Myra Brouwer	SAFMC Staff
Nikhil Mehta	NMFS Sustainable Fisheries Division

Team Members

Rick DeVictor	NMFS Sustainable Fisheries Division
John Carmichael	SAFMC Staff
Anik Clemens	NMFS Sustainable Fisheries Division
Scott Sandorf	NMFS Sustainable Fisheries Division
David Dale	NMFS Habitat Conservation Division
Otha Easley	NMFS Law Enforcement
Nick Farmer	NMFS Sustainable Fisheries Division
Karla Gore	NMFS Sustainable Fisheries Division
Andrew Herndon	NMFS Protected Resources Division
Stephen Holiman	NMFS Economic Division
David Keys	NMFS Regional NEPA Coordinator
Jack McGovern	NMFS Sustainable Fisheries Division South Atlantic Branch Chief
Kate Michie	NMFS Sustainable Fisheries Division
Janet L. Miller	NMFS Sustainable Fisheries Division
Mike Travis	NMFS Economic Division
Michael Jepson	NMFS Social Science Division
Roger Pugliese	SAFMC Staff
Kate Quigley	SAFMC Staff
Anna Martin	SAFMC Staff
Monica Smit-Brunello	NMFS General Counsel
Andy Strelcheck	NMFS Sustainable Fisheries Division
Gregg Waugh	SAFMC Deputy Director
Jim Berkson	NMFS-SEFSC
Larry Perruso	NMFS-SEFSC
David Carter	NMFS-SEFSC
Juan Agar	NMFS-SEFSC

8.0 List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent

Responsible Agency

Comprehensive ACL Amendment:
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
(843) 769-4520 (FAX)
safmc@safmc.net

Environmental Impact Statement:
NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 (TEL)
(727) 824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Marine Protected Areas Advisory Panel
SAFMC Dolphin Wahoo Advisory Panel
SAFMC Golden Crab Advisory Panel
SAFMC Habitat and Environmental Protection Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
Gulf of Mexico and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fishery Management Council
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

9.0 References

Adams, W.F., and C. Wilson. 1995. The status of the smalltooth sawfish, *Pristis pectinata* Latham 1794 (Pristiformes: Pristidae) in the United States. Chondros 6(4):1-5.

Anderes Alvarez, B.A., and I. Uchida. 1994. Study of the Hawksbill turtle (*Eretmochelys imbricata)* stomach content in Cuban waters. *In*: Study of the Hawksbill turtle in Cuba (I), Ministry of Fishing Industry, Cuba.

Bak, R.P.M., J.J.W.M. Brouns, and F.M.L. Hayes. 1977. Regeneration and aspects of spatial competition in the scleractinian corals *Agaricia agaricites* and *Monastrea annularis*. Proceedings of the 3rd International Coral Reef Symposium, Miami, pp 143-148.

Bigelow, H.B., and W.C. Schroeder. 1953. Sawfishes, guitarfishes, skates and rays, pp. 1-514. *In:* Tee-Van, J., C.M Breder, A.E. Parr, W.C. Schroeder and L.P. Schultz (eds). Fishes of the Western North Atlantic, Part Two. Mem. Sears Found. Mar. Res. I.

Bird, C.E., Holland, B.S., Bowen, B.W., and R.J. Toonen. 2007. Contrasting population structure in three endemic Hawaiian limpets (*Cellana* spp.) with similar life histories. Molecular Ecology. 16: 3173-3187

Bjorndal, K.A. 1980. Nutrition and grazing behavior of the green sea turtle, *Chelonia mydas*. Marine Biology 56:147.

Bjorndal, K.A. 1997. Foraging ecology and nutrition of sea turtles. *In*: Lutz, P.L. and J.A. Musick (eds.), The Biology of Sea Turtles. CRC Press, Boca Raton, Florida.

Bolten, A.B., and G.H., Balazs. 1995. Biology of the early pelagic stage – the “lost year.” *In*: Bjorndal, K.A. (ed.), Biology and Conservation of Sea Turtles, Revised edition. Smithsonian Institute Press, Washington, D.C., 579.

Brongersma, L.D. 1972. European Atlantic Turtles. Zool. Verhand. Leiden, 121:318

Burke, V.J., E.A. Standora, and S.J. Morreale. 1993. Diet of juvenile Kemp’s ridley and loggerhead sea turtles from Long Island, New York. Copeia, 1993, 1176.

Byles, R.A. 1988. Behavior and Ecology of Sea Turtles from Chesapeake Bay, Virginia. Ph.D. dissertation, College of William and Mary, Williamsburg, VA.

Carpenter, K. E. 2002. The living marine resources of the Western Central Atlantic. Volume 2: Bony fishes part 1 (Acipenseridae to Grammatidae). FAO Species Identification Guide for Fishery Purposes and American Society of Ichthyologists and herpetologists Special publication No. 5. FAO**:** 1297-1298. Rome Italy.

Carr, A. 1986. Rips, FADS, and little loggerheads. BioScience 36:92.

Carr, A. 1987. New perspectives of the pelagic stage of sea turtle development. Conservation Biology 1(2):103.

Carter, D.W. and C. Liese. 2011. The Economic Value of Catching and Keeping or Releasing Saltwater Sportfish in the Southeast United States. In Review.

CeTAP (Cetacean and Turtle Assessment Program). 1982. A characterization of marine mammals and turtles in the mid- and north Atlantic areas of the U.S. outer continental shelf. Final Report. U.S. Dept. of Interior, Bureau of Land Management, Contract No. AA551- CT8-48, Washington, D.C. 538 pp.

CEQ (Council on Environmental Quality). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. U.S. Council on Environmental Quality, Washington, DC. 64 pp.

Cheuvront, B., and M. Neal. 2004. A Social and Economic Analysis of Snapper Grouper Complex Fisheries in North Carolina South of Cape Hatteras. A report for the NC Technical Assistance to the SAFMC, Task 5: NEPA Related Activities, Contract No. SA-03-03-NC. Morehead City, NC. 50 pages.

Crosson, Scott B. 2010. Trends in the South Atlantic Golden Crab Fishery. NOAA Technical Memorandum NOAA Fisheries Service-SEFSC-608.

Cutter, S. L. Byron J. B., and W. L. Shirley. 2003. Social Vulnerability to Environmental Hazards. Social Science Quarterly 84(2):242-261.

Dumas, C.F., J.C. Whitehead, C.E. Landry, and J.H. Herstine. 2009. Economic Impacts and Recreation Value of the North Carolina For-Hire Fishing Fleet. North Carolina Sea Grant FRG Grant Report 07-FEG-05.

Eckert, S.A., D.W. Nellis, K.L. Eckert, and G.L. Kooyman. 1986. Diving patterns of two leatherback sea turtles (*Dermochelys coriacea*) during interesting intervals at Sandy Point, St. Croix, U.S. Virgin Islands. Herpetologica 42:381.

Eckert, S.A., K.L. Eckert, P. Ponganis, and G.L. Kooyman. 1989. Diving patterns of two leatherback sea turtles (*Dermochelys coriacea*). Canadian Journal of Zoology 67:2834.

Florida Marine Species Rule. FWCC Rule No. 68-42.001, accessed at: https://www.flrules.org/gateway/chapterhome.asp?chapter=68B-42

Frick, J. 1976. Orientation and behavior of hatchling green turtles (*Chelonia mydas*) in the sea. Animal Behavior 24:849.

GMFMC (Gulf of Mexico Fishery Management Council). 1989. Amendment 1 to the Reef Fish Fishery Management Plan. Gulf of Mexico Fishery Management Council, 2203 N Lois Avenue Suite 1100, Tampa, FL 33607. 356 p.

Ghiold, J. and S. H. Smith. 1990. Bleaching and recovery of deep-water, reef-dwelling invertebrates in the Cayman Islands, BWI. Caribbean Journal of Science 26:52-61.

Goreau, T. F. and J. W. Wells. 1967. The shallow-water Scleractinia of Jamaica: revised list of species and their vertical range. Bulletin of Marine Science 17:442-453.

Goreau, T. F. and N. I. Goreau. 1973. Coral Reef Project-Papers in Memory of Dr. Thomas F. Goreau. Bulletin of Marine Science 23:399-464.

Haab, T. C., J. C. Whitehead, and T. McConnell. 2001. The Economic Value of Marine Recreational Fishing in the Southeast United States. NOAA Technical Memorandum NMFS-SEFSC-466.

Haab, T.C., R. Hicks, K. Schnier, and J.C. Whitehead. 2009. Angler Heterogeneity and the Species-Specific Demand for Recreational Fishing in the Southeastern United States. Draft Final Report Submitted for MARFIN Grant #NA06NMF4330055.

Harper, D.E., Eyo, P.B., and G.P. Scott. 2000. Updated Golden crab fishery trends and production model analysis based on trip report logbook and trip interview data collection programs. Report to the South Atlantic Fishery Management Council Golden Crab Advisory Committee. NOAA Fisheries Southeast Fisheries Science Center, Miami, Florida. 15p.

Holland, S. M., A. J. Fedler, and J. W. Milon. 1999. The Operation and Economics of the Charter and Headboat Fleets of the Eastern Gulf of Mexico and South Atlantic Coasts. University of Florida Office of research, Technology, and Graduate Education. Report prepared for the National Marine Fisheries Service. Grant Number NA77FF0553.

Hughes, G.R. 1974. The sea turtles of southeast Africa. II. The biology of the Tongaland loggerhead turtle *Caretta caretta* L. with comments on the leatherback turtle *Dermochelys coriacea* L. and green turtle *Chelonia mydas* L. in the study region. Oceanographic Research Institute (Durban) Investigative Report. No. 36.

IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

Jaap, W.C., W.G. Lyons, P. Dustan, and J.C. Halas. 1989. Stony coral (Scleractinia and Milleporina) community structure at Bird Key Reef, Ft. Jefferson National Monument, Dry Tortugas, Florida. Fla. Mar. Res. Publ. 46.

Jepson, M., K. Kitner, A. Pitchon, W.W. Perry, and B. Stoffle. 2005. Potential fishing communities in the Carolinas, Georgia, and Florida: An effort in baseline profiling and mapping. NOAA Technical Report No. (TBD).

Keinath, J.A., and J.A., Musick. 1993. Movements and diving behavior of a leatherback sea turtle, *Dermochelys coriacea*. Copeia 1993:1010.

Kennedy, V. S., R. R. Twilley, J. A. Kleypas, J. H. Cowan, Jr., S. R. Hare. 2002. Coastal and Marine Ecosystems & Global Climate Change: Potential Effects on U.S. Resources. Pew Center on Global Climate Change. 52 p.

Knowlton, A.R., S.D. Kraus, and R.D. Denney. 1994. Reproduction in North Atlantic right whales, Eubalaena glacialis. Canadian Journal of Zoology. 72: 1297-1305.

Kraus, S.D., P.K. Hamilton, R.D. Kenney, A. Knowlton, and C.K. Slay. 2001. Reproductive parameters of the North Atlantic right whale. Journal of Cetacean Research and Management. (Special Issue) 2: 231-236.

Landres, P. B., J. Verner, and J. W. Thomas. 1988. Ecological uses of vertebrate indicator species: A critique. Conservation Biology 2: 316–328.

Lanyon, J.M., C.J. Limpus, and H., Marsh. 1989. Dugongs and turtles: grazers in the seagrass system. *In:* Larkum, A.W.D, A.J., McComb and S.A., Shepard (eds.) Biology of Seagrasses. Elsevier, Amsterdam, 610.

Lewis, J.B. 1977. Suspension feeding in Atlantic reef corals and the importance of suspended particulate matter as a food source. Proceedings of the 3rd International Coral Reef Symposium. pp. 405-408.

Liese, C., D.W. Carter, and R. Curtis. 2009. Surveying the For-Hire Sector: Economic Heterogeneity in the Southeast Charter Boat Industry. Submitted to the Proceedings of the 5th World Recreational Fishing Conference.

Limpus, C.J., and N., Nichols. 1988. The southern oscillation regulates the annual numbers of green turtles (*Chelonia mydas*) breeding around northern Australia. Australian Journal of Wildlife Research 15:157.

Limpus, C.J., and N., Nichols. 1994. Progress report on the study of the interaction of El Niño Southern Oscillation on annual *Chelonia mydas* numbers at the southern Great Barrier Reef rookeries. *In:* Proceedings of the Australian Marine Turtle Conservation Workshop, Queensland Australia.

Lutz, P.L., and J.A., Musick (eds.). 1997. The Biology of Sea Turtles. CRC Press, Boca Raton, Florida.

Lutz, P.L., J.A., Musick, and J. Wyneken. 2002. The Biology of Sea Turtles, Volume II. CRC Press, Boca Raton, Florida.
MRAG Americas. 2009. South Atlantic Regional PSA Results. A report from MRAG Americas, Inc. 16 p. http://www.mragamericas.com/wp-content/uploads/2010/04/PSA_SA-Results_MRAG.pdf

MacDonald, L.H. 2000. Evaluating and managing cumulative effects: process and constraints. Environmental Management 26(3): 299-315.
Márquez -M, R. 1994. Synopsis of biological data on the Kemp's ridley turtles, *Lepidochelys kempii* (Garman, 1880). NOAA Technical Memo, NMFS-SEFSC-343. Miami, FL.

Mendonca, M.T., and P.C.H., Pritchard. 1986. Offshore movements of post-nesting Kemp's ridley sea turtles (*Lepidochelys kempi*). Herpetologica 42:373.

Meylan, A. 1984. Feeding Ecology of the Hawksbill turtle (*Eretmochelys imbricata)*: Spongivory as a Feeding Niche in the Coral Reef Community. Dissertation, University of Florida, Gainesville, FL.

Meylan, A. 1988. Spongivory in hawksbill turtles: a diet of glass. *Science* 239:393-395.

Meylan, A.B., and M. Donnelly. 1999. Status justification for listing the hawksbill turtle (*Eretmochelys imbricata)* as critically endangered on the 1996 IUCN Red List of Threatened Animals. Chelonian Conservation and Biology 3(2): 200-204.

Mortimer, J.A. 1981. The feeding ecology of the West Caribbean green turtle (*Chelonia mydas*) in Nicaragua. Biotropica 13:49.

Mortimer, J.A. 1982. Feeding ecology of sea turtles. *In*: Bjorndal, K.A. (ed.), Biology and Conservation of Sea Turtles. Smithsonian Institute Press, Washington, D.C.

Niemi, J. G., J. M. Hanowski, A. R. Lima, T. Nicholls, and N. Weiland. 1997. A critical analysis on the use of indicator species in management. Journal of Wildlife Management 61:1240–1252.

NMFS (National Marine Fisheries Service). 1998. Draft recovery plan for the fin whale, *Balaenoptera physalus* and sei whale, *Balaenoptera borealis*. Prepared by Reeves, R.R., G.K. Silber and P.M. Payne for the National Marine Fisheries Service, Silver Springs, MD. 60p.

NMFS (National Marine Fisheries Service). 1998a. Recovery plan for the blue whale, *Balaenoptera musculus*. Prepared by Reeves, R.R., P.J. Clapham, R.L. Brownell, Jr. and G.K. Silber for the National Marine Fisheries Service, Silver Spring, MD. 42p.

NMFS (National Marine Fisheries Service). 2003a. Endangered Species Act – Section 7 Consultation on the Fishery Management Plan for the Dolphin and Wahoo Fishery of the Atlantic Ocean. Biological Opinion, August 27.

NMFS (National Marine Fisheries Service). 2003b. Endangered Species Act – Section 7 Consultation on the Section Revised Fishery Management Plan for Pelagic Sargassum Habitat of the South Atlantic Region. Biological Opinion, March 21.

NMFS (National Marine Fisheries Service). 2006. Endangered Species Act section 7 consultation on the Continued Authorization of Snapper-Grouper Fishing under the South Atlantic Snapper-Grouper Fishery Management Plan (RFFMP) and Proposed Amendment 13C. Biological Opinion. June 7.

NMFS (National Marine Fisheries Service). 2008a. Analysis of the Expected Economic Effects of the August 5 Closure of the 2008 Red Snapper Recreational Fishery in the Federal Waters of the Gulf of Mexico. NOAA SEFSC SSRG.

NMFS (National Marine Fisheries Service). 2009a. Fisheries Economics of the United States 2006. U.S. Depart. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-97. 158 p. Available at: http://www.st.nmfs.gov/st5/publications/index.html.

NMFS (National Marine Fisheries Service). 2009b. "Response to the 7/10/09 Data Request for Amendment 17A to the Snapper Grouper Fishery Management Plan of the South Atlantic." 4 p.

NMFS (National Marine Fisheries Service). 2009c. "Economic Value of Angler Catch and Keep in the Southeast United States: Evidence from a Choice Experiment." NOAA SEFSC SSRG.

NMFS (National Marine Fisheries Service). 2010. Interim Rule for Red Snapper. Federal Register, September 24, 2010 (Volume 75, Number 185).

NMFS (National Marine Fisheries Service). 2011. Annual report to Congress on the Status of U.S. Fisheries – 2010, U.S. Dept. of Commerce, NOAA, Natl. Mar. Fish. Serv., Silver Spring, MD, 21pp.

Norman, J. R., and F. C.. Fraser. 1938. Giant Fishes, Whales and Dolphins. W. W. Norton and Company, Inc, New York, NY. 361 pp.

Ogren, L.H. 1989. Distribution of juvenile and subadult Kemp's ridley turtles: Preliminary results from the 1984-1987 surveys. *In*: C.W. Caillouet Jr. and A.M. Landry Jr. (eds.) Proceedings from the 1st Symposium on Kemp's ridley Sea Turtle Biology, Conservation, and Management. Sea Grant College Program, Galveston, TX. 116.

Paredes, R.P. 1969. Introduccion al Estudio Biologico de *Chelonia mydas agassizi* en el Perfil de Pisco, Master's thesis, Universidad Nacional Federico Villareal, Lima, Peru.

Porter, J.W. 1976. Autotrophy, heterotrophy, and resource partitioning in Caribbean reef-building corals. American Naturalist 110: 731-742.

Powers, J.E. 2001. Letter to Fulton Love, Chairman, South Atlantic Fishery Management Council regarding MSY for Golden Crab. 2p.

Prager, M.H. 2000. Exploratory Assessment of Dolphinfish, *Coryphaena hippurus*, based on U.S. landings from the Atlantic Ocean and Gulf of Mexico. NMFS, SEFSC 18pp.

Rothschild, B.J. 1986. Dynamics of Marine Fish Populations. Harvard University Press. Cambridge, Massachusetts. 277pp.

Rylaarsdam, K.W. 1983. Life histories and abundance patterns of colonial corals on Jamaican reefs. Marine Ecology Progress Series 13:249-260.

SAFMC (South Atlantic Fishery Management Council). 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1987. Regulatory Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1988a. Amendment Number 1 and Environmental Assessment and Regulatory Impact Review to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 63 pp.

SAFMC (South Atlantic Fishery Management Council). 1988b. Regulatory Amendment 2 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1989. Regulatory Amendment 3 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1990a. Amendment Number 2, to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1990b. Amendment Number 3, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South

Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1991. Amendment Number 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 200 pp.

SAFMC (South Atlantic Fishery Management Council). 1992a. Regulatory Amendment 5 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1992b. Regulatory Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1992c. Regulatory Amendment 5 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1993. Amendment Number 6, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 155 pp.

SAFMC (South Atlantic Fishery Management Council). 1994a. Amendment Number 7, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 110 pp.

SAFMC (South Atlantic Fishery Management Council). 1994b. Regulatory Amendment 6 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1995. Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407. 239 pp.

SAFMC (South Atlantic Fishery Management Council). 1997a. Amendment Number 8, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 124 pp.

SAFMC (South Atlantic Fishery Management Council). 1997b. Framework Seasonal Adjustment #1. Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998a. Regulatory Amendment 7 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998b. Amendment 9, Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 246 pp.

SAFMC (South Atlantic Fishery Management Council). 1998c. Habitat Plan for the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998d. Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (Amendment 10 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998e. Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region (Amendment 11 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 151 pp.

SAFMC (South Atlantic Fishery Management Council). 2000a. Regulatory Amendment 8 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2000b. Amendment 3 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407.

SAFMC (South Atlantic Fishery Management Council). 2000c. Amendment Number 12, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2002. Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for Pelagic Sargassum Habitat of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 228 pp.

SAFMC (South Atlantic Fishery Management Council). 2003a. Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Dolphin and Wahoo Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 386 pp.

SAFMC (South Atlantic Fishery Management Council). 2003b. Amendment Number 13A, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2006. Amendment 13C, Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 631 pp.

SAFMC (South Atlantic Fishery Management Council). 2007. Amendment 14, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2008a. Amendment 15A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2008b. Amendment 15B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management

Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2009a. Amendment 16, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2009b. Fishery Ecosystem Plan for the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2010a. Amendment 17A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2010b. Amendment 17B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2010c. Comprehensive Ecosystem Based Amendment 1, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for South Atlantic Region (Amendment 19 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. 286 pp.

SAFMC (South Atlantic Fishery Management Council). 2011a. Regulatory Amendment 10, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011b. Regulatory Amendment 9, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

Sammarco, P.W. 1980. Diadema and its relationship to coral spat mortality: grazing, competition, and biological disturbance. Journal of Experimental Marine Biology and Ecology, 45:245-272.

Scott, T.M. and S. S. Sadove. 1997. Sperm whale, *Physeter macrocephalus*, sightings in the shallow shelf waters off Long Island, New York. Marine Mammal Science. 13:317-321.

SEDAR 3. 2003. Stock assessment of southeastern U.S. yellowtail snapper. Available from the SEDAR website: www.sefsc.noaa.gov/sedar/

SEDAR 4. 2004. Stock Assessment Report 1. Stock assessment of the deep-water snapper-grouper complex in the South Atlantic. Available from the SEDAR website: www.sefsc.noaa.gov/sedar/

SEDAR 15A. 2008. Stock Assessment Report 1 (revised March, 2009). South Atlantic Mutton Snapper. Available from the SEDAR website: www.sefsc.noaa.gov/sedar/

SEDAR 19. 2010. Complete Stock Assessment Report 1. South Atlantic and Gulf of Mexico Black Grouper. Available from the SEDAR website: www.sefsc.noaa.gov/sedar/

Sedberry, G.R., G.F. Ulrich, and A.J. Applegate. 1994. Development and status of the fishery for wreckfish (*Polyprion americanus*) in the southeastern United States. Proc. Gulf of Mexico Carib. Fish. Inst. 43:168-192.

Sedberry, G.R., J.L. Carlin, R.W. Chapman, and B. Eleby. 1996. Population structure in the pan-oceanic wreckfish, *Polyprion americanus* (Teleostei: Polyprionidae), as indicated by mtDNA variation. J. Fish Biol. 49 (Supplement A): 318-329.

Sedberry, G., C. A. P. Andrade, J. L. Carlin, R. W. Chapman, B. E. Luckhurst, C. S. I. Manooch, G. Menezes, B. Thomsen, and G. F. Ulrich. 1999. Wreckfish *Polyprion americanus* in the North Atlantic: Fisheries, Biology, and Management of a widely distributed and long-lived fish. *In*: J.A. Musick. Life in the Slow Lane: Ecology and Conservation of Long-Lived Marine Animals. Am. Fish. Soc. Symp. 23:27-50.

Sedberry, G., J. C. McGovern, and O. Pashuk. 2001. The Charleston Bump: An Island of Essential Fish Habitat in the Gulf of Mexico Stream. *In*: Island in the Stream: Oceanography and Fisheries of the Charleston Bump. G. Sedberry, American Fisheries Society Symposium, Bethesda MD. 25: 3-24.

Sedberry, G. 2003. Fishery Biology, Life History and Genetic Population Structure of Globally-distributed Wreckfish, *Polyprion americanus*. South Carolina Department of Natural Resources. http://www.dnr.state.sc.us/marine/mrri/wreckfish/wreckfish.html.

Shaver. D.J. 1991. Feeding ecology of wild and head-started Kemp's ridley sea turtles in south Texas waters. Journal of Herpetology 25:327.

Shinn, E.A. 1963. Spur and groove formation on the Florida Reef Tract. Journal of Sediment Petrology 33: 291-303.

Shivlani, M. 2009. Examination of Non-Fishery Factors on the Welfare of Fishing Communities in the Florida Keys: A focus on the cumulative effects of trade, economic, energy, and aid policies, macroeconomic (county and regional) conditions, and coastal development on the Monroe County commercial fishing industry. MARFIN Grant NA05NMF4331079.

Simpfendorfer, CA. 2001. Essential habitat of the smalltooth sawfish, *Pristis pectinata*. Report to the National Fisheries Service's Protected Resources Division. Mote Marine Laboratory, Technical Report (786) 21pp.

Simpfendorfer, C.A., and T.R., Wiley. 2004. Determination of the distribution of Florida's remnant sawfish population, and identification of areas critical to their conservation. Mote Marine Laboratory, Technical Report July 2, 2004, 37 pp.

Social Vulnerability Index for the United States. http://webra.cas.sc.edu/hvri/products/sovi.aspx# Accessed July 8, 2010.

Soma, M. 1985. Radio biotelemetry system applied to migratory study of turtle. Journal of the Faculty of Marine Science and Technology, Tokai University, Japan, 21:47.

Soong, K. and J. C. Lang. 1992. Reproductive integration in coral reefs. Biological Bulletin 183:418-431.

Standora, E.A., J.R., Spotila, J.A., Keinath, and C.R. Shoop. 1984. Body temperatures, diving cycles, and movements of a subadult leatherback turtle, *Dermochelys coriacea*. Herpetologica 40:169.

Sutton, S. G., R. B. Ditton, J. R. Stoll, and J. W. Milon. 1999. A cross-sectional study and longitudinal perspective on the social and economic characteristics of the charter and party boat fishing industry of Alabama, Mississippi, Louisiana, and Texas. Report by the Human Dimensions of Recreational Fisheries Research Laboratory, Texas A&M University, MARFIN program grant number NA77FF0551.

Szmant, A. M. and M. W. Miller. 2006. Settlement preferences and post-settlement mortality of laboratory cultured and settled larvae of the Caribbean hermatypic corals *Montastraea faveolata* and *Acropora palmata* in the Florida Keys, USA. Proceedings of the 10th International Coral Reef Symposium.

Thayer, G.W., K.A., Bjorndal, J.C., Ogden, S.L., Williams, and J.C., Zieman. 1984. Role of large herbivores in seagrass communities. Estuaries 7:351.

Van Dam, R., and C. Diéz. 1998. Home range of immature hawksbill turtles (*Eretmochelys imbricata*) at two Caribbean islands. Journal of Experimental Marine Biology and Ecology 220(1):15-24.

Vaughan, D.S., Manooch III, C.S., and Potts, J.C. 2001. Assessment of the wreckfish fishery on the Blake Plateau. American Fisheries Society Symposium. 25:105-120.

Walker, T.A. 1994. Post-hatchling dispersal of sea turtles. p. 79. *In*: Proceedings of the Australian Marine Turtle Conservation Workshop, Queensland Australia.

Waring, G. T., R. M. Pace, J. M. Quintal, C. P. Fairfield, and K. Maze-Foley (Eds.). 2004. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2003. NOAA Technical Memorandum NMFS-NE-182. U. S., Department of Commerce, National Oceanic and Atmospheric Administration National Marine Fisheries Service Northeast Region Northeast Fisheries Science Center Woods Hole, Massachusetts.

Waters, J.R., R.J. Rhodes, W. Waltz, and R. Wiggers. 1997. Executive Summary: An economic survey of commercial reef-fish boats along the U.S. South Atlantic Coast. USDC/NOAA/NMFS and SCDNR. November 1997. Unpublished.

Wenner, E. L., G. F. Ulrich, and J. B. Wise. 1987. Exploration for the golden crab, *Geryon fenneri*, in the south Atlantic Bight: distribution, population structure, and gear assessment. Fishery Bulletin 85: 547-560.

Wenzel, F.W., D.K. Mattila, and P.J. Clapham. 1988. *Balaenoptera musculus* in the Gulf of Maine. Marine Mammal Science. 4:172-175.

Whitehead, J.C. and T. C. Haab. 2001. Analysis of Contingent Valuation data from the 1997-98 Southeast Economic Add-on Survey Data. NOAA Technical Memorandum NMFS SEFSC-465.

Whitehead, J.C. 2006. A comparison of contingent valuation method and random utility model estimates of the value of avoiding reductions in king mackerel bag limits. Applied Economics vol. 38(15): 1725-1735.

Williams, E. H. and L. Bunkley-Williams. 1990. The worldwide coral reef bleaching cycle and related sources of coral mortality. Atoll Research Bulletin 335:1-71.

Witzell, W.N. 2002. Immature Atlantic loggerhead turtles (*Caretta caretta*): suggested changes to the life history model. Herpetological Review 33(4):266-269.

Wyanski, D.M., and H.S. Meister. 2002. Analytical report on the sex ratio, maturity, reproductive seasonality, and annual fecundity of wreckfish, *Polyprion americanus*, off the Southeastern United States. South Carolina Department of Natural Resources, Charleston.

10.0 Index

ABC, 4, 34, 124, 149, 171, 173, 363, 443, 527, 589, 637
ABC Control Rule, III, IV, 3, 4, 6, 7, 8, 34, 44, 45, 46, 124, 149, 363, 368, 369, 372, 373, 374, 375, 376, 377, 399, 528, 529, 541, 589, 590, 601, 661
Acceptable Biological Catch, I, III, IV, 3, 4, 6, 7, 8, 10, 34, 41, 42, 44, 45, 46, 47, 48, 49, 58, 61, 62, 80, 84, 85, 90, 92, 93, 95, 96, 97, 98, 100, 101, 103, 104, 105, 117, 118, 119, 122, 123, 124, 125, 128, 130, 149, 150, 151, 154, 155, 171, 172, 173, 174, 175, 357, 363, 368, 369, 372, 373, 374, 375, 376, 377, 379, 396, 399, 400, 443, 449, 450, 463, 464, 467, 468, 469, 470, 474, 476, 483, 485, 486, 509, 510, 513, 516, 523, 525, 527, 528, 529, 532, 540, 541, 570, 589, 590, 592, 600, 601, 637, 638, 639, 640, 641, 642, 661
ACL, 1, III, IV, V, 3, 4, 5, 6, 9, 10, 15, 16, 17, 28, 31, 33, 48, 50, 51, 52, 55, 57, 58, 60, 61, 62, 63, 64, 66, 71, 74, 77, 78, 83, 84, 85, 87, 92, 99, 101, 103, 104, 105, 106, 108, 109, 111, 115, 118, 119, 120, 121, 123, 125, 128, 130, 131, 132, 133, 135, 138, 139, 150, 151, 153, 154, 155, 156, 158, 161, 164, 169, 171, 172, 173, 174, 175, 176, 180, 185, 320, 321, 322, 327, 335, 348, 349, 352, 353, 354, 355, 356, 357, 362, 369, 381, 382, 383, 385, 395, 396, 398, 399, 400, 401, 410, 412, 413, 414, 415, 427, 430, 443, 444, 445, 449, 450, 452, 455, 463, 464, 470, 477, 478, 485, 486, 489, 490, 491, 492, 497, 499, 513, 520, 540, 541, 544, 545, 546, 551, 563, 585, 595, 600, 601, 603, 605, 606, 611, 622, 637, 638, 639, 640, 641, 644, 645, 658, 659, 660, 661, 664, 666, 672, 673
Administrative effects, 23, 33, 47, 65, 83, 89, 93, 96, 100, 107, 119, 122, 125, 132, 138, 150, 153, 157, 164, 189, 335, 348, 355, 357, 362, 379, 393, 410, 420, 440, 448, 452, 460, 465, 474, 483, 489, 495, 506, 516, 523, 532, 538, 544, 548, 557, 592, 598, 603, 608, 617, 635, 644, 647
Allocations, 4, 50, 52, 81, 95, 98, 126, 151, 381, 383, 444, 467, 476, 534, 595
AM, I, III, V, 3, 4, 6, 9, 10, 28, 31, 33, 55, 62, 63, 65, 66, 67, 68, 84, 86, 90, 101, 105, 106, 107, 108, 118, 121, 130, 132, 133, 135, 153, 156, 157, 158, 161, 172, 176, 335, 348, 349, 352, 353, 355, 356, 357, 362, 382, 399, 400, 401, 412, 413, 414, 415, 420, 422, 424, 430, 444, 449, 453, 455, 470, 490, 491, 492, 495, 497, 499, 513, 520, 541, 545, 546, 548, 551, 563, 595, 600, 605, 606, 608, 611, 638, 640, 645, 647, 659, 660, 661, 664
Assessed, 7, 31, 34, 41, 46, 49, 180, 351, 357, 363, 368, 369, 372, 373
Atlantic States Marine Fisheries Commission, I, 187, 188, 189
Biological effects, 23, 27, 33, 48, 49, 55, 56, 62, 66, 77, 78, 79, 83, 85, 90, 91, 93, 94, 97, 101, 102, 105, 108, 115, 116, 119, 120, 123, 125, 127, 130, 132, 133, 138, 139, 140, 146, 147, 148, 150, 151, 153, 155, 158, 164, 165, 166, 169, 170, 174, 175, 176, 180, 184, 316, 338, 353, 368, 382, 399, 412, 430, 444, 449, 455, 462, 467, 477, 486, 490, 499, 511, 528, 534, 540, 545, 551, 563, 589, 595, 600, 605, 611, 622, 640, 645, 649, 663, 678, 679
Black Grouper, 2, 24, 41, 57, 340, 368, 395, 468, 469
Charter, 241, 242, 243, 244, 245, 246, 254, 255, 310, 312, 564, 566, 622, 676, 677
Commercial, 26, 28, 31, 50, 51, 52, 54, 55, 56, 63, 65, 66, 81, 82, 83, 86, 92, 98, 99, 100, 101, 103, 104, 106, 107, 108, 122, 127, 128, 130, 131, 132, 133, 141, 142, 147, 151, 153, 156, 157, 158, 167, 252, 258, 259, 260, 306, 307, 308, 311, 312, 314, 324, 329, 339, 342, 344, 345, 346, 347, 349, 352, 369, 381, 382, 383, 385, 393, 399, 400, 412, 420, 444, 445, 446, 448, 450, 453, 455, 462, 463, 464, 469, 470, 471, 476, 477, 478, 483, 485, 486, 487, 490, 492, 495, 538, 540, 541, 545, 546, 548, 560, 561, 563, 566, 567, 568, 569, 585, 595, 598, 601, 605, 606, 608, 620, 622, 635, 650, 651, 657, 658, 659, 660, 661, 663, 667, 686, 687
Council, 1, II, III, IV, XV, 1, 4, 5, 6, 7, 8, 9, 10, 13, 46, 47, 80, 104, 122, 125, 128, 150, 151, 171, 173, 178, 179, 180, 181, 187, 188, 189, 311, 329, 339, 348, 356, 368, 372, 373, 374, 379, 399, 400, 413, 414, 443, 449, 450, 455, 463, 467, 468, 469, 470, 474, 486, 491, 492, 516, 523, 525, 528, 532, 540, 541, 545, 563, 585, 592, 600, 601, 605, 622, 637, 639, 640, 646, 648, 649, 654, 667, 668, 669, 671, 673
Cultural, 257
Cumulative effects, 648, 649, 655, 656, 661, 662, 663, 664, 665, 686
Damage, 657, 667
Direct effects, 194
Dolphin, 2, 13, 124, 126, 128, 130, 133, 141, 159, 178, 185, 311, 312, 525, 526, 527, 534, 540, 545, 549, 560, 563, 570, 587, 601, 609, 636, 678
Economic Activity, 250
Economic effects, I, 239, 250, 306, 331, 346, 357, 377, 385, 402, 416, 433, 446, 451, 458, 465, 472, 479, 487, 494, 502, 514, 529, 536, 542, 546, 554, 571, 590, 596, 602, 606, 614, 623, 641, 646, 672, 675, 677
Economic impacts, 194
Economic Value, 250
Effort, 80, 239, 443
EFH, XV, 177, 179
enforce, 189, 672, 673
Environmental Justice, 314
ESA, I, 181, 182, 183, 184, 185, 331, 346, 357, 385, 401, 416, 433, 445, 451, 457, 464, 472, 478, 487, 493, 502, 513, 520, 536, 541, 546, 554, 571, 596, 602, 606, 613, 623, 641, 646
essential fish habitat, XV, 177, 179
Exclusive Economic Zone, I, 15, 16, 17, 141, 142, 167, 179, 181, 187, 252, 320, 321, 322, 470, 560, 561, 563, 620
Expenditures, 250
Fisheries, 1, II, III, IV, 54, 83, 100, 119, 122, 153, 178, 180, 184, 187, 188, 189, 240, 241, 242, 243, 244, 245, 246, 249, 252, 356, 393, 413, 414, 448, 471, 474, 483, 491, 492, 516, 598, 662, 669, 671, 672, 673, 675, 676, 678, 679, 685, 686
Fishery management plan, I

Fishery management unit, I
Fishing Communities, 260, 261, 308, 686
Florida Counties, 261
FMP, I, III, 46, 128, 171, 178, 179, 180, 313, 316, 342, 353, 525, 526, 540, 587, 589, 601, 637, 640, 650, 651, 652, 654, 658, 659, 668
F_{MSY}, I, 657
FMU, I, III, 2, 11, 13, 14, 23, 27, 28, 30, 33, 34, 42, 62, 63, 74, 105, 130, 155, 315, 316, 329, 331, 335, 339, 342, 348, 349, 351, 353, 362, 363, 368, 369, 412, 422, 661
Gear, 662
Georgia Counties, 282
Golden crab, 13, 275, 283, 313
Gulf of Mexico, I, 44, 45, 46, 49, 95, 97, 104, 117, 119, 120, 122, 123, 125, 150, 151, 179, 251, 252, 309, 356, 374, 462, 467, 468, 469, 470, 471, 472, 486, 509, 510, 513, 516, 521, 523, 525, 526, 563, 586, 673, 676, 680, 685
Habitat Areas of Particular Concern, 178, 179, 652, 668
Harvest, 66, 108, 132, 158, 239
Headboat, 17, 249, 257, 322, 676
Imports, 306, 663
Index, XXXIV, 259, 261, 282, 287, 288, 295, 686, 688
Indirect effects, 194
Individual Transfer Quota, I, 80, 86, 90, 443, 453, 659, 664
Irretrievable, 669
Irreversible, 669
Landings, 80, 101, 153, 286, 291, 310, 314, 342, 413, 443, 468, 471, 491
List of Agencies, 673
List of Preparers, 671
Magnuson-Stevens Fishery Conservation and Management Act, 48, 62, 66, 77, 105, 108, 115, 125, 130, 132, 138, 150, 155, 158, 164, 174, 176, 659
Magnuson-Stevens Reauthorization Act, II, 6, 9
Management Measures, 651, 667, 668
Marine Recreational Fisheries Statistics Survey, II, 15, 16, 17, 151, 239, 240, 241, 242, 243, 244, 245, 246, 252, 254, 255, 256, 257, 320, 321, 322, 413, 445, 464, 469, 471, 491, 595
Marine Related Employment, 262
Maximum Fishing Mortality Threshold, II, 34, 46, 48, 49, 363, 372, 399, 525, 586
MSY, II, 525, 586
National Environmental Policy Act, II, 648, 669, 670, 671, 672, 675
National Oceanic and Atmospheric Administration, II, III, IV, 54, 83, 100, 119, 122, 153, 178, 180, 187, 189, 240, 241, 242, 243, 244, 245, 246, 249, 251, 252, 373, 393, 413, 414, 448, 471, 474, 483, 491, 492, 516, 598, 662, 669, 671, 678, 679, 687
National Standard 1 guidelines, 46, 111, 369, 412, 414, 490, 491, 492
North Carolina Counties, 295
Office of Law Enforcement, 189, 672, 673
OFL, II, 4
Organizations, 673
overfished, IV, 6, 24, 46, 80, 109, 338, 339, 340, 341, 342, 368, 374, 443, 497, 526, 563, 586, 641, 657
overfishing, III, IV, 6, 7, 9, 10, 24, 46, 61, 62, 101, 105, 121, 130, 155, 171, 172, 173, 174, 316, 338, 339, 340, 341, 342, 345, 355, 357, 372, 373, 399, 400, 401, 413, 414, 443, 449, 450, 470, 486, 487, 491, 520, 541, 563, 600, 601, 622, 637, 638, 639, 640, 641, 649, 650, 652, 657, 658, 659, 660, 661, 669, 670
overfishing limit, II, 4
OY, II, IV, 3, 57, 84, 103, 128, 154, 173, 395, 449, 485, 540, 600, 640
Permits, 249, 307, 309, 310, 312, 313
Productivity, 339, 353, 668
Purpose and need, XXXIV
Recreational, 17, 26, 28, 31, 50, 51, 52, 54, 55, 56, 77, 78, 79, 83, 86, 87, 91, 92, 94, 97, 98, 99, 100, 101, 102, 103, 104, 109, 111, 115, 116, 122, 127, 133, 139, 141, 145, 147, 151, 153, 159, 164, 165, 167, 169, 239, 240, 241, 242, 243, 244, 245, 246, 248, 250, 251, 252, 253, 257, 258, 259, 262, 307, 311, 314, 322, 324, 329, 339, 342, 343, 344, 345, 346, 349, 352, 369, 381, 382, 383, 385, 393, 399, 413, 414, 444, 445, 448, 450, 453, 455, 462, 463, 464, 468, 469, 470, 471, 476, 477, 478, 483, 485, 486, 487, 491, 492, 497, 499, 526, 538, 546, 550, 560, 563, 566, 579, 585, 595, 598, 601, 605, 606, 609, 620, 622, 623, 635, 657, 658, 659, 660, 661, 663
References, 674
Resources, II, 188, 669, 671, 672, 673, 685, 686, 687
SAFMC, 1, II, III, IV, 1, 44, 45, 49, 128, 142, 177, 178, 179, 180, 187, 252, 306, 311, 316, 355, 375, 376, 470, 540, 561, 649, 651, 652, 657, 658, 663, 667, 668, 671, 672, 673, 675
Sargassum, 1, 2, 13, 171, 177, 178, 179, 180, 182, 183, 184, 185, 313, 637, 679
Scientific and Statistical Committee, II, IV, 3, 13, 563, 570, 587, 669, 673
sea turtles, 184
Sector, 55, 91, 151, 156, 262, 270, 283, 289, 296, 300, 304, 385, 462, 476, 477, 595, 605, 677
SEDAR, II, 104, 180, 181, 354, 356, 373, 468, 469, 471, 486, 526, 586, 656, 669, 685
Snapper Grouper, 15, 16, 17, 18, 19, 320, 321, 322, 324, 325, 343, 344, 345, 346, 658, 664
Snapper grouper species, 15, 16, 17, 18, 19, 320, 321, 322, 324, 325, 343, 344, 345, 346
Social effects, IV, 3, 23, 257, 259, 261, 265, 288, 289, 295, 308, 313, 314, 353, 641, 655, 662, 663, 664, 665
Social Environment, 306, 311, 313
Socioeconomic, 23, 27, 33, 48, 49, 55, 56, 62, 66, 77, 78, 79, 83, 85, 90, 91, 93, 94, 97, 101, 102, 105, 108, 115, 116, 119, 120, 123, 125, 127, 130, 132, 133, 138, 139, 140, 146, 147, 148, 150, 151, 153, 155, 158, 164, 165, 166, 169, 170, 174, 175, 176, 662
South Carolina Counties, 288
Southeast Fisheries Science Center, II, 15, 16, 17, 249, 251, 320, 321, 322, 671, 672, 678, 680
SSC, II, IV, 3, 13, 563, 570, 587, 669, 673
State, 15, 16, 17, 187, 188, 189, 239, 240, 241, 262, 263, 266, 267, 269, 270, 271, 272, 273, 275, 276, 278, 283, 284, 285, 286, 289, 290, 291, 292, 296, 297, 298, 300, 301, 302, 305, 308, 320, 321, 322, 564
Summary, XV, XXXIV, 23, 27, 33, 48, 55, 62, 66, 77, 83, 85, 90, 93, 97, 101, 105, 108, 115, 119, 123, 125, 127,

130, 132, 138, 146, 150, 153, 155, 158, 164, 169, 174, 176, 254, 255, 256, 257, 687
Un-assessed, 8, 34, 42, 44, 45, 46, 48, 49, 80, 173, 353, 355, 356, 357, 363, 369, 372, 374, 375, 376, 443, 639
Wahoo, 2, 13, 124, 128, 149, 151, 154, 156, 159, 167, 178, 311, 312, 400, 450, 486, 525, 526, 540, 570, 586, 587, 589, 595, 600, 601, 605, 609, 620, 636, 678
Wreckfish, 2, 26, 80, 81, 84, 86, 91, 240, 241, 242, 243, 244, 245, 246, 316, 342, 356, 443, 444, 449, 453, 462, 463, 659, 685

APPENDIX A. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

SNAPPER GROUPER ALTERNATIVES

SSC Control Rule for Species without assessments.

Discussion:

The South Atlantic Fishery Management Council (Council) received the proposed data-poor acceptable biological catch (ABC) control rule in June 2010. Some aspects of the proposed ABC control rule and its criteria were considered inappropriate because the ABC control did not follow the NS1 Guidelines. The Council ultimately rejected the data poor ABC control rule as put forth by the scientific and statistical committee (SSC) and requested that the SSC consider the following in revising the rule:

MOTION: COUNCIL DIRECTS THE SSC TO CONSIDER THE FOLLOWING GUIDANCE WHEN CONSIDERING AN ALTERNATIVE CONTROL RULE FOR UN-ASSESSED STOCKS:

(1) DETERMINATION OF SPECIES AS ECOSYSTEM COMPONENTS AND INCREASING BUFFERS ABOUT OFL FOR SUCH CIRCUMSTANCES IS BEYOND THE SCOPE OF ASSESSMENT UNCERTAINTY AND SHOULD THEREFORE NOT BE PART OF AN ABC CONTROL RULE.

(2) THE COUNCIL BELIEVES THAT STOCK STATUS IS AN OUTCOME AND NOT AN ASSESSMENT UNCERTAINTY APPROPRIATE TO CONSIDER IN AN ABC CONTROL RULE.

(3) THE COUNCIL RECOMMENDS THAT THE SSC CONFIGURE THE DATA POOR CONTROL RULE TO PROVIDE A REDUCTION DOWNWARD FROM OFL, AS DESCRIBED IN THE GUIDELINES, AND DOES NOT BELIEVE IT IS APPROPRIATE TO START AT AN ASSUMPTION THAT ABC=0.

(4) THE COUNCIL RECOMMENDS THAT THE SSC CONSIDER A TIERED APPROACH THAT DIFFERENTIATES BETWEEN LEVELS OF DATA DEFICIENCY, AND TAKES INTO CONSIDERATION SOURCES OF INFORMATION BEYOND LANDINGS STREAMS THAT MAY INCLUDE BUT ARE NOT LIMITED TO, PRIOR ASSESSMENTS, EFFORT TRENDS, SURVEY AND MONITORING TRENDS.

MOREOVER, THE COUNCIL RECOMMENDS THAT THE SSC REVIEW, COMPARE AND CONTRAST AND COMMENT ON THE UTILITY OF:

(1) THE ANALYTICAL APPROACHES FOR DEVELOPING ABCS IN DATA POOR SITUATIONS AND FOR UN-ASSESSED STOCKS THAT WERE PROVIDED FOR CONSIDERATION AT THE APRIL 2010 MEETING (E.G., DCAC AND COOPER APPROACHES);

(2) THE ALTERNATIVE ABC CONTROL RULES DEVELOPED BY THE COUNCIL AND INCLUDED IN CURRENT DRAFT AMENDMENTS; AND

(3) THE PROPOSED DATA POOR CONTROL RULE DEVELOPED AT THE APRIL 2010 MEETING.

THE SSC SHOULD COMMENT ON WHICH OF THESE APPROACHES IS MOST ROBUST TO UNKNOWN INFORMATION AND MOST APPROPRIATE FOR USE IN DERIVING

ABC FROM OFL. [INTENT THAT THIS APPLIES TO ALL SPECIES; USE ANY ASSESSMENT, NOT JUST PEER REVIEWED ASSESSMENTS].

The Council passed a motion establishing a data poor (later the term 'unassessed stocks' was indicated as preferred) ABC control rule of ABC=75% of OFL for snapper grouper stocks, excluding wreckfish. This was intended as a way to move the process ahead while giving the SSC additional time to develop the unassessed stocks control rule, and is an alternative referenced in (2) of the second clause of the motion listed above.

Council Motion:
ESTABLISH AN ABC CONTROL RULE FOR DATA POOR (NO P* ANALYSIS) SNAPPER GROUPER SPECIES WHERE ABC = 75% OF OFL (ALTERNATIVE 3B) EXCEPT FOR WRECKFISH.

The SSC further developed their ABC control rule in accordance with the NS1 Guidelines, which has been incorporated into the Comprehensive ACL Amendment. The SSC determined OFL was unknown for many data poor species and further revised its ABC control to include a broad range of data levels from data rich to data poor.

Action 3: Establish Species Groupings for Snapper Grouper Species
Alternative 2. Establish three species groups based on results from Shertzer and Williams (2008). For snapper-grouper species in Table 11 not covered by the assemblages, ACLs, ACTs, and AMs would be specified on an individual basis.

1. Deepwater assemblage: Blueline tilefish, snowy grouper, speckled hind, and yellowedge grouper.
2. Southern assemblage: Blue runner, gray snapper, lane snapper, mutton snapper, and yellowtail snapper.
3. Northern assemblage: Bank sea bass, black sea bass, knobbed porgy, gag, gray triggerfish, greater amberjack, red porgy, red snapper, scamp, tomtate, vermilion snapper, white grunt, and whitebone porgy.

Alternative 3. Use spatial and temporal patterns from Shertzer et al. (2009) to establish three species groups. For snapper-grouper species in Table 11 not covered by the assemblages, ACLs, ACTs, and AMs would be specified on an individual basis.

1. North Carolina and South Carolina.
2. Georgia and N. Florida (north of Cape Canaveral).
3. South Florida (south of Cape Canaveral, including the Keys).

Alternative 4. Use information from Shertzer et al. (2009), to establish two species groups for snapper-grouper species, north and south of the Cape Canaveral zoogeographic boundary (Table 9).

> *<u>Discussion:</u> Using the approach in these studies would have been problematic. Firstly, it would have resulted in a north and a south assemblage so groups would have been separated by geographical range. Secondly, the groupings approach proposed by Dr. Nick Farmer (used to develop the other alternatives) already makes use of the information contained in these studies.*

Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Species That Have Not Been Assessed

Alternative 4. Establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

> **Subalternative 4a.** ABC=yield at 65%MFMT
> **Subalternative 4b.** ABC=yield at 75%MFMT
> **Subalternative 4c.** ABC=yield at 85%MFMT
> *Discussion: This alternative was not applicable to unassessed species as the MFMT is obtained from a stock assessment.*

Alternative 6. Establish ABC based on the SSC's ABC Control Rule where ABC is a percentage of OFL. The percentage is based on the level or risk of overfishing (P*).

> **Alternative 6a**. ABC=X% of OFL. The X% is based upon P* equals .20.
> **Alternative 6b.** ABC=X% of OFL. The X% is based upon P* equals .30.
> **Alternative 6c.** ABC=X% of OFL. The X% is based upon P* equals .40.
> **Alternative 6d.** ABC=X% of OFL. The X% is based upon P* equals .50.
> *Discussion: This alternative refers to a P* approach but the SSC's ABC control rule does not apply the P* approach to species that have not been assessed. For assessed species, this alternative is redundant as this approach is contained within Tier 1 of the SSC's Control Rule.*

Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

Alternatives 2, 3 and 4. Establish ACLs for species…

> **Subalternative a.** Establish a single ACL (commercial and recreational) based on the current TAC.
> **Subalternative b.** Establish commercial and recreational ACLs based on preferred allocation alternative.
> *Discussion: The subalternatives were redundant as allocations were selected under a previous action. The same action was taken for similar actions in the amendment (i.e. wreckfish, black grouper, dolphin and wahoo).*

WRECKFISH ALTERNATIVES

Action 10: Maximum Sustainable Yield (MSY) for Wreckfish.
Action 11: Specify Optimum Yield (OY) for Wreckfish.
Action 12: Specify the Overfishing Limits for Wreckfish.
Action 13: Specify the Overfished Threshold for Wreckfish.

> *Discussion: The Council chose to wait for any specification for MSY to come from the Council's SSC or wait until a new assessment is complete for wreckfish in 2012. The Council chose to re-specify optimum yield so that it coincides with the ACL. Overfishing levels need to be recommended by the SSC.*

ABC Control Rule

Action 14. Establish an Acceptable Biological Catch (ABC) for wreckfish.

> Discussion: *The Council chose to replace this action with a discussion of the ABC recommendations from the SSC and their rationale for that recommendation. Note that the same rationale was given for actions that would set the ABC for golden crab and Sargassum.*

Alternative 5. ABC = Amount equal to that calculated with the use of the ABC control rule developed by the SSC.

> Discussion: *This alternative was the same as Alternative 2 in Action 14.*

Action 10: Establish an Annual Catch Limit (ACL) for Wreckfish

Alternative 2 (Preferred). ACL = OY = ABC.

> **Subalternative 2a.** Establish a single ACL (commercial and recreational) based on the current TAC.
>
> **Subalternative 2b.** Establish commercial and recreational ACLs based on preferred allocation alternative.

Alternative 3. ACL = OY = 90% of the ABC.

> **Subalternative 3a**. Establish a single ACL (commercial and recreational) based on the current TAC.
>
> **Subalternative 3b.** Establish commercial and recreational ACLs based on preferred allocation alternative.

Alternative 4. ACL = OY = 80% of the ABC.

> **Subalternative 4a.** Establish a single ACL (commercial and recreational) based on the current TAC.
>
> **Subalternative 4b.** Establish commercial and recreational ACLs based on preferred allocation alternative.
>
> Discussion: *The Council voted to remove the subalternatives under each one of the alternatives in Action 10 since ACLs are addressed in a separate action. Note that the Council took the same action for black grouper, dolphin and wahoo due to the same reasoning.*

Action 17: Specify Annual Catch Target for the Wreckfish Fishery.

> Discussion: *This action was moved to the Considered But Rejected Appendix because all of the current landings are under an IFQ Program, which is a built-in accountability mechanism.*

Action 18: Specify Accountability Measures for the Wreckfish Fishery.

Alternative 2. Specify Annual Catch Targets (ACT) for the recreational sector, apply the ACT to recreational AM Alternatives 3 and 4.

> **Subalternative 2c.** The recreational sector ACT equals sector ACL [(1-PSE) or 0.5, whichever is greater].
>
> Discussion: *Subalternative 2c was removed from consideration because there is not recreational fishery for wreckfish and consequently no PSEs.*

Alternative 2. After the commercial ACL is met, all purchase and sale of wreckfish is prohibited and harvest and/or possession is limited to the bag limit.
Alternative 3. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

> <u>Discussion:</u> *The commercial fishery already contains accountability measures; that is, the IFQ Program itself. The program already prevents fishermen from going over the ACL. The Council felt that the IFQ Program itself is the accountability mechanism.*

Alternative 5. The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met.

> <u>Discussion:</u> *There would be no basis to be able to project when the ACL is expected to be met because there has never been a recreational fishery. All that could be done is to have the accountability measure be a post-season retrospective. An in-season measure is not practical at this point. The Council may revisit the approach in the future when there are some baseline data for the recreational fishery.*

Management Measures for the Wreckfish Fishery (Recreational Sector)
Alternative 6. Implement a 5 wreckfish per angler per day bag limit for the recreational fishery.
Alternative 7. Implement a 10 wreckfish per vessel per day bag limit for the recreational fishery.
Alternative 8. Implement a 10 wreckfish per angler per day bag limit for the recreational fishery.
Alternative 9. Implement a 20 wreckfish per vessel per day bag limit for the recreational fishery.
Alternative 10. Implement a 20 wreckfish per angler per day bag limit for the recreational fishery.

> <u>Discussion:</u> *The Council reasoned that Alternatives 6 through 10 would create a recreational fishery for this species. When the Council considered management measures for other deep-water species and the landings were unknown for some sectors, they decided on a one-per- person, considering going to a one per boat in those fisheries. To be consistent and to take care of creating a bycatch fishery in this sector, the Council thought it prudent to eliminate the potential for developing a recreational fishery with a bag limit of ten and twenty fish.*

Alternative 2. Eliminate the January 15-April 15 spawning season closure in the:

> **Subalternative 2a:** Commercial sector.
> **Subalternative 2b:** Recreational sector.
> <u>Discussion:</u> *This action was suggested by some members of the IPT for Council consideration since many catch share programs eliminate seasonal closures upon implementation of a catch share program. However, this is not a seasonal closure but a spawning season closure, which has important biological benefits to the stock. Members of the industry support a spawning season closure.*

DOLPHIN ALTERNATIVES

MSY Alternatives

Previously, the Councils (South Atlantic, Mid-Atlantic and New England Councils) were considering the following alternatives:

A. Maximum Sustainable Yield (MSY)

Option 1. No action. Maximum Sustainable Yield (MSY) for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds.

Option 2. MSY = 26,986,790 pounds (12,241 mt). This figure is from a production model by Prager (2000) and would apply for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 3. MSY = 15,882,100 – 17,833,190 pounds. This range is based on average landings from a 10 year and 5 year period respectively (Prager 2000) and would apply for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 4. Specify MSY separately for the Atlantic at __________ million pounds.

Option 5. Recommended MSY from the Scientific and Statistical Committee (SSC).

Option 6. Specify MSY as 46.5 million pounds for the Atlantic, U.S. Caribbean, and Gulf of Mexico.

> *Discussion:* *One AP member supported Option 1. No Action. There was no support for Options 2, 3, & 4. Nine AP members supported Option 5. The AP recommended adding Option 6, which is the top end of the current MSY range. The Council concluded this is not an action item and does not need to be addressed in the Comprehensive ACL Amendment because they felt an updated estimate of MSY should come from a stock assessment. The current MSY will remain until a SEDAR assessment is completed.*

OFL Alternatives

Previously, the Councils (South Atlantic, Mid-Atlantic and New England Councils) were considering the following alternatives:

Option 1. No action. A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%Static\ SPR}$).

A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for dolphin is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY.

Option 2. OFL = F_{MSY} = 0.49 based on a production model (Prager 2000; Table 4).

Option 3. Specify OFL separately for the Atlantic at ________.

Option 4. Value recommended by the SSC.

Discussion: The AP supported Option 4. The Council's SSC indicated that OFL cannot be determined for dolphin.

ABC Control Rule and ABC Alternatives

Option 4. Establish ABC based on the SSC's Data Poor ABC control rule.

Discussion: The Council determined that this alternative is not needed as the SSCs ABC control rule was updated to encompass tiers, which include different levels of data availability.

Alternative 4. Establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Subalternative 4a. ABC = yield at 65%MFMT = 11,122,393 lbs whole weight.
Subalternative 4b. ABC = yield at 75%MFMT= 11,538,294 lbs whole weight.
Subalternative 4c. ABC = yield at 85%MFMT = 11,752,186 lbs whole weight

Discussion: This alternative is not appropriate since dolphin have not been assessed and a stock assessment is needed to estimate MFMT.

Allocation Alternatives

Alternative 6. Split the allocations for dolphin equally among the two sectors. The allocation would be 50% commercial and 50% recreational. Beginning in 2011, the commercial allocation would be ________ lbs gutted weight and the recreational allocation would be ________ fish (________ lbs gutted weight). The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Discussion: The Council reasoned that this alternative was no longer necessary because allocations are being established based on catch history. Catches of dolphin have been overwhelmingly dominated by the recreational sector. Based on catch history, there is no basis to allocate catch equally to the commercial and recreational sectors.

Alternative 3. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 8% commercial and 92% recreational. Beginning in 2011, the commercial allocation would be 712,974 lbs gutted weight and the recreational allocation would be ______ fish (8,199,200 lbs gutted weight). The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Discussion: Alternative 3 was not needed as the allocation percentages were identical for both Alternatives 3 and 4.

ACL Alternatives

Option 2. ACL = 17,541,414 pounds based on 65% of MSY Option 2 and would apply for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 3. ACL = 20,240,093 pounds based on 75% of MSY Option 2 and would apply for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 4. ACL = 22,938,772 pounds based on 85% of MSY Option 2 and would apply for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Discussion: These alternatives were removed because a value for OFL was being considered and the ACL values exceeded the OFL level in the preferred alternative. The ACL must be set equal to or below the OFL. The Comprehensive ACL Amendment currently contains alternatives for ACLs that are defined as a portion of ABC where ABC was defined by the preferred alternative for the ABC control rule.

AM Alternatives

Option 2. The commercial AM for this stock is to prohibit harvest, possession, and retention when the quota is met. All purchase and sale is prohibited when the quota is met. Do not implement AMs for the recreational sector.

Option 4. Pay back for commercial?

Option 5. Pay back for recreational?

Discussion: The Council did not feel there was a need to consider a payback for dolphin because the stock is not overfished or undergoing overfishing. The Council has indicated that it will monitor landings with respect to the ACLs and recreational ACTs as a performance measure. If the ACLs and recreational ACTs were routinely exceeded, the Council would take action through a framework measure to modify management measures, AMs, etc.

Management Measure Alternatives

Option 4. Establish minimum size limits in NEFMC and MAFMC.

Discussion: The Mid-Atlantic and New England Councils did not indicate an interest in establishing a minimum size limit for dolphin.

OPTION 7. Examine harvest by powerheads and evaluate whether it should continue to be allowed.

Discussion: Harvest with powerheads represents a very low level of landings and the Council did not feel that it should be evaluated in this comprehensive amendment. The Council will consider this action in a future amendment.

WAHOO ALTERNATIVES

Previously, the Councils (South Atlantic, Mid-Atlantic and New England Councils) were considering the following alternatives:

Maximum Sustainable Yield (MSY)

Option 1. No action. The MSY proxy in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds (NMFS SEFSC based on 5-10 year catch history; letter dated 1/8/01).

Option 2. MSY = x.xx – y.yy million pounds. These figures could be based on updated 5-10 year time periods using more recent data and would apply for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 3. Specify MSY separately for the Atlantic at ___________ million pounds.

Option 4. The recommendation from the Scientific and Statistical Committee (SSC).

<u>Discussion</u>
The MSY options were structured the same way they were for dolphin. The Council chose to not make MSY an action item for dolphin and wanted to remain consistent for wahoo. The Council concluded this is not an action item and does not need to be addressed in the Comprehensive ACL Amendment because they felt an updated estimate of MSY should come from a stock assessment.

<u>OFL Alternatives</u>
Previously, the Councils (South Atlantic, Mid-Atlantic and New England Councils) were considering the following alternatives:
Option 1. No action. A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\% Static\ SPR}$).
A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for wahoo is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY.

Option 2. Specify OFL and MSST separately for the Atlantic at _____ and ______ pounds.

Option 3. The values recommended by the SSC.
<u>Discussion:</u> The AP supported Option 3. The Council's SSC indicated that OFL cannot be determined for wahoo.

<u>ABC Control Rule and ABC Alternatives</u>
Option 4. Establish ABC based on the SSC's Data Poor ABC control rule.
<u>Discussion:</u> The Council determined that alternative is not needed as the SSCs ABC control rule was updated to encompass tiers, which include different levels of data availability.

Action 27: Acceptable Biological Catch (ABC) Control Rule and ABC (for wahoo).
Alternative 7. Establish an ABC Control Rule where ABC is a percentage of OFL. The percentage is based upon the level of risk of overfishing (P*).
Alternative 7a. ABC=X% of OFL. The X% is based upon P* equals .20.
Alternative 7b. ABC=X% of OFL. The X% is based upon P* equals .30.
Alternative 7c. ABC=X% of OFL. The X% is based upon P* equals .40.
Alternative 7d. ABC=X% of OFL. The X% is based upon P* equals .50.
<u>Discussion:</u> The use of P cannot be applied to unassessed species.*

Alternative 4. Establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Subalternative 4a. ABC=yield at 65%MFMT = 10,296,000 lbs whole weight.
Subalternative 4b. ABC=yield at 75%MFMT = 10,681,000 lbs whole weight.
Subalternative 4c. ABC=yield at 85%MFMT = 10,780,000 lbs whole weight.
<u>Discussion:</u> *This alternative is not appropriate since wahoo have not been assessed and a stock assessment is needed to obtain MFMT.*

<u>Allocation Alternatives</u>

Alternative 6. Split the allocations for wahoo equally between the two sectors. The allocation would be 50% commercial and 50% recreational. Beginning in 2011, the commercial allocation would be ________ lbs gutted weight and the recreational allocation would be ________ fish (________ lbs gutted weight). The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

<u>Discussion</u>: *The Council reasoned that this alternative was no longer necessary because allocations are being established based on catch history. Catches of wahoo have been dominated by the recreational sector. Based on catch history, there is no basis to allocate catch equally to the commercial and recreational sectors.*

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 5% commercial and 95% recreational. Beginning in 2011, the commercial allocation would be 41,250 lbs gutted weight and the recreational allocation would be _______fish (783,750 lbs gutted weight). The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

<u>Discussion:</u> *Alternative 2 resulted in same percentage as Alternative 4 so it was not needed.*

<u>ACL Alternatives</u>

Option 2. ACL = c.cc million pounds based on 65% of MSY Option 1 or 2 and apply to wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 3. ACL = d.dd million pounds based on 75% of MSY Option 1 or 2 and apply to wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

Option 4. ACL = e.ee million pounds based on 85% of MSY Option 1 or 2 and apply to wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico.

<u>Discussion</u>: *Values ACLs were defined as a portion of ABC where ABC was defined by the preferred alternative for the ABC control rule. The Council felt an updated value of MSY should come from a stock assessment.*

<u>AM Alternatives</u>

Option 2. The commercial AM for this stock is to prohibit harvest, possession, and retention when the quota is met. All purchase and sale is prohibited when the quota is met. Do not implement AMs for the recreational sector.

Option 4. Payback for commercial?

Option 5. Payback for recreational?

Discussion: These alternatives were removed to track the changes the Council made for dolphin. The Council did feel there was a need to consider a payback for wahoo because the stock is not overfished or undergoing overfishing. The Council has indicated that it will monitor landings with respect to the ACLs and recreational ACTs as a performance measure. If the ACLs and recreational ACTs were routinely exceeded, the Council would take action through a framework measure to modify management measures, AMs, etc.

Action 28. Modify the Dolphin Wahoo Framework Procedure

Discussion: Due to statutory deadlines associated with the Comprehensive ACL Amendment, the Council decided to address changes to all framework procedures in a future comprehensive framework amendment so as to expedite development of this amendment.

***SARGASSUM* ACTIONS**

Action 37: Annual Catch Limits.

Alternative 4. ACL equals 85% of the ABC.
Alternative 5. ACL equals 75% of the ABC.
Alternative 6. ACL equals 65% of the ABC.

Discussion: This range of alternatives was not needed given the SSC's ABC recommendation (12,800 pounds) and the current allowable harvest of 5,000 pounds. An alternative (Alternative 3) was added to set the ACL equal to the current allowable harvest.

Action 27. Designate Sargassum as Ecosystem Component Species and Withdraw the Sargassum FMP

Discussion: An FMP cannot have a single species that is designated as an ecosystem component. A withdrawal of the FMP would be necessary to designate Sargassum as an ecosystem component species. However, such an action would delay development of this comprehensive amendment substantially. Since there is a statutory deadline associated with the Comprehensive ACL Amendment, the Council decided to address this action in a future amendment.

GOLDEN CRAB ALTERNATIVES

Action 43: Acceptable Biological Catch Control Rule and ABC.

Discussion: At their June 2010 meeting the South Atlantic Council rejected the SSC's control rule and removed the ABC recommendations based on that control rule. The South Atlantic Council agreed with the SSC comments from April 2010 that there was likely additional information that could be compiled for golden crab to better support fishing level recommendations. One of the concerns was that there was a wide range of prior estimates of productivity and acceptable yield. At their August 2010 meeting, the SSC considered additional information on golden crab. These data included additional landings, catch per unit effort, mean sizes, and history and background of past MSY values. The SSC recommended that ABC be set at 2 million pounds with a precautionary *note that more data are needed. The Council felt the SSC's recommended ABC could be specified in the body of the text without alternatives.*

Action 41: Maximum Sustainable Yield.

<u>*Discussion:*</u> *The specification of MSY should come from the Council's SSC; therefore, no action is needed to establish MSY.*

Action 31: Modify the Golden Crab Framework Procedure

<u>*Discussion*</u>*: Due to statutory deadlines associated with this amendment, the Council decided to address changes to all framework procedures in a future comprehensive framework amendment so as to expedite development of this amendment.*

Action 45: Specify Annual Catch Target

<u>Discussion:</u> the golden crab fishery is strictly commercial so an annual catch target is not necessary.

Action 42: Overfishing Level.

<u>*Discussion:*</u> *The specification of OFL should come from the Council's SSC; therefore, no action is needed to establish OFL.*

Appendix B. Glossary

Acceptable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY}.

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Caribbean Fishery Management Council (CFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (See year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached BMSY at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The percent of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

$F_{30\%SPR}$: Fishing mortality that will produce a static SPR = 30%.

$F_{45\%SPR}$: Fishing mortality that will produce a static SPR = 45%.

F_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Head Boat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Fisheries Statistics Survey (MRFSS): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: Percent or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advise to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (SAFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix C. Essential Fish Habitat and Move to Ecosystem Based Management

South Atlantic Fishery Management Council Habitat Conservation, Ecosystem Coordination and Collaboration

The Council, using the Essential Fish Habitat Plan as the cornerstone, adopted a strategy to facilitate the move to an ecosystem-based approach to fisheries management in the region. This approach required a greater understanding of the South Atlantic ecosystem and the complex relationships among humans, marine life and the environment including essential fish habitat. To accomplish this, a process was undertaken to facilitate the evolution of the Habitat Plan into a Fishery Ecosystem Plan (FEP), thereby providing more comprehensive understanding of the biological, social and economic impacts of management necessary to initiate the transition from single species management to ecosystem-based management in the region.

Moving to Ecosystem-Based Management

The Council adopted broad goals for Ecosystem-Based Management to include maintaining or improving ecosystem structure and function; maintain or improving economic, social and cultural benefits from resources; and maintaining or improving biological, economic and cultural diversity. Development of a regional FEP (SAFMC 2009a) provided an opportunity to expand scope of the original Council Habitat Plan and compile and review available habitat, biological, social, and economic fishery and resource information for fisheries in the South Atlantic ecosystem. The South Atlantic Council views habitat conservation at the core of the move to EBM in the region. Therefore, development of the FEP was a natural next step in the evolution and expands and significantly updates the SAFMC Habitat Plan (SAFMC 1998a) incorporating comprehensive details of all managed species (SAFMC, South Atlantic States, ASMFC, and NOAA Fisheries Highly Migratory Species and Protected Species) including their biology, food web dynamics, and economic and social characteristics of the fisheries and habitats essential to their survival. The FEP therefore serves as a source document presents more complete and detailed information describing the South Atlantic ecosystem and the impact of the fisheries on the environment. This FEP updates information on designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern; expands descriptions of biology and status of managed species; presents information that will support ecosystem considerations for managed species; and describes the social and economic characteristics of the fisheries in the region. In addition, it expands the discussion and description of existing research programs and needs to identify biological, social, and economic research needed to fully address ecosystem-based management in the region. In is anticipated that the FEP will provide a greater degree of guidance by fishery, habitat, or major ecosystem consideration of bycatch reduction, prey-predator interactions, maintaining biodiversity, and spatial management needs. This FEP serves as a living source document of biological, economic, and social information for all Fishery Management Plans (FMP). Future Environmental Assessments and Environmental Impact Statements associated with subsequent amendments to Council FMPs will draw from or cite by reference the FEP.

The Fishery Ecosystem Plan for the South Atlantic Region encompasses the following volume structure:
FEP Volume I - Introduction and Overview of FEP for the South Atlantic Region
FEP Volume II - South Atlantic Habitats and Species
FEP Volume III - South Atlantic Human and Institutional Environment
FEP Volume IV - Threats to South Atlantic Ecosystem and Recommendations

FEP Volume V - South Atlantic Research Programs and Data Needs
FEP Volume VI - References and Appendices

Comprehensive Ecosystem-Based Amendment (CE-BA) 1 (SAFMC 2009b) is supported by this FEP and updates EFH and EFH-HAPC information and addresses the Final EFH Rule (e.g., GIS presented for all EFH and EFH-HAPCs). Management actions implemented in the CE-BA establish deepwater Coral HAPCs to protect what is thought to be the largest continuous distribution (>23,000 square miles) of pristine, deepwater coral ecosystems in the world.

Ecosystem Approach to Deepwater Ecosystem Management

The South Atlantic Council manages coral, coral reefs and live/hard bottom habitat, including deepwater corals, through the Fishery Management Plan for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region (Coral FMP). Mechanisms exist in the FMP, as amended, to further protect deepwater coral and live/hard bottom habitats. The SAFMC's Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel have supported proactive efforts to identify and protect deepwater coral ecosystems in the South Atlantic region. Management actions in Comprehensive Ecosystem-Based Amendment (CE-BA 1) (SAFMC 2009b)established deepwater coral HAPCs (C-HAPCs) to protect what is thought to be the largest continuous distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. In addition, CE-BA 1 established areas within the CHAPC which provide for traditional fishing in limited areas which do not impact deepwater coral habitat. CE-BA 1, supported by the FEP, also addresses non-regulatory updates for existing EFH and EFH- HAPC information and addresses the spatial requirements of the Final EFH Rule (i.e., GIS presented for all EFH and EFH-HAPCs).

Building from a Habitat to an Ecosystem Network to Support the Evolution

Starting with our Habitat and Environmental Protection Advisory Panel, the Council expanded and fostered a comprehensive Habitat network in our region to develop the Habitat Plan of the South Atlantic Region completed in 1998 to support the EFH rule. Building on the core regional collaborations, the Council facilitated an expansion to a Habitat and Ecosystem network to support the development of the FEP and CE-BA as well as coordinate with partners on other regional efforts.

These efforts include participation as a member and on the Board of the Southeast Coastal Regional Ocean Observing Association (SECOORA) to guide and direct priority needs for observation and modeling to support fisheries oceanography and integration into stock assessment process through SEDAR. Cooperation through SECOORA is envisioned to facilitate the following:

- Refining current or water column designations of EFH and EFH-HAPCs (e.g., Gulf Stream and Florida Current)
- Providing oceanographic models linking benthic, pelagic habitats and food webs
- Providing oceanographic input parameters for ecosystem models
- Integration of OOS information into Fish Stock Assessment process in the SA region
- Facilitating OOS system collection of fish and fishery data and other research necessary to support the Council's use of area-based management tools in the SA Region including but not limited to EFH, EFH-HAPCs, Marine Protected Areas, Deepwater Coral Habitat Areas of Particular Concern, Special Management Zones and Allowable Gear Areas.
- Integration of OOS program capabilities and research Needs into the South Atlantic Fishery Ecosystem Plan

- Collaboration with SECOORA to integrate OOS products on the Council's Habitat and Ecosystem Internet Mapping System to facilitate model and tool development
- Expanding IMS and Arc Services will provide permissioned researchers access to data or products including those collected/developed by SA OOS partners

In addition, the Council serves on the National Habitat Board and, as a member of the Southeast Aquatic Resource Partnership (SARP), has highlighted the collaboration by including the Southeast Aquatic Habitat Plan and associated watershed conservation restoration targets into the FEP. Many of the habitat, water quality, and water quantity conservation needs identified in the threats and recommendations Volume of the FEP are directly addressed by on-the-ground projects supported by SARP. This cooperation results in funding fish habitat restoration and conservation intended to increase the viability of fish populations and fishing opportunity which also meets the needs to conserve and manage Essential Fish Habitat for Council managed species or habitat important to their prey.

Initially discussed as a South Atlantic Eco-regional Compact, the Council has also cooperated with South Atlantic States in the formation of a Governor's South Atlantic Alliance (SAA). This will also provide regional guidance and resources that will address State and Council broader habitat and ecosystem conservation goals. The SAA was initiated in 2006. An Executive Planning Team (EPT), by the end of 2007, had created a framework for the Governors South Atlantic Alliance. The formal agreement between the four states (NC, SC, GA, and FL) was executed in May 2009. The Agreement specifies that the Alliance will prepare a "Governors South Atlantic Alliance Action Plan" which will be reviewed annually for progress and updated every five years for relevance of content. Alliance mission and purpose is to promote collaboration among the four states, and with the support and interaction of federal agencies, academe, regional organizations, non-governmental organizations, and the private sector, to sustain and enhance the region's coastal and marine resources. The Alliance proposes to regionally implement science-based actions and policies that balance coastal and marine ecosystems capacities to support both human and natural systems. An Action Plan was approved by the Governors and an Implementation Plan is under development.

One of the more recent collaborations is the Council participation as Steering Committee member for the newly establish South Atlantic Landscape Conservation Cooperative (SALCC). Landscape Conservation Cooperatives (LCCs) are applied conservation science partnerships focused on a defined geographic area that informs on-the-ground strategic conservation efforts at landscape scales. LCC partners include DOI agencies, other federal agencies, states, tribes, non-governmental organizations, universities and others. The newly formed Department of Interior Southeast Climate Services Center (CSC) has the LCCs in the region as their primary clients. One of the initial charges of the CSCs is to downscale climate models for use at finer scales.

Building Tools to support EBM in the South Atlantic Region

The Council has developed a Habitat and Ecosystem Section of the website http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx and, in cooperation with the Florida Wildlife Research Institute (FWRI), developed a Habitat and Ecosystem Internet Map Server (IMS) http://www.safmc.net/EcosystemManagement/EcosystemBoundaries/MappingandGISData/tabid/62/Default.aspx. The IMS was developed to support Council and regional partners' efforts in the transition to EBM. Other regional partners include NMFS Habitat Conservation, South Atlantic States, local management authorities, other Federal partners, universities, conservation organizations, and recreational and commercial fishermen. As technology and spatial information needs evolve, the distribution and use of GIS demands greater capabilities. The Council has continued its collaboration with FWRI in the now evolution to Web Services initially for for Essential Fish Habitat (http://ocean.floridamarine.org/SAFMC_EFH/) and Fishery Regulations (http://ocean.floridamarine.org/SAFMC_Regulations/) and is refining permissioned services for Fishery Independent and Habitat Research and developing one for Ocean Energy activities in the region (e.g., wind, wave and current).

Ecosystem Based Action, Future Challenges and Needs

The Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deepwater Marine Protected Areas for the Snapper Grouper fishery, proactive harvest control rules on species (e.g., dolphin and wahoo) which are not overfished, implementing extensive gear area closures which in most cases eliminate the impact of fishing gear on Essential Fish Habitat and use of other spatial management including Special Management Zones. Pursuant to the development of the Comprehensive Ecosystem-Based Amendment, the Council is taking an ecosystem approach to protect deepwater ecosystems while providing for traditional fisheries for the Golden Crab and Royal Red shrimp in areas where they do not impact deepwater coral habitat. The stakeholder based process taps in on an extensive regional Habitat and Ecosystem network. Support tools facilitate Council deliberations and with the help of regional partners, are being refined to address long-term ecosystem management needs.

One of the greatest challenges to the long-term move to EBM in the region is funding high priority research, including but not limited to, comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for Council use of place based management measures. Additional resources need to be dedicated to expand regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP and SEFIS) which are linking directly to addressing high priority management needs. Development of ecosystem information systems to support Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term Council needs.

The FEP and CE-BA 1 complement, but do not replace, existing FMPs. In addition, the FEP serves as source document to the CE-BAs. NOAA should support and build on regional coordination efforts of the Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update and refine our FEP and support future fishery actions including but not limited to completing one of the highest priority needs to support EBM, the completion of mapping of near-shore, mid-shelf, shelf edge and deepwater habitats in the South Atlantic region. In developing future FEPs, the Council will draw on SAFEs (Stock Assessment and Fishery Evaluation reports) which NMFS is required to provide the Council for all FMPs implemented under the Magnuson-Stevens Act. The FEP, serving as the source document for CE-BAs, could also meet NMFS SAFE requirements if information is provided to the Council to update necessary sections.

EFH and EFH-HAPC Designations Translated to Cooperative Habitat Policy Development and Protection The Council actively comments on non-fishing projects or policies that may impact fish habitat. Appendix A of the Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (SAFMC 1998b) outlines the Council's comment and policy development process and the establishment of a four-state Habitat Advisory Panel. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. AP members bring projects to the Council's attention, draft comment letters, and attend public meetings. With guidance from the Advisory Panel, the Council has developed and approved policies on:

1. Energy exploration, development, transportation and hydropower re-licensing;
2. Beach dredging and filling and large-scale coastal engineering;
3. Protection and enhancement of submerged aquatic vegetation;
4. Alterations to riverine, estuarine and nearshore flows; and
5. Marine aquaculture.
6. Marine Ecosystems and Non-Native and Invasive Species
7. Estuarine Ecosystems and Non-Native and Invasive Species

NOAA Fisheries, State and other Federal agencies apply EFH and EFH-HAPC designations and protection policies in the day-to-day permit review process. In addition to the workshop process described above the revision and updating of existing habitat policies and the development of new policies is being coordinated with core agency representatives on the Habitat and Coral Advisory Panels. Existing policies are included at the end of this Appendix.

South Atlantic Bight Ecopath Model

The Council worked cooperatively the University of British Columbia and the Sea Around Us project to develop a straw-man and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the Council. This effort was envisioned to help the Council and cooperators in identifying available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provides a vehicle to identify research necessary to better define populations, fisheries and their interrelationships. While individual efforts are still underway in the South Atlantic (e.g., Biscayne Bay) only with significant investment of new resources through other programs will a comprehensive regional model be further developed.

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern

Following is a summary of the current South Atlantic Council's EFH and EFH-HAPCs. Information supporting their designation is being updated (pursuant to the EFH Final Rule) in the Council's Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment:

Snapper Grouper FMP

Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

Areas which meet the criteria for EFH-HAPCs for species in the snapper-grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; nearshore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the *Oculina* Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs). In addition, the Council through CEBA 2 (SAFMC 2011) is proposing the deepwater snapper grouper MPAs and golden tilefish and blueline tilefish habitat as EFH-HAPCs under the Snapper Grouper FMP as follows:

EFH-HAPCs for golden tilefish to include irregular bottom comprised of troughs and terraces inter-mingled with sand, mud, or shell hash bottom. Mud-clay bottoms in depths of 150-300 meters are HAPC. Golden tilefish are generally found in 80-540 meters, but most commonly found in 200-meter depths.

EFH-HAPC for blueline tilefish to include irregular bottom habitats along the shelf edge in 45-65 meters depth; shelf break; or upper slope along the 100-fathom contour (150-225 meters); hardbottom habitats characterized as rock overhangs, rock outcrops, manganese-phosphorite rock slab formations, or rocky reefs in the South Atlantic Bight; and the Georgetown Hole (Charleston Lumps) off Georgetown, SC.

EFH-HAPCs for the snapper grouper complex to include the following deepwater Marine Protected Areas (MPAs) as designated in Snapper Grouper Amendment 14; Snowy Grouper Wreck MPA, Northern South Carolina MPA, Edisto MPA, Charleston Deep Artificial Reef MPA, Georgia MPA, North Florida MPA, St. Lucie Hump MPA and East Hump MPA.

Shrimp FMP

For penaeid shrimp, Essential Fish Habitat includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies as described in the Habitat Plan. Inshore nursery areas include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats. This applies from North Carolina through the Florida Keys.

For rock shrimp, essential fish habitat consists of offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters in depth with highest concentrations occurring between 34 and 55 meters. This applies for all areas from North Carolina through the Florida Keys. Essential fish habitat includes the shelf current systems near Cape Canaveral, Florida which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida Shelf and may transport them inshore in spring. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse rock shrimp larvae.

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy sand, or white calcareous mud. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

Areas which meet the criteria for EFH-HAPCs for penaeid shrimp include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas), and state-identified overwintering areas.

Coastal Migratory Pelagics FMP

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas).

For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae.
For king and Spanish mackerel and cobia essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

Areas which meet the criteria for EFH-HAPCs include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The “Wall” off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River, North Carolina; Bogue Sound, North Carolina (Adults May-September salinity >30 ppt); and New River, North Carolina (Adults May-October salinity >30 ppt). For Cobia they include Broad River, South Carolina; and Broad River, South Carolina (Adults & juveniles May-July salinity >25ppt).

Golden Crab FMP

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework

Spiny Lobster FMP

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Areas which meet the criteria for EFH-HAPCs for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida.

Coral, Coral Reefs, and Live/Hard Bottom Habitats FMP

Essential fish habitat for corals (stony corals, octocorals, and black corals) must incorporate habitat for over 200 species. EFH for corals include the following:

A. Essential fish habitat for hermatypic stony corals includes rough, hard, exposed, stable substrate from Palm Beach County south through the Florida reef tract in subtidal to 30 m depth, subtropical (15°-35° C), oligotrophic waters with high (30-35$^{o}/_{oo}$) salinity and turbidity levels sufficiently low enough to provide algal symbionts adequate sunlight penetration for photosynthesis. Ahermatypic stony corals are not light restricted and their essential fish habitat includes defined hard substrate in subtidal to outer shelf depths throughout the management area.

B. Essential fish habitat for *Antipatharia* (black corals) includes rough, hard, exposed, stable substrate, offshore in high (30-35$^{o}/_{oo}$) salinity waters in depths exceeding 18 meters (54 feet), not restricted by light penetration on the outer shelf throughout the management area.

C. Essential fish habitat for octocorals excepting the order Pennatulacea (sea pens and sea pansies) includes rough, hard, exposed, stable substrate in subtidal to outer shelf depths within a wide range of salinity and light penetration throughout the management area.

D. Essential fish habitat for Pennatulacea (sea pens and sea pansies) includes muddy, silty bottoms in subtidal to outer shelf depths within a wide range of salinity and light penetration.

Areas which meet the criteria for EFH-HAPCs for coral, coral reefs, and live/hard bottom include: The 10-Fathom Ledge, Big Rock, and The Point (North Carolina); Hurl Rocks and The Charleston Bump (South Carolina); Gray's Reef National Marine Sanctuary (Georgia); The *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; Oculina Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral; nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral to Broward County); offshore (5-30 meter; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary. In addition, the Council through CEBA 2 (SAFMC 2011) is proposing the Deepwater Coral HAPCs as EFH-HAPCs under the Coral FMP as follows:

Deepwater Coral HAPCs designated in Comprehensive Ecosystem-Based Amendment 1 as Snapper Grouper EFH-HAPCs: Cape Lookout Coral HAPC, Cape Fear Coral HAPC, Blake Ridge Diapir Coral HAPC, Stetson-Miami Terrace Coral HAPC, Pourtalés Terrace Coral HAPC.

Dolphin and Wahoo FMP

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*. This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998b) (dolphin was included within the Coastal Migratory Pelagics FMP).

Areas which meet the criteria for EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*. This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

Pelagic *Sargassum* Habitat FMP

The Council through CEBA 2 (SAFMC 2011) is proposing to designate the top 10 meters of the water column in the South Atlantic EEZ bounded by the Gulfstream, as EFH for pelagic Sargassum.

Actions Implemented That Protect EFH and EFH-HAPCs

Snapper Grouper FMP

- Prohibited the use of the following gears to protect habitat: bottom longlines in the EEZ inside of 50 fathoms or anywhere south of St. Lucie Inlet Florida, fish traps, bottom tending (roller-rig) trawls on live bottom habitat, and entanglement gear.

- Established the *Oculina* Experimental Closed Area where the harvest or possession of all species in the snapper grouper complex is prohibited

Shrimp FMP

- Prohibition of rock shrimp trawling in a designated area around the *Oculina* Bank,
- Mandatory use of bycatch reduction devices in the penaeid shrimp fishery,
- Mandatory Vessel Monitoring System (VMS) in the Rock Shrimp Fishery.
- A mechanism that provides for the concurrent closure of the EEZ to penaeid shrimping if environmental conditions in state waters are such that the overwintering spawning stock is severely depleted.

Pelagic Sargassum Habitat FMP

- Prohibited all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the latitude line representing the North Carolina/South Carolina border (34° North Latitude).
- Prohibited all harvest of *Sargassum* from the South Atlantic EEZ within 100 miles of shore between the 34° North Latitude line and the Latitude line representing the North Carolina/Virginia border.
- Harvest of *Sargassum* from the South Atlantic EEZ is limited to the months of November through June.
- Established an annual Total Allowable Catch (TAC) of 5,000 pounds landed wet weight.
- Required that an official observer be present on each *Sargassum* harvesting trip. Require that nets used to harvest *Sargassum* be constructed of four inch stretch mesh or larger fitted to a frame no larger than 4 feet by 6 feet.

Coastal Migratory Pelagics FMP

- Prohibited of the use of drift gill nets in the coastal migratory pelagic fishery;

Golden Crab FMP

- In the northern zone golden crab traps can only be deployed in waters deeper than 900 feet; in the middle and southern zones traps can only be deployed in waters deeper than 700 feet.
  Northern zone - north of the 28°N. latitude to the North Carolina/Virginia border;
  Middle zone - 28°N. latitude to 25°N. latitude; and
  Southern zone - south of 25°N. latitude to the border between the South Atlantic and Gulf of Mexico Fishery Management Councils.

Coral, Coral Reefs and Live/Hard Bottom FMP

- Established an optimum yield of zero and prohibiting all harvest or possession of these resources which serve as essential fish habitat to many managed species.
- Designated of the *Oculina* Bank Habitat Area of Particular Concern
- Expanded the *Oculina* Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.
- Established the following two Satellite *Oculina* HAPCs: (1) Satellite *Oculina*

HAPC #1 is bounded on the north by 28°30'N. latitude, on the south by 28°29'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude, and (2) Satellite *Oculina* HAPC #2 is bounded on the north by 28°17'N. latitude, on the south by 28°16'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude.

- Prohibited the use of all bottom tending fishing gear and fishing vessels from anchoring or using grapples in the *Oculina* Bank HAPC.
- Established a framework procedure to modify or establish Coral HAPCs.
- Established the following six deepwater CHAPCs: Cape Lookout Lophelia Banks, Cape Fear Lophelia Banks, Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson-Miami Terrace), Pourtales Terrace, and Blake Ridge Diapir Methane Seep.
- Within the deepwater CHAPCs, the possession of coral species and the use of all bottom damaging gear is prohibited including bottom longline, trawl (bottom and mid-water), dredge, pot or trap, or the use of an anchor, anchor and chain, or grapple and chain by all fishing vessels.

South Atlantic Council Policies for Protection and Restoration of Essential Fish Habitat.

SAFMC Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the SAFMC to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the SAFMC policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The SAFMC will pursue these goals at state, Federal, and local levels. The Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species, and shall actively enter Federal, decision- making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

SAFMC EFH Policy Statements

In addition to implementing regulations to protect habitat from fishing related degradation, the Council in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact fish habitat. The Council adopted a habitat policy and procedure document that established a four-state Habitat Advisory Panel and adopted a comment and policy development process. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. With guidance from the Advisory Panel, the Council has developed and approved the following habitat policy statements which are available on the Habitat and Ecosystem section of the Council website:

Protection and Restoration of EFH from Marine Aquaculture
http://www.safmc.net/Portals/0/HabitatPolicies/SAFMCAquaPolicyFinalJune07.pdf
Protection and Enhancement of Marine Submerged Aquatic Vegetation
http://www.safmc.net/Portals/0/HabitatPolicies/SAFMCSAVPol.pdf
Protection and Restoration of EFH from Beach Dredging and Filling

http://www.safmc.net/Portals/0/HabitatPolicies/BeachPolicy.pdf
Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing
http://www.safmc.net/Portals/0/HabitatPolicies/SAFMCEnergyPolicyFinal05.pdf
Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows
http://www.safmc.net/Portals/0/HabitatPolicies/FlowsPolicy.pdf
Policies for the Protection of South Atlantic Estuarine Ecosystems from Non-Native and Invasive Species
http://www.safmc.net/LinkClick.aspx?fileticket=Qn%2baT%2blNjZM%3d&tabid=245
Policies for the Protection of South Atlantic Marine Ecosystems from No-Native and Invasive Species
http://www.safmc.net/LinkClick.aspx?fileticket=bNFKO%2fIcvHQ%3d&tabid=245

Appendix D. History of Management

History of Management of the South Atlantic Snapper Grouper Fishery

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The following table summarizes actions in each of the amendments to the original FMP, as well as some events not covered in amendment actions.

Table D-1. History of Management for the Snapper Grouper Fishery of the South Atlantic Region.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
FMP (1983)	08/31/83	PR: 48 FR 26843 FR: 48 FR 39463	-12" limit – red snapper, yellowtail snapper, red grouper, Nassau grouper -8" limit – black sea bass -4" trawl mesh size -Gear limitations – poisons, explosives, fish traps, trawls -Designated modified habitats or artificial reefs as Special Management Zones (SMZs)
Regulatory Amendment #1 (1987)	03/27/87	PR: 51 FR 43937 FR: 52 FR 9864	-Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear. -Prohibited harvest of goliath grouper in SMZs.
Amendment #1 (1988a)	01/12/89	PR: 53 FR 42985 FR: 54 FR 1720	-Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, FL. -Directed fishery defined as vessel with trawl gear and ≥200 lbs s-g on board. -Established rebuttable assumption that vessel with s-g on board had harvested such fish in EEZ.
Regulatory Amendment #2 (1988b)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	-Established 2 artificial reefs off Ft. Pierce, FL as SMZs.
Notice of Control Date	09/24/90	55 FR 39039	-Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	-Established artificial reef at Key Biscayne, FL as SMZ. Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ.
Amendment #2 (1990)	10/30/90	PR: 55 FR 31406 FR: 55 FR 46213	-Prohibited harvest/possession of goliath grouper in or from the EEZ -Defined overfishing for goliath grouper and other species

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Emergency Rule	8/3/90	55 FR 32257	-Added wreckfish to the FMU -Fishing year beginning 4/16/90 -Commercial quota of 2 million pounds -Commercial trip limit of 10,000 pounds per trip
Fishery Closure Notice	8/8/90	55 FR 32635	- Fishery closed because the commercial quota of 2 million pounds was reached
Emergency Rule Extension	11/1/90	55 FR 40181	-extended the measures implemented via emergency rule on 8/3/90
Amendment #3 (1990b)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	-Added wreckfish to the FMU; -Defined optimum yield and overfishing -Required permit to fish for, land or sell wreckfish; -Required catch and effort reports from selected, permitted vessels; -Established control date of 03/28/90; -Established a fishing year for wreckfish starting April 16; -Established a process to set annual quota, with initial quota of 2 million pounds; provisions for closure; -Established 10,000 pound trip limit; -Established a spawning season closure for wreckfish from January 15 to April 15; and -Provided for annual adjustments of wreckfish management measures;
Notice of Control Date	07/30/91	56 FR 36052	-Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #4 (1991)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	-Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, FL; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish**; powerheads and bangsticks in designated SMZs off S. Carolina. -defined overfishing/overfished and established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991) -Required permits (commercial & for-hire) and specified data collection regulations -Established an assessment group and annual adjustment procedure (framework) -Permit, gear, and vessel id requirements specified for black sea bass traps. -No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit. -8" limit – lane snapper -10" limit – vermilion snapper (recreational only) -12" limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers -20" limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers. -28" FL limit – greater amberjack (recreational only) -36" FL or 28" core length – greater amberjack (commercial only) -bag limits – 10 vermilion snapper, 3 greater amberjack -aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers -aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed -spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April south of Cape Canaveral, FL -spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June -charter/headboats and excursion boat possession limits extended

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #5 (1992a)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	-Wreckfish: established limited entry system with ITQs; required dealer to have permit; rescinded 10,000 lb. trip limit; required off-loading between 8 am and 5 pm; reduced occasions when 24-hour advance notice of offloading required for off-loading; established procedure for initial distribution of percentage shares of TAC
Emergency Rule	8/31/92	57 FR 39365	-Black Sea Bass (bsb): modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Emergency Rule Extension	11/30/92	57 FR 56522	-Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Regulatory Amendment #4 (1992b)	07/06/93	FR: 58 FR 36155	-Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Regulatory Amendment #5 (1992c)	07/31/93	PR: 58 FR 13732 FR: 58 FR 35895	-Established 8 SMZs off S. Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed.
Amendment #6 (1993)	07/27/94	PR: 59 FR 9721 FR: 59 FR 27242	-commercial quotas for snowy grouper, golden tilefish -commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper -include golden tilefish in grouper recreational aggregate bag limits -prohibited sale of warsaw grouper and speckled hind -100% logbook coverage upon renewal of permit -creation of the *Oculina* Experimental Closed Area -data collection needs specified for evaluation of possible future IFQ system
Amendment #7 (1994a)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	-12” FL – hogfish -16” TL – mutton snapper -required dealer, charter and headboat federal permits -allowed sale under specified conditions -specified allowable gear and made allowance for experimental gear -allowed multi-gear trips in N. Carolina -added localized overfishing to list of problems and objectives -adjusted bag limit and crew specs. for charter and head boats -modified management unit for scup to apply south of Cape Hatteras, NC -modified framework procedure
Regulatory Amendment #6 (1994)	05/22/95	PR: 60 FR 8620 FR: 60 FR 19683	Established actions which applied only to EEZ off Atlantic coast of FL: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30” TL; 12” TL – gray triggerfish
Notice of Control Date	04/23/97	62 FR 22995	-Anyone entering federal bsb pot fishery off S. Atlantic states after 04/23/97 was not assured of future access if limited entry program developed.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #8 (1997a)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	-established program to limit initial eligibility for snapper grouper fishery: Must demonstrate landings of any species in SG FMU in 1993, 1994, 1995 or 1996; and have held valid SG permit between 02/11/96 and 02/11/97. -granted transferable permit with unlimited landings if vessel landed ≥ 1,000 lbs. of snapper grouper spp. in any of the years -granted non-transferable permit with 225 lb. trip limit to all other vessels -modified problems, objectives, OY, and overfishing definitions -expanded Council's habitat responsibility -allowed retention of snapper grouper spp. in excess of bag limit on permitted vessel with a single bait net or cast nets on board -allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions.
Regulatory Amendment #7 (1998)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Interim Rule Request	1/16/98		-Council requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under MSA
Action Suspended	5/14/98		-NMFS informed the Council that action on the interim rule request was suspended
Emergency Rule Request	9/24/98		-Council requested Amendment 9 be implemented via emergency rule
Request not Implemented	1/22/99		-NMFS informed the Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	-Red porgy: 14" length (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April. -Black sea bass: 10" length (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots -Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lbs; began fishing year May 1; prohibited coring. -Vermilion snapper: 11" length (recreational) Gag: 24" length (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April -Black grouper: 24" length (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April. -Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination) -All SG without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners -Vessels with longline gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.
Amendment #9 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack
Regulatory Amendment #8 (2000a)	11/15/00	PR: 65 FR 41041 FR: 65 FR 61114	-Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet CG permit specs; restricted fishing in new and revised SMZs
Emergency Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	-Prohibited harvest or possession of red porgy.
Emergency Action	9/3/99	64 FR 48326	-Reopened the Amendment 8 permit application process
Amendment #10 (1998d)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	-Identified EFH and established HAPCs for species in the SG FMU.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #11 (1998e)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	-MSY proxy: goliath and Nassau grouper = 40% static SPR; all other species = 30% static SPR -OY: hermaphroditic groupers = 45% static SPR; goliath and Nassau grouper = 50% static SPR; all other species = 40% static SPR -Overfished/overfishing evaluations: BSB: overfished (MSST=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (MFMT=0.72, F1991-1995=0.95) Vermilion snapper: overfished (static SPR = 21-27%). Red porgy: overfished (static SPR = 14-19%). Red snapper: overfished (static SPR = 24-32%) Gag: overfished (static SPR = 27%) Scamp: no longer overfished (static SPR = 35%) Speckled hind: overfished (static SPR = 8-13%) Warsaw grouper: overfished (static SPR = 6-14%) Snowy grouper: overfished (static SPR = 5=15%) White grunt: no longer overfished (static SPR = 29-39%) Golden tilefish: overfished (couldn't estimate static SPR) Nassau grouper: overfished (couldn't estimate static SPR) Goliath grouper: overfished (couldn't estimate static SPR) -overfishing level: goliath and Nassau grouper = F>F40% static SPR; all other species: = F>F30% static SPR Approved definitions for overfished and overfishing. MSST = [(1-M) or 0.5 whichever is greater]*B_{MSY}. MFMT = F_{MSY}
Amendment #12 (2000c)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	-Red porgy: MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST=7.34 mp; rebuilding timeframe=18 years (1999=year 1); no sale during Jan-April; 1 fish bag limit; 50 lb. bycatch comm. trip limit May-December; modified management options and list of possible framework actions.
Amendment #13A (2003b)	04/26/04	PR: 68 FR 66069 FR: 69 FR 15731	-Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper spp. within the *Oculina* Experimental Closed Area.
Notice of Control Date	10/14/05	70 FR 60058	-The Council is considering management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding Wreckfish).
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	- End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006. 1. Snowy Grouper Commercial: Quota (gutted weight) = 151,000 lbs gw in year 1, 118,000 lbs gw in year 2, and 84,000 lbs gw in year 3 onwards. Trip limit = 275 lbs gw in year 1, 175 lbs gw in year 2, and 100 lbs gw

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			in year 3 onwards. Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit. 2. Golden Tilefish Commercial: Quota of 295,000 lbs gw, 4,000 lbs gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lbs gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1. Recreational: Limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit. 3. Vermilion Snapper Commercial: Quota of 1,100,000 lbs gw. Recreational: 12" size limit. 4. Black Sea Bass Commercial: Commercial quota (gutted weight) of 477,000 lbs gw in year 1, 423,000 lbs gw in year 2, and 309,000 lbs gw in year 3 onwards. Require use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31. Recreational: Recreational allocation of 633,000 lbs gw in year 1, 560,000 lbs gw in year 2, and 409,000 lbs gw in year 3 onwards. Increase minimum size limit from 10" to 11" in year 1 and to 12" in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31. 5. Red Porgy Commercial and recreational 1. Retain 14" TL size limit and seasonal closure (retention limited to the bag limit); 2. Specify a commercial quota of 127,000 lbs gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April; 3. Increase commercial trip limit from 50 lbs ww to 120 red porgy (210 lbs gw) during May through December; 4. Increase recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-The Council may consider measures to limit participation in the snapper grouper for-hire fishery
Amendment #14 (2007) Sent to NMFS 7/18/07	2/12/09	PR: 73 FR 32281 FR: 74 FR 1621	-Establish eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species.
Amendment #15A (2008a)	3/14/08	73 FR 14942	- Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Amendment #15B (2008b)	2/15/10	PR: 74 FR 30569 FR: 74 FR 58902	- Prohibit the sale of bag-limit caught snapper grouper species.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			-Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish. - Adjust commercial renewal periods and transferability requirements. - Implement plan to monitor and assess bycatch, - Establish reference points for golden tilefish. - Establish allocations for snowy grouper (95% com & 5% rec) and red porgy (50% com & 50% rec).
Amendment #16 (SAFMC 2009a)	7/29/09	PR: 74 FR 6297 FR: 74 FR 30964	-Specify SFA parameters for gag and vermilion snapper -For gag grouper: Specify interim allocations 51%com & 49%rec; rec & com spawning closure January through April; directed com quota=348,440 pounds gutted weight; reduce 5-grouper aggregate to 3-grouper and 2 gag/black to 1 gag/black and exclude captain & crew from possessing bag limit. -For vermilion snapper: Specify interim allocations 68%com & 32%rec; directed com quota split Jan-June=168,501 pounds gutted weight and 155,501 pounds July-Dec; reduce bag limit from 10 to 4 and a rec closed season October through May 15. In addition, the NMFS RA will set new regulations based on new stock assessment. -Require dehooking tools.
Amendment #17A (SAFMC 2010a)	12/3/10 red snapper closure; circle hooks March 3, 2011	PR: 75 FR 49447 FR: 75 FR 76874	-Specify an ACL and an AM for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL -Specify a rebuilding plan for red snapper -Specify status determination criteria for red snapper -Specify a monitoring program for red snapper
Emergency Rule	12/3/10	75 FR 76890	- Delay the effective date of the area closure for snapper grouper species implemented through Amendment 17A
Amendment #17B (SAFMC 2010b)	January 31, 2011	PR: 75 FR 62488 FR: 75 FR 82280	-Specify ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing. -Modify management measures as needed to limit harvest to the ACL or ACT. -Update the framework procedure for specification of total allowable catch.
Notice of Control Date	12/4/08	74 FR 7849	Establishes a control date for the golden tilefish fishery of the South Atlantic

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Notice of Control Date	12/4/08	74 FR 7849	- Establishes control date for black sea bass pot fishery of the South Atlantic
Amendment #19 (Comprehensive Ecosystem-based Amendment 1) (SAFMC 2010c)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	-Provide presentation of spatial information for Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) designations under the Snapper Grouper FMP - Designation of deepwater coral HAPCs
Regulatory Amendment 10 (2011a)	5/31/11	PR: 76 FR 9530 FR: 76 FR 23728	Eliminate closed area for snapper grouper species approved in Amendment 17A.
Regulatory Amendment 9 (2011b)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	- Establish trip limit for vermilion snapper and gag, increase trip limit for greater amberjack, and reduce bag limit for black sea bass
Regulatory Amendment 11	TBD	TBD	- Eliminate 240 ft closure for six deepwater species.
Amendment #18A (TBD)	TBD	TBD	- Limit participation and effort in the black sea bass fishery - Modifications to management of the black sea bass pot fishery - Improve the accuracy, timing, and quantity of fisheries statistics

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment 18B (TBD)	TBD	TBD	-Limit participation and effort in the golden tilefish fishery -Change the golden tilefish fishing year -Modify trip limits - update SFA parameters based on assessment
Amendment #20A	TBD	TBD	-Redistribute latent share for the wreckfish ITQ program.
Amendment #20B	TBD	TBD	-Update wreckfish ITQ according to reauthorized Magnuson-Stevens Act
Amendment #23 (Comprehensive Ecosystem-based Amendment 2)	TBD	TBD	- Designate the Deepwater MPAs as EFH-HAPCs - Limit harvest of snapper grouper species in SC Special Management Zones to the bag limit - Modify sea turtle release gear
Comprehensive ACL Amendment	TBD	TBD	-Establish ABC control rules, establish ABCs, ACLs, and AMs for species not undergoing overfishing -Remove some species from South Atlantic FMU -Specify allocations among the commercial, recreational, and for-hire sectors for species not undergoing overfishing -Limit the total mortality for federally managed species in the South Atlantic to the ACLs
Amendment #24	TBD	TBD	-Specify MSY, rebuilding plan (including ACLs, AMs, and OY), and allocations for red grouper

History of Management for the Dolphin and Wahoo Fishery off the Atlantic States
The Fishery Management Plan for the Dolphin and Wahoo Fishery off the Atlantic States (SAFMC 2003a) was partially approved on December 23, 2003. The FMP represents a proactive approach to maintaining healthy stocks of dolphin and wahoo, with action intended to cap participation, effort, and landings in the fishery. Approved actions provide equitable harvesting restrictions to the recreational and commercial sectors, and maintain the historical participation by both user groups. The intended effects of the FMP are to conserve and manage dolphin and wahoo off the Atlantic states (Maine through the east coast of Florida), and to ensure that no new fisheries for dolphin and wahoo develop.

The following regulations were effective on June 28, 2004: (1) a 20-inch fork length minimum size limit for dolphin off the coasts of Georgia and Florida with no size restrictions elsewhere; (2) prohibition of longline fishing for dolphin and wahoo in areas closed to the use of such gear for highly migratory pelagic species; and (3) allowable gear to be used in the fishery (hook-and-line gear including manual, electric, and hydraulic rods and reels; bandit gear; handlines; longlines; and spearfishing (including powerheads) gear. In addition, other approved portions of the FMP were also effective on this date, including (1) the management unit and designations of stock status criteria for the unit; (2) a fishing year of January 1 through December 31; (3) a 1.5 million pound (or 13% of the total harvest) cap on commercial landings; (4) establishment of a framework procedure by which the SAFMC may modify its management measures; and (5) designations of Essential Fish Habitat and Essential Fish habitat-Habitat Areas of Particular Concern.

The following regulations were effective on September 24, 2004: (1) owners of commercial vessels and/or charter vessels/headboats must have vessel permits and, if selected, submit reports; (2) dealers must have permits and, if selected, submit reports; (3) longline vessels must comply with sea turtle protection measures; (4) a recreational bag limit of 10 dolphin and 2 wahoo per person per day, with a limit of 60 dolphin per boat per day (headboats are excluded from the boat limit); (5) prohibition on recreational sale of dolphin and wahoo caught under a bag limit unless the seller holds the necessary commercial permits; and (6) a commercial trip limit of 500 pounds for wahoo.

The following regulations were effective on November 23, 2004: (1) operators of commercial vessels, charter vessels and headboats that are required to have a federal vessel permit for dolphin and wahoo must display operator permits.

Amendment 1 to the Dolphin Wahoo FMP was included in the Comprehensive Ecosystem-Based Amendment 1 (SAFMC 2010c). The amendment provided presentation of spatial information for Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) designations under the FMP. Regulations became effective on July 22, 2010.

History of Management for the Golden Crab Fishery off the South Atlantic Region
The golden crab resource and fishery in the South Atlantic Region was unprotected prior to implementation of the FMP. The Council approved a control date that was published in the Federal Register on April 7, 1995. The Council completed the Golden Crab FMP (SAFMC 1995) and submitted the plan for formal Secretarial Review on December 15, 1995. Regulations implementing the FMP were published in the Federal Register on August 27, 1996 [61 FR 43952]; various regulations became effective August 27, September 26, and October 28, 1996 and September 7, 1997.

The Golden Crab FMP relies on a system of traditional fishery management plus controlled access. Traditional fisheries management includes measures to provide biological protection to the resource (escape gaps in traps and no retention of female crabs); gear regulation (define allowable gear, degradable panel, tending requirements, gear identification, and maximum trap size by zone); provide for law enforcement (depth limitations and prohibit possession of whole fish or fillets of snapper grouper species); determine the number of participants (vessel and dealer/processor permits); collect the necessary data (vessel/fishermen and dealer/processor reporting); and a framework procedure to adjust the management program (framework adjustments and adjustments to activities authorized by the Secretary of Commerce). Use of these traditional management techniques in other fishery management plans has not solved all fisheries management problems. At best, the fishery resource, in this case golden crab, is biologically protected. Ignored, or even exacerbated, are underlying social and economic problems resulting from gear conflicts, high regulatory costs, and low marketing incentives. To solve these social and economic problems, managers have increasingly turned to various forms of controlled access or effort limitation. The Council chose to limit the number of vessels in the golden crab fishery. Combining the more traditional fisheries management measures with controlled access best allowed the Council to solve problems in the golden crab fishery.

Framework Seasonal Adjustment #1 (SAFMC 1997) revised the vessel size limitations applicable when a vessel permit is transferred to another vessel and extended through December 31, 2000, the authorization to use wire cable for a mainline attached to a golden crab trap. The framework document was sent to NMFS on September 26, 1997 and the proposed rule was published on June 26, 1998. The final rule was published in the Federal Register on October 28, 1998 with regulations effective upon publication.

Amendment 1 (SAFMC 1998d) was a part of the Council‘s Comprehensive Amendment addressing Essential Fish Habitat in FMPs of the South Atlantic Region. Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream, which occurs within the EEZ, is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). Refer to Volume II of the FEP (SAFMC 2009b) and the Habitat Plan (SAFMC 1998c) for a more detailed description of habitat utilized by the managed species. There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs. As information becomes available, the Council would evaluate such data and identify HAPCs as appropriate through the framework. In addition, Amendment 1 established a framework procedure to address habitat issues; this framework was added to the framework of all approved FMPs including the Golden Crab FMP. Amendment 1 was submitted to the NMFS on October 9, 1998. The Notice of Availability was published in the Federal Register on March 5, 1999, and the Comprehensive Habitat Amendment was approved on June 3, 1999. The proposed rule was published on July 9, 1999 and a supplement to the proposed rule was published on November 2, 1999. The final rule was published in the Federal Register on June 14, 2000 with regulations becoming effective July 14, 2000.

Amendment 2 (SAFMC 1998d) was a part of the Council's Comprehensive Amendment addressing Sustainable Fishery Act definitions and other required provisions in FMPs of the South Atlantic Region. The amendment was partially approved on May 19, 1999. The final rule was published in the Federal Register on November 2, 1999 with regulations becoming effective December 2, 1999. The description of fisheries and communities was approved and bycatch reporting was approved. The remaining items for golden crab were disapproved because the stock status determination criteria are incomplete and, thus, do not totally fulfill the new requirements of the Magnuson-Stevens Act and the national standard guidelines.

Amendment 3 (SAFMC 2000b) extended the authorization to use wire cable for mainlines attached to golden crab traps to December, 31, 2002; modified escape panel sizes for traps; addressed permit renewal requirements including removal of the 5,000-pound harvest requirement for renewing biannual permits and addressed the minimum harvest requirement for permit holders in the Southern Zone; allowed up to a 20% increase in vessel size from the vessel size of the original permit; created a sub-zone within the Southern Zone with specified conditions; allowed two new vessels to be permitted to fish only in the Northern Zone using an earlier list of those wanting to enter the fishery; specified status determination criteria; and modified the FMP framework to allow modifications to the sub-zone.

Amendment 4 (SAFMC 2010c) was included the Comprehensive Ecosystem-Based Amendment 1. The amendment created Allowable Golden Crab Fishing Areas‖ within the proposed Coral Habitat Areas of Particular Concern (CHAPCs); considered vessel monitoring for the golden crab fishery; and provide presentation of spatial information for Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) designations under the Golden Crab FMPs. Regulations in Amendment 4 became effective on July 22, 2010.

Amendment 5 is contained within this Comprehensive ACL Amendment and establishes ABC, ACL and AMs for the golden crab fishery.

Amendment 6 (under development) proposes to establish a catch share program for the golden crab fishery.

The current effort at managing the golden crab fishery is distinguished by the practice of co-management, which has been defined by McGoodwin (1990) as a shift away from autocratic and paternalistic modes of management to modes that rely on the joint efforts of traditional fisheries specialists and fishing peoples. The options for managing the fishery that are put forth in this document have been developed by the golden crab fishermen and refined in consultation with the

Council. It is hoped that such efforts would increase the legitimacy of the future regulations and make the rationale for such regulations more understandable to all involved.

History of Management of Pelagic *Sargassum* Habitat

The Fishery Management Plan for Pelagic *Sargassum* Habitat (SAFMC 2002) was approved in 2003 and established the following restrictions to protect Pelagic *Sargassum* Habitat in the South Atlantic:

(1) Harvest and possession of *Sargassum* is prohibited south of the latitude line representing the North Carolina/South Carolina border, (2) all harvest is prohibited within 100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border, (3) harvest is limited to the months of November through June, (4) official observers are required on any harvesting trip, (5) an annual quota of 5,000 pounds landed wet weight, and (6) nets used to harvest Sargassum must be constructed of 4 ft stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

Other provisions of the plan include: Establishing the management unit for pelagic *Sargassum* throughout the South Atlantic exclusive economic zone (EEZ) and state waters. The management unit is the population of pelagic Sargassum occurring within the South Atlantic Council's area of jurisdiction along the U.S. Atlantic coast from the east coast of Florida, including the Atlantic side of the Florida Keys, to the North Carolina/Virginia Border and within state waters of North Carolina, South Carolina, Georgia, and the Florida East Coast. In addition, the following were established for pelagic *Sargassum*; a maximum sustainable yield, an optimum yield for pelagic *Sargassum* as 5,000 pounds wet weight per year and an overfishing level to meet Magnuson-Stevens Act mandate for pelagic *Sargassum*.

APPENDIX E: FISHERY IMPACT STATEMENT (FIS)

The Magnuson-Stevens Act requires a FIS be prepared for all amendments to Fishery Management Plans (FMPs). The FIS contains an assessment of the likely biological and socioeconomic effects of the conservation and management measures on: 1) fishery participants and their communities; 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and 3) the safety of human life at sea.

Actions Contained in the Comprehensive Annual Catch Limit (ACL) Amendment

This amendment will bring the Snapper Grouper, Dolphin Wahoo, Golden Crab and *Sargassum* FMPs into compliance with Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requirements for Annual Catch Limits (ACLs) and Accountability Measures (AMs) and modify management measures for wreckfish and dolphin. Specifically, this amendment would:

- Remove some snapper grouper species from the Fishery Management Unit and designate others as Ecosystem Component species
- Establish species groupings for the Snapper Grouper FMP
- Establish an Acceptable Biological Catch (ABC) Control Rule
- Establish sector allocations for snapper grouper species, dolphin and wahoo
- Establish ACLs, ACTs and AMs for snapper grouper species, dolphin, wahoo, and golden crab, as appropriate
- Establish jurisdictional allocations for black grouper, yellowtail snapper and mutton snapper
- Modify management measures for wreckfish and dolphin

Assessment of Biological Effects

Removal of 13 snapper grouper species from the Snapper Grouper FMP is expected to have little impact on the biological environment. Landings data indicate the vast majority of the landings for these 13 species occur in state waters. The potential effects on bycatch are expected to be minimal in most cases because the species proposed for removal are not generally targeted or desired. State agencies, such as Florida's Fish and Wildlife Commission, will continue to manage these species within their area of jurisdiction and may, in some cases, extend management into Federal waters. Moreover, removal of species from the FMU does not mean the species cannot be added back into the FMU. The Council intends to evaluate landings and other available information on species removed from the FMU every five years. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the Council determines that a removed species is in need of management, the species would be added back into the FMU. Further, six species met criteria to be designated as Ecosystem Component species thus negating the need to remove them from the FMU and the requirement to specify ACLs and AMs. Most of these species are generally not retained because of their small size and availability of a higher quality co-occurring species.

The structuring of the species in the Snapper Grouper FMU into groupings or "complexes" is an administrative action that promotes attaining OY for assessed stocks while providing a mechanism to prevent overfishing of the less productive or more vulnerable, unassessed stocks. Grouping less productive, vulnerable, and/or data-poor stocks into complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. The biological effects of this action, if any, are therefore expected to be positive.

Specification of jurisdictional allocations for some species, sector allocations, ACLs, ACTs and AMs are intended to meet the mandates of the Reauthorized MSA to have measures in place by 2011 for managed species that are not overfished or undergoing overfishing. In general, the biological effects of these actions are positive in that overfishing will be prevented while attaining OY and sustainably managing the resource. The establishment of AMs would provide beneficial effects by establishing a mechanism to maintain harvest levels at or below the ACLs. Overall, the South Atlantic Council believes the implementation of this system is necessary to manage the resources sustainably.

Assessment of Economic Effects

The economic effects of the actions in this Amendment can be aggregated by fishery (snapper grouper, dolphin-wahoo, and golden crab) and by sector (commercial and recreational). Because the commercial sector of the wreckfish fishery is managed under an IFQ program, the economic effects for wreckfish are considered separately from the other species in the snapper grouper fishery. All direct economic effects are due to the jurisdictional allocation, ACL, sector allocation, and management measure (dolphin only) actions. All other actions only result in indirect economic effects.

For the snapper grouper fishery (excluding wreckfish), the actions in this Amendment are expected to result in an increase of approximately $1.52 million in gross revenue to the commercial sector and an increase of approximately $22.43 million in consumer surplus to the recreational sector. Changes in producer surplus to the for-hire sector cannot be estimated with currently available information, but are expected to be positive given the large increase in consumer surplus. Thus, the actions in this Amendment are expected to result in significant net economic benefits to the snapper grouper fishery.

For the wreckfish component of the snapper grouper fishery, the actions in this Amendment may potentially result in a decrease of approximately $4.36 million in gross revenue to the commercial sector and an increase of approximately $31,000 in consumer surplus to the recreational sector. However, the potential loss in commercial gross revenue significantly overstates the expected actual loss in gross revenue. Losses in gross revenue overstate losses in profits. Further, the potential loss in gross revenue is based on a reduction in the wreckfish commercial quota from 2 million pounds to 237,500 pounds. In addition, the commercial sector only harvested approximately 165,000 pounds on average between 2005 and 2009, which is below the proposed commercial quota. On the other hand, because each wreckfish shareholder's annual allocation will be proportionally reduced as a result of the reduction in the commercial quota, it is possible that some vessels' allocation of wreckfish will be reduced below their recent harvest levels, which would reduce their gross revenue and likely their profits. On average, only 5 vessels have been harvesting wreckfish in recent years. Thus, the actions in this Amendment may result in some net economic losses to a small number of commercial vessels in the wreckfish fishery.

For the dolphin-wahoo fishery, the actions in this Amendment are expected to result in a decrease of approximately $91,000 in gross revenue to the commercial sector and an increase of approximately $124.5 million in consumer surplus to the recreational sector. The reduction in commercial gross revenue is entirely due to the expected reduction in the commercial harvest of dolphin as no reduction in the commercial harvest of wahoo is expected. A decrease in revenue to the for-hire sector of approximately $71,000 is expected as a result of the action to prohibit bag limit sales of dolphin from for-hire vessels. However, revenue losses overstate losses in producer surplus in the for-hire sector. Further, changes in producer surplus to the for-hire sector cannot be estimated with currently available information, but are expected to be positive given the large increase in consumer surplus. Thus, the actions in this Amendment are expected to result in significant net economic benefits to the dolphin-wahoo fishery, though these benefits accrue solely to the recreational sector.

For the golden crab fishery, the actions in this Amendment result in an increase of approximately $94,000 in gross revenue to the commercial sector. Gross revenue effects overstate effects on profits. No recreational sector exists in the golden crab fishery. Thus, the actions in this Amendment will likely result in modest net economic benefits to the golden crab fishery.

Assessment of the Social Effects

The combined impacts of the Comprehensive ACL amendment for the South Atlantic would primarily be contingent upon the alternatives affecting harvest levels, sector allocation and any reductions in harvest as a result of the proposed accountability measures. The effects are described below in summary fashion for all alternatives.

Removing species from the management unit will likely have positive social effects as it would streamline management. Requiring federal agencies to maintain annual catch limits and accountability measures on species that pose some difficulty in monitoring because landings data are sparse or non-existent could impose further regulatory burdens on fishermen if harvest levels are reduced unnecessarily because of excessively restrictive catch levels. By establishing some species as Ecosystem Component species and removing others, that may be avoided, therefore avoiding negative social effects in the short term.

Overfishing limits and other biological thresholds are determined through stock assessment and deliberation of the SSC in setting the ABC from which ACLs and ACTs are derived. With actions in this amendment establishing both single ACLs and complex ACLs, it is anticipated that fewer negative social effects should accrue as compared to single ACLs on all species, which could be cumbersome for management. In some cases, where ACLs are set close to current harvest levels, short-term negative social effects could occur if thresholds are exceeded in the future. With the setting of ACTs and AMs it is anticipated that management will be able to constrain harvest within sustainable levels. However, there may be negative social effects in the short term as fishermen adjust to the possibility of closures and reductions in harvest. It is unknown whether the flexibility remains for either commercial or recreational fishermen to switch targeting behaviors to accommodate closures and any reductions in harvest levels as new thresholds are established for all species in the FMU. In some cases new sector allocations are being established which should assist with sector accountability, yet new allocations may change fishing behaviors that could impose other social effects if other thresholds are exceeded and management measures are imposed.

The overall intent of the amendment is to establish sustainable fisheries through establishment of harvest thresholds and accountability measures. However, this new management regime may create new burdens on management, as monitoring for many different species can be cumbersome. In addition, as mentioned previously, these new harvesting thresholds might encourage different fishing patterns for both recreational and commercial fishermen, which could initiate a continuing struggle over allocation.

Assessment of Effects on Safety at Sea

The actions contained in the Comprehensive ACL Amendment are not expected to change the manner in which fisheries are prosecuted in the Snapper Grouper, Dolphin Wahoo, Golden crab, and *Sargassum* FMPs. Therefore, the actions proposed in this amendment are not expected to affect safety at sea.

APPENDIX F

1.0 REGULATORY IMPACT REVIEW

1.1 Introduction

The National Marine Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: 1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866 and provides some information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the impacts that the proposed management alternatives in this interim rule would be expected to have on the grouper fishery.

1.2 Problems and Objectives

The problems and objectives addressed by this action are discussed in Section 1.2 of this document and are incorporated herein by reference. In summary, management measures considered in this regulatory action are intended to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects.

1.3 Description of Fisheries

A description of the South Atlantic snapper grouper, dolphin-wahoo, and golden crab fisheries are provided in Section 3 of this document and is incorporated herein by reference.

1.4 Impacts of Management Measures

1.4.1 Action 1: Remove Species from Snapper Grouper Fishery Management Unit (FMU)

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.1.2 and is incorporated herein by reference. The number of species to be removed under **Alternative 2 (Preferred), Alternative 5 (Preferred),** and **Alternative 9**

(Preferred) are 10, 3, and 2 respectively. Because two species would be removed under both **Alternative 2 (Preferred)** and **Alternative 5 (Preferred),** the total number of species removed under all preferred alternatives is 13 rather than 15. However, a better measure of the reduction in federal oversight of snapper grouper species is total landings of snapper grouper species removed under each alternative. The total landings in millions of pounds (whole weight) of snapper grouper species being removed from federal management under **Alternative 2 (Preferred), Alternative 5 (Preferred), Alternative 6, Alternative 7, Alternative 8** and **Alternative 9 (Preferred)** are: 2.944, 0.025, and 0, respectively. Given the overlap of species between **Alternative 2 (Preferred)** and **Alternative 5 (Preferred),** the total landings of snapper grouper species removed from federal oversight these alternatives cannot be determined simply by adding the landings under those alternatives. Thus, for example, the total landings of snapper grouper species removed from federal management across all preferred alternatives is 2.948 million pounds (whole weight) rather than 2.969 million pounds (whole weight). Although a fair degree of overlap exists across alternatives in terms of the number of species removed, the overlap in terms of landings is relatively small.

More importantly, nearly 100% of the combined landings under all preferred alternatives come from species removed under **Alternative 2 (Preferred)**. Further, most of the landings (93%) removed under **Alternative 2 (Preferred),** and thus under all preferred alternatives, are of sheepshead and crevalle jack. Current federal regulations are likely not restricting the harvest of the species being removed under **Alternatives 2 (Preferred), 5 (Preferred), and 9 (Preferred)**. Most importantly, 95% or more of the sheepshead and crevalle jack landings come from state waters, and thus the effective landings of those species being removed from federal management is approximately 124,000 pounds (whole weight) as opposed to 2.754 million pounds. Further, The effective landings of the 13 snapper grouper species being removed from federal management across all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)** is considerably less than 2.948 million pounds and, most likely, around 225,000 pounds.

the economic benefits associated with retaining management of the 13 snapper grouper species' effective landings would be relatively small. The impact of removing these landings from federal management under the preferred alternatives (**Preferred Alternatives 2, 5**, and **9**) would be reduced by other factors, such as the fact that individual states can still manage species directly if landings occur at ports within their respective jurisdictions.

Further, removing species effectively managed by the states from the snapper grouper FMP is expected to result in more efficient management of all snapper grouper species. Specifically, the states will obtain management authority over snapper grouper species which they have more direct control over and federal authorities (SAFMC and NOAA Fisheries Service) will retain management over snapper grouper species which, to some or a large extent, fall within their jurisdiction and are harvested in relatively significant numbers based on landings. In turn, federal resources (labor and capital) could be used to more effectively manage the remaining snapper grouper species in the FMU. In general, the allocation of management authority over all snapper grouper species and thus the associated costs will more closely mirror the distribution of the resource. The administrative costs associated with management of these species is not presently known given currently available information. By removing 13 of the 73 (approximately 18%) species currently in the FMU, the administrative costs of federally-managing snapper grouper species could be reduced under all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)**, and potentially in a proportional manner (i.e., federal administrative costs might be reduced by 18%).

Therefore, in general, the net economic effects of removing species from the snapper grouper FMU are expected to result in net economic benefits rather than losses. Given that only 13 species are being removed from federal management, net economic benefits are expected to be considerably less under the combination of all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)** relative to other combinations of alternatives where more species would be removed (e.g., **Alternatives 4, 5, 7,** and **8,** which would remove 39 species**),** but still greater than under **Alternative 1 (No Action)** under which no species would be removed. Since the removal of species from the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

1.4.2 Action 2: Designate Ecosystem Component Species in the Snapper Grouper Fishery Management Unit (FMU)

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.1.2 and is incorporated herein by reference. **Alternative 6 (Preferred)** would designate 6 species as ecosystem component species. The NS 1 criteria noted in section 4.1.2.1 serve as the sole basis for determining which species qualify as EC species under **Alternative 6 (Preferred)**. However, two species (tiger grouper and smallmouth grunt) are taken out of consideration due to their removal from the FMU under **Alternative 9 (Preferred)** for **Action 1**. Thus, the effective number of species determined to be EC species is 6 under **Alternative 6 (Preferred)**.

Based on 2005-09 average landings, the total landings of the species designated as EC species is 24,655 pounds. Designating species as EC could result in positive economic effects for commercial and recreational fishermen if catches of these species increase in the short-term. However, consistent with the NS 1 criteria indicating that these are not target species and are rarely if ever retained for sale or personal use, it is unlikely that landings of these species will increase much if at all in the short-term. In theory, **Alternative 6 (Preferred)** has the potential to result in the greatest negative economic effects compared to **Alternative 1 (No Action)** if fishermen significantly alter their fishing behavior by targeting and landing these species in the long-term. However, such changes are not expected as a result of the management actions being taken in this Amendment or any other currently known factors, and thus the likelihood such changes will occur are remote.

The primary economic effects of designating species as EC species are nearly identical in nature to the effects of removing species from the FMU (**Action 1**). If species which are not removed under **Action 1** are also not designated as EC species, as would be the case under **Alternative 1 (No Action)**, annual catch limits (ACLs), accountability measures (AMs), and annual catch targets (ACTs) would need to be implemented and enforced for these species, including those currently subject to little or no management, on a regular basis. The administrative costs associated with management of these species is not presently known given currently available information. By designating 6 species currently in the FMU as EC species, the administrative costs of federally-managing snapper grouper species are expected to be reduced, and potentially in a proportional manner according to the number of species receiving that designation. These reductions in administrative costs are expected to be the greatest under **Alternative 6 (Preferred)** relative to **Alternative 1 (No Action)**.

Therefore, in general, the net economic effects of designating species as EC species in the snapper grouper FMU are expected to result in net economic benefits rather than losses. More specifically, net economic benefits are expected to be maximized under **Alternative 6 (Preferred**. Since the designation of species as EC species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

1.4.3 Action 3: Establish Species Groupings for Snapper Grouper Species

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.2 and is incorporated herein by reference. **Action 3** would only apply to the 54 snapper grouper species remaining in the FMU that are also not designated as EC species. By grouping species according to a particular methodology, **Alternative 4 (Preferred)** increases the likelihood of overfishing for species not covered by an individual ACL.

Alternative 4 (Preferred) would be likely to prevent overfishing of species within the snapper grouper FMU as it would establish 29 ACLs: 6 complex ACLs and 23 individual ACLs All 14 assessed species, 3 prohibited species and 6 unassessed species would have an individual ACL. As under **Alternative 1 (No Action)**, the probability of overfishing and associated risk would be minimized for these 23 species. The probability of overfishing and associated risk for the 26 unassessed species covered by complex ACLs would be higher than under **Alternative 1 (No Action)**. Six of these 26 unassessed species are considered most vulnerable species according to the PSA analysis.

With respect to expected long-term economic benefits derived from protecting snapper grouper species in the FMU from overfishing, **Alternative 1 (No Action)** is expected to generate the greatest long-term economic benefits, while **Alternative 4 (Preferred)**, is expected to generate somewhat lower long-term economic benefits. Since the grouping of species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these expected economic benefits are the result of indirect rather than direct economic effects.

However, these expected economic benefits must be evaluated relative to the expected economic costs in order to estimate the net economic benefits associated with each of these alternatives. In general, the expected economic costs are a function of expected administrative costs associated with implementing, monitoring, and enforcing ACLs, AMs, and ACTs as well as the probability of triggering AM actions in the future (e.g., fishery closures reductions in ACLs, reductions in fishing seasons, etc.).

Administrative costs arise from fishery management and the required scientific research to support management. Administrative costs would be much greater under **Alternative 1 (No Action)** relative to **Alternative 4 (Preferred)**. Relative to **Alternative 1 (No Action)**, the reduction in ACLs and thus expected administrative costs is 46% under **Alternative 4 (Preferred)**. On the other hand, the probability of triggering an AM action in the future is inversely related to the number of ACLs, all else being equal. Thus, the probability of triggering an AM action in the future would be much greater under **Alternative 1 (No Action)** relative to **Alternative 4 (Preferred)**. AM actions in the future are expected to generate adverse indirect economic effects on fishery participants. Although quantitative estimates of the expected net economic benefits cannot be generated, a qualitative assessment based on the available information suggests that expected net economic benefits would be greatest under **Alternative 4 (Preferred)**. However, this conclusion must be cautioned by the fact that it is unknown how fishing behavior will be altered under the different species grouping methodologies and potential AMs in the future.

1.4.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.4.2 and is incorporated herein by reference. Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under **Alternative 7 (Preferred)** for **Action 4** are indirect.

In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects. In most cases, **Alternative 1 (No Action)** is expected to cause the least disruption to operations in the snapper grouper fishery. Specifically, **Alternative 1 (No Action)** would allow current harvest levels to continue and thus the greater landings and ex-vessel revenue to the commercial sector and greater consumer and producer surplus to the recreational sector relative to **Alternative 7 (Preferred)**. In turn, **Alternative 1 (No Action)** is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects. However, legally, **Alternative 1 (No Action)** is not a feasible alternative. Because **Alternative 7 (Preferred)** uses a relatively conservative ABC control rule, it is expected to generate greater short-term adverse economic effects but also greater potential long-term positive economic effects relative to **Alternative 1 (No Action)**. The cumulative economic effects of reduced harvests from all snapper grouper species covered by this action are difficult to determine. If the ACL is restrictive as a result of the selected ABC and the harvest of all species is subsequently reduced, the effects on fishing behavior will differ across vessels depending on their physical and operational characteristics. Such behavioral changes cannot be predicted using the currently available science.

1.4.5 Action 5: Specify Allocations for Snapper Grouper Species That Do not Currently have Allocations

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.5.2 and is incorporated herein by reference. **Alternative 1 (No Action)** would maintain the allocations that are currently in place for certain species but would not specify commercial or recreational allocations for the remaining species or species groups in the snapper grouper FMP. **Alternative 2 (Preferred)** would divide allocations between the recreational and commercial sectors based on historical landings information from 1986-2008 and 2006-2008. The actual allocation differs by species under **Alternative 2 (Preferred)**.

Table 4-31a shows the maximum changes in anticipated landings and gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternative 2 (Preferred)** relative to **Alternative 1 (No Action)**. These annual figures assume that the fleets are willing and able to harvest the entire ACL. The statistics offered in **Table 4-31a** should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple allocations. In addition, the resulting net benefits will depend on the regulatory framework in place (e.g., individual transferable quota, limited entry, trip limits in the commercial sector or bag limits, size limits, or seasonal closures in the recreational sector) and compliance with ACLs, which is also unknown. Regardless, the economic effects to the commercial sector are estimated to be a loss of approximately $754,000 in gross revenue. For the recreational sector, the economic effects are estimated to be a gain of approximately $3.192 million in consumer surplus. The loss in profits to the commercial sector must be less than the loss in gross revenue. Further, although the effects on producer surplus in the recreational sector cannot be estimated with available information, those effects are likely positive. As such, **Alternative 2 (Preferred)** is expected to result in net economic benefits to the fishery.

1.4.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.6.2 and is incorporated herein by reference. The establishment of ACLs is intended to reduce the risk of overfishing for those snapper grouper species that do not currently have them. For those stocks requiring biological protection, ACLs constrain existing catch levels to increase the long-run abundance of these stocks.

Alternative 2 (Preferred) would establish ACLs for those snapper grouper species that do not currently have an ACL. **Table 4-35** shows the anticipated effects on gross revenue to the commercial fleet and consumer surplus to the recreational fleet relative to **Alternative 1 (No Action)**. These annual figures presume that the commercial and recreational fleets can harvest the entire ACL. These statistics should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple snapper grouper ACLs, particularly those for overfished and/or less productive species. Thus, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. Similarly, the recreational consumer surplus estimates offered in **Table 4-35** should be considered upper bounds because it is unlikely that, as the number of pounds caught decreases, recreational participation and consumer surplus would decrease at the same rate. Again, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. Regardless, the economic effects to the commercial sector are estimated to be a gain of approximately $2.135 million in gross revenue. For the recreational sector, the economic effects are estimated to be a gain of approximately $16.723 million in consumer surplus. The effect on profits to the commercial sector is unknown though likely positive. Further, although the effects on producer surplus in the recreational sector cannot be estimated with available information, those effects are likely positive. As such, **Alternative 2 (Preferred)** is expected to result in net economic benefits to the fishery.

1.4.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for species in the Snapper Grouper FMU

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.7.2 and is incorporated herein by reference. **Action 7** considers alternatives that would establish accountability measures (AMs) for the snapper grouper species harvested by the commercial sector that currently lack such measures. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS 1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the commercial sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Subalternative 2a (Preferred) sets no ACT. Thus, it creates no buffer between the ACT and the ACL and would not generate any economic effects. **Alternative 3 (Preferred)** may generate lower short-run gross revenue in the commercial sector, but will still be bound by the estimated gross revenue changes under **Action 6**. **Alternative 4 (Preferred)** calls for reducing the commercial sector ACL in the following season by the amount of the overage if the species is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

1.4.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for species in the Snapper Grouper FMU

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.8.2 and is incorporated herein by reference. **Action 8** considers alternatives that would establish AMs for the snapper grouper species harvested by the recreational sector that currently lack such measures. Accountability measures are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS 1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 2 considers alternatives for establishing an ACT**. Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater. **Subalternative 2d (Preferred)** is relatively conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species, though it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus. **Alternative 3** considers alternatives for establishing an AM trigger. An ACL is most likely to be exceeded for the applicable snapper grouper species under **Subalternative 3b (Preferred)**. **Alternative 4** considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Alternative 5** considers alternatives for establishing a post-season AM. Under **Subalternative 5f (Preferred)**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year**.** Because the probability that a post-season AM will be required is relatively high under **Subalternative 5f (Preferred)**, the expected adverse indirect economic effects resulting from **Subalternative 5f (Preferred)** in the short term are also relatively high.

1.4.9 Action 9: Specify Allocations for Wreckfish Fishery

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.1.2 and is incorporated herein by reference. Under **Action 10**, the TAC/ACL for wreckfish is being reduced from 2 million pounds (ww) to 250,000 pounds (ww). **Alternative 1 (No Action)** allows some opportunities for participation by the recreational sector if recreational fishermen own wreckfish shares, a wreckfish permit, and fish under the bag limit. **Alternative 3 (Preferred)** provides a 5% allocation to the recreational sector and a 95% allocation to the commercial sector.

The estimated changes in landings, gross revenue, and consumer surplus assume that both the commercial and recreational sectors are able to harvest their assigned allocation, which is a reasonable assumption since the commercial allocation is being reduced by 87.5% and the recreational allocation is very small. The commercial sector would lose 12,500 pounds while the recreational sector would gain 12,500 pounds. The estimated commercial loss in gross revenue is $28,875 while the estimated gain in consumer surplus to the recreational sector is $30,625.

1.4.10 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for wreckfish

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.2.2 and is incorporated herein by reference. **Alternative 2 (Preferred)** would set the ACL equal to the ABC, which would reduce the TAC/ACL from 2 million pounds to 250,000 pounds. The TAC has previously been assigned exclusively to the commercial sector, but **Action 9** would assign only 95% (237,500 pounds) of the new ACL to the commercial sector. Although the commercial sector has not been harvesting the entire TAC for many years, the potential harvest to the commercial sector is being reduced by 1,762,500 pounds. As such, the potential loss in commercial gross revenue is estimated to be approximately $4.071 million.

1.4.11 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.2 and is incorporated herein by reference. **Action 10** considers alternatives that would establish accountability measures (AMs) for the recreational sector of the wreckfish fishery. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS-1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector of the wreckfish fishery is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the wreckfish stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 2 considers alternatives for establishing an AM trigger. The ACL is most likely to be exceeded under **Subalternative 2b (Preferred)**. Thus, **Subalternative 2b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM. **Alternative 3** considers alternatives for establishing a post-season AM. It is highly likely that **Subalternatives 3d (Preferred)** will generate some adverse indirect economic effects in the short term because the recreational ACL for wreckfish is so small.

1.4.12 Action 12: Establish Management Measures for Wreckfish

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.4.2 and is incorporated herein by reference. **Action 11** considers seven alternatives for managing recreational harvest of wreckfish in addition to **Alternative 1 (No action)**. In general, the direct and indirect economic effects of **Alternative 3 (Preferred)** are expected to be minimal given that a recreational sector does not currently exist and the recreational ACL is only 12,500 pounds under **Alternative 3 (Preferred)** for **Action 8**. However, there may be some indirect economic benefits under **Alternative 6 (Preferred)** as it may be safer to fish in July and August than other times of the year.

1.4.13 Action 13: Specify Jurisdictional Allocations for Black Grouper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.1.2 and is incorporated herein by reference. The analysis of economic effects for **Alternative 2b (Preferred)** under **Action 13** assume the allocation of black grouper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 36.88% commercial and 63.12% recreational, respectively. Relative to **Alternative 1 (No Action)**, commercial gross revenue and consumer surplus in the recreational sector for black grouper in the South Atlantic are expected to increase by $44,302 and $291,634, respectively, under **Alternative 2b (Preferred)**. Thus, net economic benefits to the snapper grouper fishery are expected to increase under **Alternative 2b (Preferred)**.

1.4.14 Action 14: Specify Sector Allocations for Black Grouper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.2.2 and is incorporated herein by reference. **Action 14** considers different allocations of the black grouper harvest that separate allocations for the commercial and recreational sectors. **Alternative 2e (Preferred)** favors the recreational sector relative to the commercial sector because it relies on a relatively short and more recent time series of data during which time an increase in recreational participation occurred. Annual commercial gross revenue is expected to decrease by $123,880, $129,345, and $132,454 in 2012 through 2014 respectively while annual consumer surplus in the recreational sector is expected to increase by $467,693, $488,326, and $500,065 during that same time period. The loss in profits to the commercial sector must be less than the loss in gross revenue. Further, although the effects on producer surplus in the recreational sector cannot be estimated with available information, those effects are likely positive. As such, **Alternative 2 (Preferred)** is expected to result in net economic benefits to the snapper grouper fishery.

1.4.15 Action 15: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.3.2 and is incorporated herein by reference. **Alternative 1 (No Action)** would retain the aggregate ACL for red grouper, gag, and black grouper, which contains an implicit black grouper ACL of 140,124 pounds whole weight. **Alternative 2 (Preferred)** explicitly establishes an ACL specifically for black grouper and sets the black grouper ACL equal to the ABC. In general, the short-run economic benefits tend be higher when there is no or little buffer between the ACL and the ABC, as is the case under **Alternative 2 (Preferred**). Long-term economic benefits may be maximized under **Alternative 2 (Preferred**) as long as there is very little uncertainty regarding whether the ACL will be exceeded or not. Using a discount rate of 3%, gross revenue in the commercial sector and consumer surplus in the recreational sector are expected to increase by $537,718 and $1,760,921, respectively, during the 2012-2014 time period. Using a discount rate of 5%, gross revenue in the commercial sector and consumer surplus in the recreational sector are expected to increase by $487,445 and $1,672,030, respectively, during the 2012-2014 time period.

1.4.16 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.4.2 and is incorporated herein by reference. **Action 16** considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the commercial sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS-1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate. As discussed above, establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on commercial fishing participants. Direct economic effects on commercial fishing participants would only occur in the future if and when the AMs are triggered.

Subalternative 2a (Preferred) does not establish an ACT. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run but still be bound by the gross revenue effects estimated under **Action 15**. **Alternative 4 (Preferred)** calls for reducing the commercial sector ACL in the following season by the amount of the overage if black grouper is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

1.4.17 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.5.2 and is incorporated herein by reference. **Action 17** considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the recreational sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 2 considers alternatives for establishing an ACT. **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater. **Subalternative 2d (Preferred)** is relatively conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species, though it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus. **Alternative 3** considers alternatives for establishing an AM trigger. An ACL is most likely to be exceeded for the applicable snapper grouper species under **Subalternative 3b (Preferred).** **Alternative 4** considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Alternative 5** considers alternatives for establishing a post-season AM. Under **Subalternative 5f (Preferred)**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year. Because the probability that a post-season AM will be required is relatively high under **Subalternative 5f (Preferred)**, the expected adverse indirect economic effects resulting from **Subalternative 5f (Preferred)** in the short term are also relatively high.

1.4.18 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.6.2 and is incorporated herein by reference. The analysis of economic effects for **Action 18** assume the allocation of yellowtail snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 52.56% commercial and 47.44% recreational, respectively. Relative to **Alternative 1 (No Action)**, commercial gross revenue and consumer surplus in the recreational sector for yellowtail snapper in the South Atlantic are expected to increase by $158,439 and $601,171, respectively, under **Alternative 4 (Preferred)**. Thus, net economic benefits to the snapper grouper fishery are expected to increase under **Alternative 4 (Preferred)**.

1.4.19 Action 19: Establish Jurisdictional Allocations for Mutton Snapper

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.7.2 and is incorporated herein by reference. The analysis of economic effects for **Action 19** assumes that the allocation of mutton snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 17.02% commercial and 82.98% recreational, respectively.. Also, under **Alternative 1 (No Action)**, the distribution of mutton snapper landings between the South Atlantic and Gulf Councils' jurisdictions is assumed to remain the same as it has been on average from 2005-2009. Relative to **Alternative 1 (No Action)**, commercial gross revenue and consumer surplus in the recreational sector for mutton snapper in the South Atlantic are expected to decrease by $18,023 and $397,516, respectively, under **Alternative 2 (Preferred)**. Thus, net economic benefits to the snapper grouper fishery are expected to decrease under **Alternative 2 (Preferred)**.

1.4.20 Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.2 and is incorporated herein by reference. Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under **Action 20** are indirect. **Alternative 4 (Preferred)** would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

1.4.21 Action 21: Specify Allocations for Dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.7 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,582,000. This figure assumes the preferred ACL for dolphin of 14,596,216 lbs ww in **Action 22**. The commercial allocation would be reduced from 13% to 7.3% under **Alternative 3 (Preferred)**. The predicted loss in gross revenue due to this 43.8% reduction in allocation is $78,000. For the recreational sector, the estimate of consumer surplus value for recreational dolphin trips under **Alternative 1 (No Action)** is $198,735,000 using willingness-to-pay estimates from the nested logit (NL) model and $71,621,000 using willingness-to-pay estimates from the mixed logit (ML) model. The predicted potential gain in consumer surplus to the recreational sector due to a 6.6% increase (i.e. 87% to 92.7%) in allocation is $13,021,000 for the NL model and $4,692,000 for the ML model. The loss in profits to the commercial sector must be less than the loss in gross revenue. Further, although the effects on producer surplus in the recreational sector cannot be estimated with available information, those effects are likely positive. As such, **Alternative 3 (Preferred)** is expected to result in net economic benefits to the dolphin-wahoo fishery.

1.4.22 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.12 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, gross revenue derived from dolphin landings is predicted to total $1,582,000. This alternative is expected to generate the least dislocation in the short term, but will also likely generate smaller long-term economic benefits relative to **Alternative 2 (Preferred)**. **Alternative 2 (Preferred)** sets the ACL equal to the ABC, which leads to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**. The annual short-term loss to the commercial sector is estimated at $78,000. However, this result assumes the allocation between the commercial and recreational sectors under **Alternative 3 (Preferred)** for **Action 21** and thus this reduction is already accounted for in the analysis for that action. Thus, no additional economic effects on the commercial sector are expected. Under **Alternative 1 (No Action)**, the estimate of consumer surplus value for recreational dolphin trips is $141,741,000 using willingness-to-pay estimates from the nested logit (NL) model and $51,081,000 using willingness-to-pay estimates from the mixed logit (ML) model. **Alternative 2 (Preferred)** sets the ACL equal to the ABC, which leads to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector is estimated at $70,014,000 for the NL model and $25,232,000 for the ML model. The loss in profits to the commercial sector must be less than the loss in gross revenue. Further, although the effects on producer surplus in the recreational sector cannot be estimated with available information, those effects are likely positive. As such, **Alternative 2 (Preferred)** is expected to result in net economic benefits to the dolphin-wahoo fishery.

1.4.23 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.17 and is incorporated herein by reference. Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,504,000. Thus, no economic effects are expected under **Subalternative 2a (Preferred)**. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run, but still be bound by the gross revenue estimates under **Action 22**.

1.4.24 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.22 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, the estimate of consumer surplus for recreational dolphin trips is $211,755,000 using willingness-to-pay estimates from the nested logit (NL) model and $76,313,000 using willingness-to-pay estimates from the mixed logit (ML) model. **Alternative 2** considers alternatives for establishing an ACT. **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater. **Subalternative 2d (Preferred)** is relatively conservative and thus generates the highest potential short-term losses in landings and consumer surplus. **Subalternative 2d (Preferred)** could result in a potential annual short-term loss in consumer surplus to the recreational sector of $57,502,000 for the NL model and $20,723,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes. **Alternative 3** considers alternatives for establishing an AM trigger. The ACL is most likely to be exceeded under **Subalternative 3b (Preferred).** **Alternative 4** considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Alternative 5** considers alternatives for establishing a post-season AM. Under **Subalternative 5f (Preferred)**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year. Because the probability that a post-season AM will be required is relatively high under **Subalternative 5f (Preferred)**, the expected adverse indirect economic effects resulting from **Subalternative 5f (Preferred)** in the short term are also relatively high.

1.4.25 Action 25: Establish Management Measures for Dolphin

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.1.1.27 and is incorporated herein by reference. Under **Alternative 1 (No Action),** regarding minimum size limits, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,517,000 (**Table 4-82**). Under **Alternative 2 (Preferred)**, charter vessels will not be able to sell dolphin fish harvested under the bag limit, even with the appropriate permits. This will result in a loss of producer surplus relative to **Alternative 1 (No Action)**. Information is not available on the relevant costs of selling fish for charter vessels that is necessary to measure the loss in producer surplus associated with this alternative. Therefore, the loss in terms of foregone revenue from the sale of fish is estimated. Losses in revenue overstate losses in producer surplus. Revenue losses are estimated to be approximately $70,901. **Alternative 3 (Preferred)** proposes increasing the minimum size limit of commercial and recreational landings of dolphin in South Carolina. **Alternative 3 (Preferred)** would result in a predicted gross revenue of $1,504,000 in the commercial sector, or a $13,000 loss in gross revenue for the commercial sector due to the minimum size limit. For the recreational sector, the loss in consumer surplus is approximately $44,000, and the loss in producer surplus to the for-hire sector is approximately $15,000.

1.4.26 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.2 and is incorporated herein by reference. Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 26** are indirect. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

1.4.27 Action 27: Specify Allocations for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.7 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, ex-vessel gross revenue is predicted to total $118,000, which is the largest amount that the industry can earn based on historical data. Under **Alternative 1 (No Action),** the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. These figures assume the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. **Alternative 3 (Preferred)** would provide for an allocation of 4.3% to the commercial sector, which would not change commercial gross revenue in the short-term if historical fishing patterns continue in the near future. The potential gain in consumer surplus to the recreational sector due to **Alternative 3 (Preferred)** is $894,000 for the CL model and $1,812,000 for the NL model.

1.4.28 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.12 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000 and the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. **Alternative 2 (Preferred)** sets the ACL equal to ABC and thus results in no short-term losses in gross revenues to commercial fishers landing wahoo. The potential annual short-term gain in consumer surplus to the recreational sector was estimated at $894,000 for the CL model and $1,812,000 for the NL model. However, this result assumes the allocation between the commercial and recreational sectors under **Alternative 3 (Preferred)** for **Action 27** and thus this reduction is already accounted for in the analysis for that action. Thus, no additional effects on the recreational sector are expected.

1.4.29 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.17 and is incorporated herein by reference. Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. Thus, no economic effects are expected under **Subalternative 2a (Preferred)**. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run, but still be bound by the gross revenue estimates under **Action 28**.

1.4.30 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.22 and is incorporated herein by reference. Under **Alternative 1 (No Action)**, the estimate of consumer surplus for recreational wahoo trips is $3,155,000 using willingness-to-pay estimates from the nested logit (NL) model and $6,396,000 using willingness-to-pay estimates from the mixed logit (ML) model. **Alternative 2** considers alternatives for establishing an ACT. **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater.

Subalternative 2d (Preferred) is relatively conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species, though it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus. **Subalternative 2d (Preferred)** could result in a potential annual short-term loss in consumer surplus to the recreational sector of $580,000 for the NL model and $1,177,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes. **Alternative 3** considers alternatives for establishing an AM trigger. An ACL is most likely to be exceeded under **Subalternative 3b (Preferred). Alternative 4** considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Alternative 5** considers alternatives for establishing a post-season AM. Under **Subalternative 5f (Preferred)**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year. Because the probability that a post-season AM will be required is relatively high under **Subalternative 5f (Preferred)**, the expected adverse indirect economic effects resulting from **Subalternative 5f (Preferred)** in the short term are also relatively high.

1.4.31 Action 31: Establish Management Measures for Wahoo

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.2.1.22 and is incorporated herein by reference. **Alternative 1 (No Action) (Preferred)** would retain current management measures for wahoo. Thus, no economic effects would occur.

1.4.32 Action 32: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Golden Crab

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.6.6.2 and is incorporated herein by reference. Under **Alternative 1 (No Action),** there is no upper limit placed on how much golden crab can be landed by the 11 permitted vessels in the fishery. Although current landings are moderate (around 570,000 pounds), rising demand and the adoption of new technologies such as re-circulating seawater systems are likely to increase production, potentially increasing the risk of overfishing. Assuming a growth rate in production between 5% and 15%, **Alternative 2 (Preferred)** would establish an ACL of 2 million pounds, which would result in gross revenue gains between approximately $47,000 and $141,000.

1.4.33 Action 33: Establish Accountability Measures for Golden Crab

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.6.6.2 and is incorporated herein by reference. Failure to implement an AM for the golden crab fishery under **Alternative 1 (No Action)** could result in overages and the smallest long-term economic benefits relative to the other alternatives since the risk of overfishing is the greatest. **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would likely generate greater adverse economic effects in the short-term but greater long-term economic benefits relative to **Alternative 1 (No Action)** since they provide a hedge against overfishing. **Alternative 2 (Preferred)** would be precautionary but would not likely generate the greatest long-term economic benefits since it does not provide a mechanism for addressing overages, if these occur. While **Alternative 2 (Preferred)** would have less adverse short-term economic effects, **Alternative 3 (Preferred)** may have greater long-term positive economic effects, but could adversely affect market and financial stability in the short term if an overage occurs. Since **Action 32** is administrative in nature, and thus does not directly affect participants in the golden crab fishery, the effects under **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** are indirect.

1.4.34 Summary of Economic Effects and Economic Impacts

The economic effects of the actions in this Amendment can be aggregated by fishery or FMP (snapper grouper, dolphin-wahoo, and golden crab) and by sector (commercial and recreational). For current purposes, because the commercial sector is managed under an IFQ program, wreckfish is broken out separately from the other species in the snapper grouper fishery/FMP. Also, all direct economic effects are due to the jurisdictional allocation, ACL, sector allocation, and management measures (dolphin only) actions. All other actions only result in indirect economic effects.

For the snapper grouper fishery (excluding wreckfish), the actions in this Amendment result in an increase of approximately $1.52 million in gross revenue to the commercial sector and an increase of approximately $22.77 million in consumer surplus to the recreational sector. Changes in producer surplus to the for-hire sector cannot be estimated with currently available information, but are expected to be positive given the large increase in consumer surplus. Thus, the actions in this Amendment result in significant net economic benefits to the snapper grouper fishery.

For the wreckfish fishery, the actions in this Amendment may potentially result in a decrease of approximately $4.36 million in gross revenue to the commercial sector and an increase of approximately $31,000 in consumer surplus to the recreational sector. However, the potential loss in commercial gross revenue significantly overstates the expected actual loss in gross revenue. Losses in gross revenue overstate losses in profits. Further, the potential loss in gross revenue is based on a reduction in the wreckfish commercial quota from 2 million pounds to 237,500 pounds. In addition, the commercial sector only harvested approximately 165,000 pounds on average between 2005 and 2009, which is below the proposed commercial quota. On the other hand, because each wreckfish shareholder's annual allocation will be proportionally reduced as a result of the reduction in the commercial quota, it is possible that some vessels' allocation of wreckfish will be reduced below their recent harvest levels, which would reduce their gross revenue and likely their profits. On average, only 5 vessels have been harvesting wreckfish in recent years. Thus, the actions in this Amendment may result in some net economic losses to a small number of commercial vessels in the wreckfish fishery.

For the dolphin-wahoo fishery, the actions in this Amendment result in a decrease of approximately $91,000 in gross revenue to the commercial sector, all of which is due to a reduction in gross revenue associated with the harvest of dolphin, and an increase of approximately $124.5 million in consumer surplus to the recreational sector. A decrease in revenue to the for-hire sector of approximately $71,000 is estimated as a result the action to prohibit bag limit sales of dolphin by charter vessels. However, revenue losses overstate losses of producer surplus in the for-hire sector. Further, with the exception of the action to increase the minimum size limit of dolphin, changes in producer surplus to the for-hire sector cannot be estimated with currently available information, but are expected to be positive given the large increase in consumer surplus. For the action to increase the minimum size limit of dolphin, the loss in producer surplus to the for-hire sector is approximately $15,000. Thus, the actions in this Amendment result in significant net economic benefits to the dolphin-wahoo fishery, though these benefits accrue solely to the recreational sector.

For the golden crab fishery, the actions in this Amendment result in an increase of approximately $94,000 in gross revenue to the commercial sector. Gross revenue effects overstate effects on profits. No recreational sector exists in the golden crab fishery. Thus, the actions in this Amendment likely result in modest net economic benefits to the golden crab fishery.

The economic effects noted above will result in economic impacts. Because changes in the number of trips and thus producer surplus cannot be estimated using currently available information, the economic impacts resulting from the economic effects on the recreational sector also cannot be estimated. Further, because of the unique nature of the commercial sector of the wreckfish fishery (e.g., a very small number of participants, landings data is confidential for some recent years, and those landings are significantly below the current commercial quota), the current model used to estimate economic impacts from the commercial sector does not generate scientifically reasonable results. In addition, results for black grouper, yellowtail snapper, and mutton snapper are separated from the other snapper grouper species due the jurisdictional allocation actions and the related fact that the harvest of these species is geographically specialized in the Florida Keys. The estimated economic impacts are presented in Table F-1 below. Numbers in parentheses indicate negative values.

Table F-1. Summary of Commercial Economic Impacts

	Black Grouper	Yellowtail Snapper	Mutton Snapper	Other Snapper Grouper	Dolphin	Golden Crab
Change in gross revenue	$407,825	$65,915	$111,243	$934,623	($91,000)	$94,000
Harvesters						
Employment impacts (FTE jobs)	10	2	3	23	(2)	2
Income Impacts (000 of dollars)	336	54	92	771	(74)	80

Output Impacts (000 of dollars)	874	141	238	2,003	(194)	204
Primary dealers/processors						
Employment impacts (FTE jobs)	6	1	2	14	(1)	1
Income Impacts (000 of dollars)	283	46	77	648	(63)	65
Output Impacts (000 of dollars)	880	142	240	2,017	(196)	203
Secondary wholesalers/distributors						
Employment impacts (FTE jobs)	5	1	1	12	(1)	1
Income Impacts (000 of dollars)	277	45	75	634	(62)	64
Output Impacts (000 of dollars)	649	105	177	1,487	(145)	150
Grocers						
Employment impacts (FTE jobs)	3	0	1	7	(1)	1
Income Impacts (000 of dollars)	115	19	31	264	(26)	27
Output Impacts (000 of dollars)	251	40	68	574	(56)	58
Restaurants						
Employment impacts (FTE jobs)	52	8	14	120	(12)	12
Income Impacts (000 of dollars)	1,277	206	348	2,928	(285)	294
Output Impacts (000 of dollars)	2,716	439	741	6,225	(606)	626
Harvesters and seafood industry						
Employment impacts (FTE jobs)	77	12	21	176	(17)	18
Income Impacts (000 of dollars)	2,288	370	624	5,245	(509)	530
Output Impacts (000 of dollars)	5,370	868	1,465	12,306	(1,197)	1,240

1.5 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources that can be expressed as costs associated with the regulations. Costs associated with this specific action would include:

Council costs of document preparation, meetings, public hearings, and information dissemination………………………………………………………………..$350,000

NMFS administrative costs of document preparation, meetings, and review……………………………………………………….................................$200,000

TOTAL…………………………………………………………………...$550,000

The Council and Federal costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds were expended directly for this specific action. There are no permit requirements proposed in this interim rule. Under a fixed budget, any additional enforcement activity due to the adoption of this interim rule would mean a redirection of resources to enforce the new measures.

1.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is likely to result in: 1) An annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this action has been determined to not be economically significant for purposes of E.O. 12866.

APPENDIX G

1.0 REGULATORY FLEXIBILITY ACT ANALYSIS

1.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct an initial regulatory flexibility analysis (IRFA) for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the RIR, the IRFA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.

7.2 Statement of the need for, objectives of, and legal basis for the rule

A discussion of the reasons why action by the agency is being considered is provided in Section 1.2 of this document. In summary, the purposes of this proposed rule are to implement measures expected to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects and specify overfishing limits (OFLs), ACLs, and AMs where needed in order to comply with Magnuson-Stevens Act requirements.

7.3 Description and estimate of the number of small entities to which the proposed action would apply

This proposed rule is expected to directly affect commercial fishing vessels that have permits for or landings of snapper grouper, including wreckfish, dolphin-wahoo, or golden crab. This proposed rule is also expected to directly affect for-hire vessels that possess for-hire snapper grouper or dolphin-wahoo permits. The Small Business Administration has established size criteria for all major industry sectors in the U.S. including fish harvesters. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $4.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide. For for-hire vessels, the other qualifiers apply and the receipts threshold is $7.0 million (NAICS code 713990, recreational industries).

In 2010, 598 vessels possessed snapper grouper unlimited permits and 136 vessels possessed limited snapper grouper permits. Thus, 732 vessels possessed limited access permits to harvest snapper grouper species in the South Atlantic. Between 2005 and 2009, the average gross revenue from landings of South Atlantic snapper grouper was approximately $13.82 million, resulting in an average of $18,875 in gross revenue per permitted vessel. These vessels are expected to be directly affected by the proposed actions to specify jurisdictional allocations for black grouper, yellowtail snapper, and mutton snapper, the action to establish ACLs for snapper grouper species retained in the FMU that currently do not have an ACL, and the action to establish sector allocations for snapper grouper species currently without such allocations.

The commercial sector of the wreckfish fishery is managed under an IFQ program. In the 2009/2010 fishing season, there were 25 IFQ shareholders. However, between 2005 and 2009, only 5 vessels harvested wreckfish per year on average. All vessels harvesting wreckfish must possess a snapper grouper permit. Between 2005 and 2009, the average annual gross revenue from wreckfish landings was approximately $440,000, resulting in an average of $84,600 in annual gross revenue per vessel. These shareholders and vessels are expected to be directly affected by the actions to establish an ACL and sector allocation for wreckfish.

In 2010, 2,144 vessels possessed an open access dolphin-wahoo commercial permit. However, landings data indicates that, on average, only 602 and 224 vessels harvested dolphin and wahoo, respectively, between 2005 and 2009. Annual gross revenue from dolphin and wahoo landings were approximately $1.58 million and $118,000, respectively, during this time period. Thus, annual gross revenue per vessel was approximately $2,628 and $527 on average for dolphin and wahoo, respectively. These vessels are expected to be directly affected by the actions to establish ACLs and sector allocations for dolphin and wahoo. The action to establish a commercial minimum size limit for dolphin would only affect vessels that harvest dolphin.

For the golden crab fishery, 11 vessels possessed a limited access permit in 2010. However, between 2005 and 2009, only 5 vessels harvested golden crab per year on average. Between 2005 and 2009, the average annual gross revenue from golden crab landings was approximately $1.09 million, resulting in an average of $226,400 in annual gross revenue per vessel. These vessels are expected to be directly affected by the action to establish an ACL for golden crab.

Between 2005 and 2009, approximately 2,018 vessels possessed for-hire snapper grouper permits. These vessels are expected to be directly affected by the proposed actions to specify jurisdictional allocations for black grouper, yellowtail snapper, and mutton snapper, the action to establish ACLs for snapper grouper species retained in the FMU that currently do not have an ACL, the action to establish sector allocations for snapper grouper species currently without such allocations, the actions to establish an ACL and sector allocation for wreckfish, and the actions to establish a daily vessel limit for the recreational possession of wreckfish and a closed season for the wreckfish recreational sector. Also between 2005 and 2009, 2,012 vessels possessed for-hire dolphin-wahoo permits on average. These vessels are expected to be directly affected by the actions to establish ACLs and sector allocations for dolphin and wahoo, and the action to prohibit sales of dolphin under the bag limit by charter vessels. For-hire permits do not distinguish charterboats from headboats and thus the specific number of charterboats with for-hire dolphin-wahoo permits cannot be estimated. The number of for-hire vessels that landed snapper grouper or dolphin-wahoo during this time period also cannot be estimated based on currently available data.

A study on the for-hire sector in the Southeastern U.S. presented two sets of average gross revenue estimates for the charter and headboat sectors in the South Atlantic (Holland *et al*., 1999). The first set of estimates was as follows: $51,000 for charterboats on the Atlantic coast of Florida; $60,135 for charterboats in North Carolina; $26,304 for charterboats in South Carolina; $56,551 for charterboats in Georgia; $140,714 for headboats in Florida; and $123,000 for headboats in the other South Atlantic states. The second set of estimates was as follows: $69,268 for charterboats and $299,551 for headboats. Since the second set of estimates were considerably higher than the first set, a new approach was employed that generated the following estimates of average gross revenue: $73,365 for charterboats in North Carolina, $32,091 for charterboats in South Carolina; $68,992 for charterboats in Georgia; and $261,990 for headboats in the other South Atlantic states.

Based on the figures above, all commercial fishing vessels expected to be directly affected by this proposed rule are determined for the purpose of this analysis to be small business entities. Similarly, and regardless of which estimates are used, based on these figures, all for-hire fishing vessels expected to be directly affected by this proposed rule are determined for the purpose of this analysis to be small business entities.

7.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small

entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records

This proposed rule would not establish any new reporting, record-keeping, or other compliance requirements.

7.5 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed rule

No duplicative, overlapping, or conflicting federal rules have been identified.

7.6 Significance of economic impacts on small entities

Substantial number criterion

This proposed rule, if implemented, would be expected to directly affect all federally permitted commercial fishing entities and for-hire fishing entities in the South Atlantic snapper grouper, dolphin-wahoo, and golden crab fisheries. All affected entities have been determined, for the purpose of this analysis, to be small entities. Therefore, it is determined that the proposed rule will affect a substantial number of small entities.

Significant economic impacts

The outcome of "significant economic impact" can be ascertained by examining two factors: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities expected to be directly affected by the measures in this proposed rule are determined for the purpose of this analysis to be small business entities, so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profits for a substantial number of small entities?

For the action to establish sector allocations in the snapper grouper fishery, the economic effects to the commercial sector are estimated to be a loss of approximately $754,000 in gross revenue, representing a loss of approximately $1,030 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, an increase of approximately $3.192 million in consumer surplus for the recreational sector suggests that producer surplus will also increase for vessels in the for-hire sector.

For the action to establish ACLs in the snapper grouper fishery, the economic effects to the commercial sector are estimated to be a gain of approximately $2,134,725 in gross revenue, representing a gain of about $2,916 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $16.72 million in consumer surplus for the recreational sector suggests that producer surplus for for-hire vessels will likewise increase, with the increase potentially being substantial.

For the action to establish a sector allocation for wreckfish, the economic effects to the commercial sector are estimated to be a loss of approximately $29,000 in gross revenue, representing a loss of about $5,800 per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $31,000 in consumer surplus for the recreational sector suggests that producer surplus may also increase for for-hire vessels.

For the action to establish an ACL for wreckfish, the economic effects to the commercial sector are estimated to be a potential loss of approximately $4.07 million in gross revenue. However, losses in gross revenue overstate losses in profits. Moreover, the potential loss in commercial gross revenue significantly overstates the expected actual loss in gross revenue. The potential loss in gross revenue is based on a reduction in the wreckfish commercial quota from 2 million pounds to 237,500 pounds. The commercial sector only harvested approximately 165,000 pounds on average between 2005 and 2009, which is below the proposed commercial quota. In addition, only 5 vessels have been harvesting wreckfish in recent years on average. It is highly unlikely these 5 vessels could generate landings of 2 million pounds. It is much more likely their landings will be close to the proposed ACL, in which case the losses in gross revenue and profits may be minimal and possibly zero. However, because each wreckfish shareholder's annual allocation would be proportionally reduced as a result of the reduction in the commercial quota, it is possible that a few of these vessels' allocation of wreckfish will be reduced below their recent harvest levels, which would reduce their gross revenue and likely their profits. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $31,000 in consumer surplus for the recreational sector suggests that producer surplus for for-hire vessels may also increase.

For the actions to establish a daily vessel limit for the recreational possession of wreckfish and a closed season for the wreckfish recreational sector, the direct economic effects are expected to be minimal given that a recreational sector does not currently exist and a recreational ACL of only 12,500 pounds is being established under a separate action.

For the action to establish a jurisdictional allocation for black grouper, commercial gross revenue is expected to increase by approximately $44,300, or by approximately $61 per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $291,600 in consumer surplus for the recreational sector suggests that producer surplus for for-hire vessels will also increase.

For the action to establish a sector allocation for black grouper, the economic effects to the commercial sector are estimated to be a gain of approximately $124,000 in gross revenue for 2012, representing a gain of about $170 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $468,000 in consumer surplus for the recreational sector in 2012 suggests that producer surplus will also increase for for-hire vessels.

For the action to establish an ACL for black grouper, the economic effects to the commercial sector are estimated to be a gain of approximately $538,000 in gross revenue, indicating a gain of about $735 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $1.76 million in consumer surplus for the recreational sector suggests that producer surplus for for-hire vessels will likewise increase.

For the action to establish a jurisdictional allocation for yellowtail snapper, commercial gross revenue is expected to increase by approximately $158,400, or by approximately $216 per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of approximately $601,200 in consumer surplus for the recreational sector suggests that producer surplus for for-hire vessels will also increase.

For the action to establish a jurisdictional allocation for mutton snapper, the economic effects to the commercial sector are estimated to be a loss of approximately $18,000 in gross revenue for 2012, representing a loss of about $25 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a loss of approximately $397,600 in consumer surplus for the recreational sector in 2012 suggests that producer surplus may also decrease for for-hire vessels.

Thus, an increase in gross revenue of approximately $1.52 million, or approximately $2,080 per vessel, is expected as a result of all actions affecting commercial snapper grouper vessels. Further, under all actions affecting for-hire snapper grouper vessels, the expected increase in consumer surplus is approximately $22.77 million. Although the effects on producer surplus cannot be estimated given available data, producer surplus is expected to increase, likely substantially, for for-hire vessels.

For the action to establish a sector allocation for dolphin, the economic effects to the commercial sector are estimated to be a loss of approximately $78,000 in gross revenue, representing a loss of about $130 in gross revenue per vessel. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of at least $4.7 million in consumer surplus for the recreational sector suggests that producer surplus will also increase, possibly substantially, for for-hire vessels.

For the action to establish an ACL for dolphin, the economic effects to the commercial sector are estimated to be a loss of approximately $78,000 in gross revenue. However, this loss is directly attributable to the to the proposed sector allocation, and thus no additional losses in gross revenue are expected as a result of this action. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of at least $25.2 million in consumer surplus for the recreational sector suggests that producer surplus will also increase, likely substantially, for for-hire vessels.

For the action to establish management measures for dolphin, a loss of $13,000 in gross revenue is expected as a result of the proposed commercial minimum size limit, representing a loss in gross revenue of approximately $22 per vessel. The prohibition on bag limit sales by charter vessels is expected to result in a loss of approximately $71,000 in revenue, or by approximately $70 per charter vessel. Losses in revenue overstate losses in producer surplus and thus the expected loss in producer surplus per vessel would be less. A loss in producer surplus to the for-hire sector of approximately $15,000 is expected as a result of the proposed recreational minimum size limit for dolphin. Because this action would only affect the 134 vessels with for-hire dolphin-wahoo permits in South Carolina, the loss in producer surplus per for-hire vessel is approximately $112.

For the action to establish a sector allocation for wahoo, no economic effects on the commercial sector are expected. For the for-hire sector, effects on producer surplus cannot be estimated given available data. However, a gain of at least $894,000 in consumer surplus for the recreational sector suggests that producer surplus may also increase for for-hire vessels.

For the action to establish an ACL for wahoo, no economic effects on the commercial sector are expected. For the for-hire sector, effects on producer surplus cannot be estimated given available data. A gain of at least $894,000 in consumer surplus was estimated for the recreational sector. However, this gain is directly attributable to the proposed sector allocation, and thus no gains in producer surplus are expected as a result of this action.

For the action to establish an ACL for golden crab, the economic effects to the commercial sector are estimated to be a gain of approximately $94,000 in gross revenue, representing a gain of approximately $18,800 in gross revenue per vessel.

As a result of the information above, a reduction in profits for a substantial number of small entities would not be expected.

7.7 Description of significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities

This proposed action, if implemented, would not be expected to have a significant direct adverse economic effect on the profits of a substantial number of small entities. As a result, the issue of significant alternatives is not relevant.

Appendix H.

1 Bycatch Practicability Analysis

1.1 Population Effects for the Bycatch Species

Background

The Comprehensive Annual Catch Limit (ACL) Amendment includes actions which could: remove some species from South Atlantic Snapper Grouper Fishery Management Unit (FMU); consider multi-species groupings for specifying ACLs, annual catch targets (ACT)s, and accountability measures (AM)s; designate some snapper grouper species as ecosystem component species; establish acceptable biological catch (ABC) control rules, ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing in the Fishery Management Plan (FMP) for the Dolphin Wahoo Fishery of the Atlantic, the FMP for pelagic *Sargassum* habitat of the South Atlantic Region, FMP for the Golden Crab Fisheries of the South Atlantic Region, and FMP for the Snapper Grouper Fishery of the South Atlantic Region; specify allocations among the commercial, recreational, and for-hire sectors for species not undergoing overfishing; and modify management measures to limit total mortality to the ACL.

The majority of species in the snapper grouper FMU are taken with hook and line gear (Table 1). Black sea bass are predominantly taken with pots; whereas, longline gear has been the predominant gear type used to capture golden tilefish. In dolphin wahoo FMU, most dolphin and wahoo are taken with hook and line gear. Golden crab are harvested with traps. There have been no landings of *Sargassum* since 1997. *Sargassum* is a free floating seaweed that is harvested with nets.

Table 1. Percentage of commercial catch by gear based on data from 2005-2009. H&L = hook and line; L = longline; O = other; S = spear; and T = black sea bass pots.

Taxon	H&L	L	O	S	T
Amberjack	100%	0%	0%	0%	0%
Greater amberjack	93%	0%	0%	7%	0%
Lesser amberjack	96%	2%	0%	2%	0%
Banded rudderfish	100%	0%	0%	0%	0%
Blue runner	54%	0%	45%	1%	0%
Crevalle jack	92%	0%	8%	0%	0%
Graysby	100%	0%	0%	0%	0%
Black grouper	89%	0%	0%	11%	0%
Gag	80%	0%	0%	20%	0%
Misty grouper	99%	1%	0%	1%	0%
Red grouper	98%	0%	0%	2%	0%
Snowy grouper	81%	19%	0%	0%	0%
Warsaw grouper	14%	86%	0%	0%	0%
Yellowedge grouper	69%	30%	0%	1%	0%
Yellowfin grouper	99%	1%	0%	0%	0%
Yellowmouth grouper	100%	0%	0%	0%	0%

Taxon	H&L	L	O	S	T
Groupers	100%	0%	0%	0%	0%
Bluestriped grunt	97%	0%	0%	0%	2%
French grunt	94%	0%	0%	0%	6%
Sailors Cchoice	0%	0%	0%	0%	100%
Tomtate	100%	0%	0%	0%	0%
White grunt	30%	0%	0%	0%	70%
Grunts	89%	0%	1%	0%	11%
Red hind	100%	0%	0%	0%	0%
Rock hind	99%	0%	0%	0%	0%
Speckled hind	98%	0%	0%	0%	1%
Hogfish	54%	0%	3%	43%	1%
Yellow jack	60%	0%	1%	39%	0%
Almaco jack	96%	0%	0%	4%	0%
Bar jack	80%	0%	2%	18%	0%
Jacks Unc	16%	0%	84%	0%	0%
Margate	94%	0%	0%	1%	5%
Black margate	91%	0%	0%	1%	7%
Grass porgy	100%	0%	0%	0%	0%
Jolthead porgy	98%	0%	1%	0%	0%
Knobbed porgy	98%	0%	0%	0%	2%
Longspine porgy	100%	0%	0%	0%	0%
Red porgy	99%	0%	0%	0%	1%
Whitebone porgy	90%	0%	1%	0%	9%
Porkfish	94%	0%	0%	6%	0%
Scamp	95%	0%	0%	5%	0%
Scups or Porgies, Unc	49%	0%	4%	1%	46%
Bank sea bass	1%	0%	0%	0%	99%
Rock sea bass	7%	0%	0%	0%	93%
Black sea bass	11%	0%	0%	0%	89%
Sheepshead	34%	0%	34%	32%	0%
Black snapper	100%	0%	0%	0%	0%
Blackfin snapper	29%	70%	1%	0%	0%
Cubera snapper	74%	6%	0%	19%	0%
Dog snapper	82%	0%	0%	18%	0%
Gray snapper	100%	0%	0%	0%	0%
Lane snapper	99%	0%	0%	0%	0%
Mahogony snapper	53%	0%	0%	47%	0%
Mangrove snapper	92%	0%	0%	8%	0%
Mutton snapper	93%	0%	2%	4%	0%
Queen snapper	65%	34%	0%	1%	0%
Red snapper	94%	0%	0%	5%	0%
Schoolmaster snapper	87%	0%	0%	13%	0%

Taxon	H&L	L	O	S	T
Silk snapper	61%	39%	0%	0%	0%
Vermilion snapper	100%	0%	0%	0%	0%
Yellowtail snapper	100%	0%	0%	0%	0%
Snapper, Unc	86%	14%	0%	0%	0%
Atlantic spadefish	11%	0%	23%	66%	0%
Tilefish	9%	91%	0%	0%	0%
Blueline tilefish	46%	52%	0%	0%	1%
Sand tilefish	100%	0%	0%	0%	0%
Tilefish, Unc	100%	0%	0%	0%	0%
Gray triggerfish	96%	1%	0%	1%	2%
Ocean triggerfish	99%	0%	0%	0%	1%
Queen triggerfish	82%	17%	0%	1%	0%
Triggerfishes	89%	0%	0%	1%	10%
Wreckfish	100%	0%	0%	0%	0%
Dolphin	56%	44%	0%	0%	0%
Wahoo	86%	1%	10%	0%	3%

Source: NMFS SEFSC Logbook Program.

Landings during 2005-2009 among species in the snapper grouper and dolphin wahoo sectors were generally dominated by the for-hire and private recreational sectors (Table 2). Catches of deepwater species such as snowy grouper and golden tilefish were dominated by commercial fishermen. Golden crab are taken entirely by the commercial sector and there are no landings of *Sargassum*.

Table 2. Percentage of landings among the commercial, for-hire, private recreational sectors during 2005-2009. Landings provided by the Southeast Fisheries Science Center.

Taxon	Commercial	For Hire	Recreational
Almaco jack	57%	29%	15%
Atlantic spadefish	12%	42%	46%
Banded rudderfish	30%	56%	14%
Bank sea bass	6%	76%	18%
Bar jack	42%	44%	14%
Black grouper	52%	10%	38%
Black margate	0%	52%	48%
Black sea bass	42%	20%	38%
Black snapper	100%	0%	0%
Blackfin snapper	39%	16%	45%
Blue runner	17%	53%	30%
Blueline tilefish	50%	34%	16%
Bluestriped grunt	0%	46%	54%
Coney	0%	12%	88%
Cottonwick	0%	100%	0%

Taxon	Commercial	For Hire	Recreational
Crevalle jack	27%	53%	20%
Cubera snapper	26%	36%	39%
Dog snapper	8%	9%	83%
French grunt	0%	5%	95%
Gag	54%	14%	32%
Goliath grouper	0%	2%	98%
Grass porgy	0%	17%	83%
Gray snapper	15%	35%	50%
Gray triggerfish	*43%	24%	33%
Graysby	4%	54%	42%
Greater amberjack and Unc jacks	41%	34%	25%
Hogfish	27%	3%	70%
Jolthead porgy	6%	47%	48%
Knobbed porgy	54%	33%	12%
Lane snapper	6%	32%	61%
Lesser amberjack	50%	36%	14%
Longspine porgy	3%	97%	0%
Mahogany snapper	2%	27%	72%
Margate	16%	55%	29%
Misty grouper	100%	0%	0%
Mutton snapper	15%	28%	57%
Nassau grouper	0	0	0
Ocean triggerfish	0%	17%	83%
Porkfish	0%	23%	77%
Puddingwife	0%	1%	99%
Queen snapper	100%	0%	0%
Queen triggerfish	0%	56%	44%
Red grouper	46%	9%	46%
Red hind	74%	8%	18%
Red porgy	51%	36%	13%
Red snapper	25%	29%	46%
Rock hind	66%	21%	13%
Rock sea bass	26%	26%	48%
Sailors choice	0%	48%	52%
Sand tilefish	20%	22%	58%
Saucereye porgy	0%	44%	56%
Scamp	69%	18%	13%
Schoolmaster	3%	12%	84%

Taxon	Commercial	For Hire	Recreational
Scup	0%	95%	5%
Sheepshead	13%	18%	70%
Silk snapper	75%	24%	1%
Snowy grouper	65%	23%	12%
Spanish grunt	0%	0%	100%
Speckled hind	51%	47%	2%
Tilefish	83%	11%	5%
Tomtate	0%	54%	46%
Vermilion snapper	63%	30%	7%
Warsaw grouper	6%	26%	68%
White grunt and Unc grunts	32%	41%	26%
Whitebone porgy	0%	35%	65%
Yellow jack	0%	60%	40%
Yellowedge grouper	97%	3%	0%
Yellowfin grouper	43%	5%	51%
Yellowmouth grouper	0%	43%	57%
Yellowtail snapper	69%	12%	19%
Dolphin	8%	37%	54%
Wahoo	4%	23%	73%

*Commercial represents unclassified triggerfish. Commercial triggerfish landings are not identified to species; however, most triggerfish in landings are likely gray triggerfish.

Commercial Fishery

During 2005 to 2009, approximately 20% of snapper grouper permitted vessels from the Gulf of Mexico and South Atlantic were randomly selected to fill out supplementary logbooks. The average number of trips per year during 2005 to 2009 was 13,973 (Table 3). Fishermen spent an average of 1.69 days at sea per trip.

Table 3. Snapper grouper fishery effort for South Atlantic.

YEAR	Trips	Days	Days per Trip
2005	13,771	22,855	1.66
2006	13,264	23,324	1.76
2007	14,885	24,509	1.65
2008	14,781	25,023	1.69
2009	15,345	25,487	1.66
Mean	13,973	23,563	1.69

Source: NMFS SEFSC Logbook Program.

For species in Snapper Grouper Fishery FMU, the number of commercial trips that reported discards was greatest for yellowtail snapper, red porgy, vermilion snapper, scamp, and black sea bass (Table 4). Table 4 indicates many other species not included in the Snapper Grouper FMU including mackerel species, sharks, dolphin, and others are discarded by fishermen with federal commercial snapper grouper permits.

Table 4. The 70 most commonly discarded species during 2005-2009 for the South Atlantic. Snapper grouper species are highlighted. Note: Represents total of unexpanded data during 2005-2009.

Species	Number of trips reported discarding the species	Number discarded
Red porgy, Unc	1,449	128,197
Vermilion snapper	1,272	89,156
Black sea bass, Unc	896	69,027
Knobbed porgy	503	27,924
Yellowtail snapper	2,058	21,420
Rough skin dogfish	85	14,807
Red snapper	634	11,340
Scamp	969	8,703
King mackerel	1,415	7,917
Mangrove snapper	416	7,230
Spottail pinfish	113	7,194
Smooth dogfish	43	5,456
Atlantic sharpnose	204	5,055
Menhaden	50	4,880
Little tunny	140	4,189
Greater amberjack	361	4,163
Gag	618	4,045
Grunts	181	3,517
Dogfish shark	54	3,435
Bluefish	77	3,092
Red grouper	559	3,045
White grunt	168	2,695
Gray triggerfish	233	2,508
Scups or Porgies, Unc	73	2,495
Blue runner	303	2,332
Triggerfish	168	2,274
Blacktip shark	161	2,098
Amberjack	262	1,818
Sandbar shark	129	1,810
Black grouper	381	1,723
Tomtate	22	1,703
Tiger shark	115	1,506
Mutton snapper	296	1,347
Dolphin	214	1,270

Species	Number of trips reported discarding the species	Number discarded
Unc, finfish for food	86	1,167
Atlantic bonito	218	1,049
Speckled hind	122	817
Remora	270	815
Snappers, Unc	36	681
Barracuda	75	668
Spanish mackerel	106	651
Ballyhoo	18	600
Lane snapper	73	582
Groupers	67	396
Chubs	8	364
Caribbean sharpnose	13	361
Stingrays	29	335
Hake	35	333
Rays, Unc	46	324
Snowy grouper	59	319
Margate	17	313
Cobia	182	304
Needlefish	72	299
Cero	98	288
Lesser amberjack	12	282
Sand tilefish	35	264
Spinner shark	33	245
Hammerhead shark	69	218
Almaco jack	20	203
Sheepshead	21	201
Sea catfish	69	188
Rudderfish	33	181
Black margate	3	161
Yellowfin tuna	36	161
Banded rudderfish	14	159
Mahogany snapper	13	133
Rock sea bass	11	131
Squirrelfish	18	131
Silky shark	13	114
Atlantic spadefish	21	107

Some dolphin are taken with pelagic longline. Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations. Actions have been taken to reduce bycatch and incidental catch of overfished and protected species by pelagic longline fishermen who target highly migratory pelagic species (HMS). Appendix C of the Dolphin Wahoo FMP contains data which indicate that pelagic longlines targeting dolphin do in fact result in a bycatch of HMS species.

Recreational Fishery

For the recreational fishery, estimates of the number of recreational discards are available from MRFSS and the NMFS headboat survey. The MRFSS system classifies recreational catch into three categories:

- Type A - Fishes that were caught, landed whole, and available for identification and enumeration by the interviewers.

- Type B - Fishes that were caught but were either not kept or not available for identification:

    - Type B1 - Fishes that were caught and filleted, released dead, given away, or disposed of in some way other than Types A or B2.

    - Type B2 - Fishes that were caught and released alive.

For species in the Comprehensive ACL Amendment, the number of released fish was greatest for black sea bass, followed by crevalle jack (Table 5).

Table 5. Estimated number of fish released (B2) fish in numbers for the South Atlantic during 2005-2009. Species in Comprehensive ACL Amendment are highlighted. Species highlighted in green are currently selected for removal from the Snapper Grouper FMP, in preferred alternatives under Action 1.

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
Barracudas										
Barracudas	126,721	10.8	180,157	8.7	268,282	9.5	239,534	9.6	204,545	9.8
-- Species Group Subtotal --	126,721	10.8	180,157	8.7	268,282	9.5	239,534	9.6	204,545	9.8
Bluefish										
Bluefish	3,004,781	6.1	3,707,415	5.7	4,539,620	6	3,440,594	5	2,337,256	5.4
-- Species Group Subtotal --	3,004,781	6.1	3,707,415	5.7	4,539,620	6	3,440,594	5	2,337,256	5.4
Cartilaginous fishes										
Dogfish sharks	151,502	28.1	91,248	17.4	132,366	42.2	129,161	22.3	92,811	24.9
Other sharks	2,888,895	5.1	2,770,853	6.8	3,128,079	4.5	2,925,490	4.4	2,638,748	5.5
Skates/Rays	1,387,330	6.9	1,059,210	6.7	1,183,040	5.3	1,070,743	6.2	1,431,617	10.8
-- Species Group Subtotal --	4,427,727	4.1	3,921,311	5.1	4,443,485	3.7	4,125,394	3.6	4,163,176	5.1
Catfishes										
Freshwater catfishes	64,895	28.1	40,805	30.2	20,552	25.6	45,502	28	12,530	35.4
Saltwater catfishes	1,775,623	6.2	1,362,776	5.8	2,473,885	7.1	1,912,040	6.5	1,016,001	6.6
-- Species Group Subtotal --	1,840,518	6	1,403,581	5.7	2,494,437	7	1,957,542	6.3	1,028,531	6.6
Cods and Hakes										
Other Cods/Hakes	34,531	40.3	5,889	37	9,605	31	7,405	69.3	32,350	39.9
-- Species Group Subtotal --	34,531	40.3	5,889	37	9,605	31	7,405	69.3	32,350	39.9
Dolphins										
Dolphins	218,931	16.1	231,853	10.8	254,568	17.1	200,879	11.8	75,493	14
-- Species Group Subtotal --	218,931	16.1	231,853	10.8	254,568	17.1	200,879	11.8	75,493	14
Drums										
Atlantic croaker	2,153,037	6.6	3,439,549	6.4	2,540,696	7	2,372,758	5.9	3,113,213	5.5
Black drum	190,110	11.4	312,415	9.7	820,032	10.2	640,413	7.7	293,214	8.8
Kingfishes	2,226,960	6.8	3,582,622	7.7	3,309,945	5.9	2,902,539	6.1	2,710,822	6.8
Other drum	581,461	11	834,383	8.8	1,049,974	10.9	1,173,266	9.5	900,754	12.3
Red drum	2,412,470	5.8	2,111,089	5.6	2,070,575	5.6	2,333,096	6.1	1,979,705	5.6
Sand seatrout	0	0	9,401	72	11,324	45.8	27,367	42.5	110,534	48.4
Silver perch	480,503	13.2	726,915	11.5	584,828	12.1	491,659	15.6	595,518	15.6
Spot	1,728,002	9.9	3,851,795	9.6	1,732,440	9.9	1,713,571	7.6	1,798,841	8.8
Spotted seatrout	5,336,913	5.3	4,988,541	4.7	6,114,718	5	4,715,679	5.5	3,782,693	5.4

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
Weakfish	438,519	11	538,799	11.4	346,898	14	265,383	14.1	189,614	21.8
-- Species Group Subtotal --	15,547,975	2.8	20,395,509	2.9	18,581,430	2.6	16,635,731	2.5	15,474,908	2.7
Eels										
Eels	51,553	26.3	62,029	25.8	43,847	16.3	41,653	19	27,700	17.3
-- Species Group Subtotal --	51,553	26.3	62,029	25.8	43,847	16.3	41,653	19	27,700	17.3
Flounders										
Gulf flounder	4,932	64	10,047	58.5	32,472	49.1	6,181	51.8	964	100
Other flounders	1,214,700	6.3	1,201,665	5.6	1,689,592	5.8	1,900,658	5.9	1,577,521	6.8
Southern flounder	131,274	17.9	257,712	13.7	190,340	13	125,290	14.8	104,871	23.9
Summer flounder	83,320	22.4	139,805	20.5	10,815	38.6	5,715	38	35,632	27.3
-- Species Group Subtotal --	1,434,226	5.7	1,609,229	5	1,923,219	5.4	2,037,844	5.6	1,718,988	6.4
Grunts										
Other grunts	905,462	8.2	790,470	8.4	1,561,407	8.3	903,581	7.7	1,219,001	8.5
Pigfish	743,829	7.8	553,384	9.6	868,092	10.3	821,930	8.4	841,230	10.1
White grunt	195,770	14.8	274,926	15	241,875	11.3	434,040	14.5	148,501	24.3
-- Species Group Subtotal --	1,845,061	5.3	1,618,780	5.8	2,671,374	6	2,159,551	5.4	2,208,732	6.3
Herrings										
Herrings	1,243,180	17.4	2,640,817	12.5	1,203,718	16.9	512,502	31.7	1,698,306	15.3
-- Species Group Subtotal --	1,243,180	17.4	2,640,817	12.5	1,203,718	16.9	512,502	31.7	1,698,306	15.3
Jacks										
Blue runner	661,888	9.6	822,370	9.2	1,159,991	11.7	796,058	11.1	705,910	24.5
Crevalle jack	1,362,086	6.7	1,264,018	6.5	1,634,661	6	1,097,877	7	1,139,832	7.9
Florida pompano	693,755	12.5	1,007,541	20.1	605,621	12	696,269	10.7	345,791	21.5
Greater amberjack	16,687	25.1	19,234	19.6	30,752	20.8	80,931	19.8	71,802	16.1
Other jacks	332,217	17.4	180,298	14	326,798	15.8	433,050	12.2	352,874	16
-- Species Group Subtotal --	3,066,633	5	3,293,461	7.1	3,757,823	5.1	3,104,185	4.8	2,616,209	8.3
Mullets										
Mullets	1,384,536	13.7	1,801,720	11.3	2,263,848	9.4	1,091,237	10.7	1,367,241	11.1
-- Species Group Subtotal --	1,384,536	13.7	1,801,720	11.3	2,263,848	9.4	1,091,237	10.7	1,367,241	11.1
Other fishes										
Other fishes	2,965,704	4.8	2,882,611	4.7	4,518,284	3.7	2,828,534	4.2	2,751,240	5.7
-- Species Group Subtotal --	2,965,704	4.8	2,882,611	4.7	4,518,284	3.7	2,828,534	4.2	2,751,240	5.7
Porgies										

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
Other porgies	72,379	20.1	150,357	20.4	139,040	21.4	116,266	19.5	65,856	19.2
Pinfishes	3,917,568	5.8	5,056,606	6.2	4,960,818	5.1	5,040,941	6	3,588,516	5.8
Red porgy	27,514	19.2	16,636	15.8	30,085	19	44,154	30	18,089	55.8
Scup	1,620	46.5	7,721	44	5,729	30.6	9,755	36	3,293	25.3
Sheepshead	436,207	9.6	437,836	9.3	603,767	10.7	773,720	8	520,600	9.1
-- Species Group Subtotal --	4,455,288	5.2	5,669,156	5.6	5,739,439	4.5	5,984,836	5.2	4,196,354	5.1
Puffers										
Puffers	425,264	7.7	635,341	8.5	1,152,418	6.6	1,341,422	6.7	912,983	7.6
-- Species Group Subtotal --	425,264	7.7	635,341	8.5	1,152,418	6.6	1,341,422	6.7	912,983	7.6
Sea basses										
Black sea bass	2,483,947	5.5	2,967,099	5.6	3,764,105	7.3	2,940,795	6.2	2,716,240	6.2
Epinephelus groupers	254,936	9.1	165,261	9.1	107,240	17.6	97,808	11.9	128,065	11.9
Mycteroperca groupers	145,222	11	152,123	10.7	302,398	11.2	252,309	8.9	142,865	10.6
Other sea basses	324,893	11.5	797,375	11.3	910,942	8.7	801,710	9.1	499,275	10.4
-- Species Group Subtotal --	3,208,998	4.5	4,081,858	4.6	5,084,685	5.7	4,092,622	4.8	3,486,445	5.1
Searobins										
Searobins	158,366	12.1	300,921	21.5	432,617	11.1	333,166	14.5	123,415	10.5
-- Species Group Subtotal --	158,366	12.1	300,921	21.5	432,617	11.1	333,166	14.5	123,415	10.5
Snappers										
Gray snapper	1,228,211	7.8	1,457,251	5.9	2,936,755	6	1,839,406	6.5	1,725,889	7.4
Lane snapper	111,276	22.7	137,572	16.8	330,770	14.1	227,775	18.4	157,594	16.6
Other snappers	242,324	10.6	280,948	10.1	426,284	10.4	557,020	10	314,681	10.1
Red snapper	125,739	13.3	134,692	18.5	455,405	12.8	403,244	10.5	210,279	12.4
Vermilion snapper	140,356	13.2	102,219	34.3	293,433	12.9	246,103	14.2	226,125	11.6
Yellowtail snapper	258,606	17.7	344,982	11.7	402,201	12.5	319,239	11.1	221,836	22.6
-- Species Group Subtotal --	2,106,512	5.5	2,457,664	4.5	4,844,848	4.3	3,592,787	4.3	2,856,404	5.2
Temperate basses										
Striped bass	136,536	16.3	85,438	19.4	50,735	18.2	86,858	19.6	93,353	21
White perch	0	0	46,904	38.1	7,339	56.8	1,397	58.5	0	0
-- Species Group Subtotal --	136,536	16.3	132,342	18.4	58,074	17.5	88,255	19.4	93,353	21
Toadfishes										
Toadfishes	477,955	8.3	479,125	9.4	435,924	7.7	691,142	8	405,848	8.2
-- Species Group Subtotal --	477,955	8.3	479,125	9.4	435,924	7.7	691,142	8	405,848	8.2

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
Triggerfishes/Filefishes										
Triggerfishes/Filefishes	239,995	10.7	210,123	14.6	228,262	10.1	199,476	10.7	181,503	14
-- Species Group Subtotal --	239,995	10.7	210,123	14.6	228,262	10.1	199,476	10.7	181,503	14
Tunas and Mackerels										
Atlantic mackerel	67,658	81.9								
King mackerel	207,618	13.7	195,618	9.8	303,008	9.4	166,716	9.7	127,316	13.4
Little tunny/Atlantic bonito	288,459	8.5	476,296	7	780,193	8.4	511,878	7.6	585,015	8.3
Other tunas/Mackerels	66,422	24.6	43,933	13.7	58,912	16.3	121,352	17.4	93,887	17
Spanish mackerel	704,569	12.9	321,860	11.9	586,722	9.4	994,693	10.4	466,681	9.4
-- Species Group Subtotal --	1,334,726	8.5	1,037,707	5.3	1,728,835	5.3	1,794,639	6.3	1,272,899	5.4
Wrasses										
Other wrasses	2,966	53.3	2,079	50.4	10,386	41.8	13,203	51.5	2,977	42.4
Tautog	2,885	100	5,185	52	2,905	60.9	1,755	58.9	1,922	62.6
-- Species Group Subtotal --	5,851	56.2	7,264	39.8	13,291	35.3	14,958	46	4,899	35.6
-- Grand Total --	49,741,568	1.4	58,765,863	1.6	66,691,933	1.3	56,515,888	1.3	49,238,778	1.5

Source: MRFSS Web Site http://www.st.nmfs.noaa.gov/st1/recreational/overview/overview.html.

For species in the Comprehensive ACL Amendment, black sea bass, vermilion snapper, tomtate, and red snapper were most often discarded by headboat fishermen during 2005-2009 (Table 6).

Table 6. Most commonly discarded species from headboats in South Atlantic. Total fish reported released alive or dead on sampled headboat trips during 2005-2009. Data are not expanded to all trips. Species in Comprehensive ACL Amendment are highlighted. Species highlighted in green are currently selected for removal from the Snapper Grouper FMP, in preferred alternatives under Action 1.

Species	# trips reporting discards	released	sum
Black sea bass	17,087	rel_dead	18,316
		rel_live	721,640
Vermilion snapper	11,601	rel_dead	19,013
		rel_live	413,854
Tomtate	7,801	rel_dead	34,943
		rel_live	243,869
Red snapper	9,198	rel_dead	3,214
		rel_live	212,572
Red porgy	3,848	rel_dead	2,400
		rel_live	110,940
Yellowtail snapper	11,797	rel_dead	3,005
		rel_live	103,625
White grunt	12,917	rel_dead	3,154
		rel_live	91,647
Pinfish	3,000	rel_dead	2,850
		rel_live	81,423
Sharpnose shark	10,928	rel_dead	477
		rel_live	82,816
Spottail pinfish	3,450	rel_dead	199
		rel_live	35,381
Red grouper	7,885	rel_dead	317
		rel_live	27,527
Gag	9,520	rel_dead	339
		rel_live	20,393
Gray triggerfish	14,291	rel_dead	380
		rel_live	18,599
Lane snapper	7,506	rel_dead	591
		rel_live	17,561
Scamp	4,809	rel_dead	275
		rel_live	16,123
Bank sea bass	2,903	rel_dead	763
		rel_live	13,725
Gray snapper	10,376	rel_dead	137

Species	# trips reporting discards	released	sum
		rel_live	13,744
		rel_dead	513
Mutton snapper	8,907	rel_live	13,030
		rel_dead	155
Squirrelfish	3,012	rel_live	9,688
		rel_dead	298
Bluerunner	3,958	rel_live	8,439
		rel_dead	865
Scup	1,187	rel_live	7,402
		rel_dead	104
Greater amberjack	4,438	rel_live	8,155
		rel_dead	31
Smooth dogfish	865	rel_live	6,830
		rel_dead	219
Little tunny	4,019	rel_live	6,620
		rel_dead	232
King mackerel	10,764	rel_live	5,913
		rel_dead	31
Banded rudderfish	2,333	rel_live	5,426
		rel_dead	53
Inshore lizardfish	1,126	rel_live	4,804
		rel_dead	154
Spanish mackerel	2,117	rel_live	4,380
		rel_dead	65
Remora	1,408	rel_live	4,139
		rel_dead	412
Bluefish	1,420	rel_live	3,728
		rel_dead	173
Bluestriped grunt	2,283	rel_live	3,650
		rel_dead	18
Blacktip shark	1,001	rel_live	3,729
		rel_dead	67
Porkfish	1,645	rel_live	3,429
		rel_dead	49
Black grouper	2,530	rel_live	3,026
		rel_dead	64
Nurse shark	1,730	rel_live	2,964
		rel_dead	213
Graysby	2,736	rel_live	2,699
		rel_dead	17
Cobia	3,925	rel_live	2,771

Species	# trips reporting discards	released	sum
		rel_dead	195
Sand perch	1,017	rel_live	2,279
		rel_dead	290
Rock hind	1,998	rel_live	1,663
		rel_dead	60
Doctorfish	873	rel_live	1,790
		rel_dead	24
Almaco jack	2,652	rel_live	1,768
		rel_dead	1
Sandbar shark	393	rel_live	1,694
		rel_dead	75
Margate	744	rel_live	1,540
		rel_dead	45
Dolphin	3,087	rel_live	1,370
		rel_dead	39
Bigeye	2,098	rel_live	1,231
		rel_dead	32
Whitebone porgy	4,480	rel_live	1,204
		rel_dead	0
Spiny dogfish	58	rel_live	1,201
		rel_dead	80
Jolthead porgy	3,667	rel_live	1,054
		rel_dead	47
Great barracuda	2,085	rel_live	1,079
		rel_dead	11
Pigfish	1,072	rel_live	996
		rel_dead	55
Rainbow runner	669	rel_live	811
		rel_dead	40
Sand tilefish	872	rel_live	823
		rel_dead	0
Atlantic croaker	39	rel_live	843
		rel_dead	26
Knobbed porgy	3,890	rel_live	554
		rel_dead	0
Crevalle jack	265	rel_live	564

Source: NMFS Headboat survey.

Finfish Bycatch Mortality

Release mortality rates are unknown for most snapper grouper species. Recent SEDAR assessments include estimates of release mortality rates based on published studies. Stock assessment reports can be found at http://www.sefsc.noaa.gov/sedar/.

SEDAR 17 (2008) recommended a release mortality rate for vermilion snapper of 38% for both the commercial and recreational fisheries. SEDAR 10 (2006) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. SEDAR 24 (2010) used release mortality rates of 48% commercial; 41% for-hire, and 39% private recreational for red snapper. Release mortality rates were estimated as 20% for black grouper and red grouper in SEDAR 19 (2010). SEDAR 15 (2008) estimated a 20% release mortality rate for greater amberjack. In the Gulf of Mexico, SEDAR 9 (2006) assumes a 0% release mortality rate for gray triggerfish. Snowy grouper are primarily caught in water deeper than 300 feet and golden tilefish are taken at depths greater than 540 feet; therefore, release mortality of the species are probably near 100% (SEDAR 4 2004). Release mortality of black sea bass is considered to be low (15%) (SEDAR 2-SAR 3 2005) indicating minimum size limits are probably an effective management tool for black sea bass. Collins et al. (1999) reported venting of the swim bladder yielded reductions in release mortality of black sea bass, and the benefits of venting increased with capture depth. The same study was analyzed by Wilde (2009) to suggest that venting increased the survival of black sea bass, although this was an exception to the general findings of Wilde's (2009) study.

Estimates of bycatch mortality for dolphin and wahoo are unknown. It is likely that most mortality is a function of hooking and handling of the fish when the hook is being removed. Release mortality of golden crab is presumed to be very low. Regulations do not allow for the retention of females, and it is assumed they survive the trauma of capture.

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Tables 2-6 list the species that are most commonly discarded by commercial and recreational fishermen. The Comprehensive ACL Amendment includes alternatives for annual catch limits (ACLS) and annual catch targets for snapper grouper species as well as dolphin wahoo that are below current catch levels. Accountability measures (AM) are also being considered for these species that could shorten fishing seasons and reduce bag limits (i.e. dolphin) if an ACL is exceeded.

Discards of dolphin and wahoo are small in comparison to snapper grouper species and bycatch is believed to be minimal in the recreational, charter, and headboat sectors. Action was taken in the Dolphin Wahoo FMP to reduce bycatch by prohibiting the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species. The Comprehensive ACL Amendment would also establish ACLs for the commercial dolphin fishery, which could establish a ceiling on the commercial catch slightly below the current levels and thereby reduce interaction of longline gear with protected species. Actions have been taken to reduce bycatch and incidental catch of overfished and protected species by pelagic longline fishermen who target highly migratory pelagic species (HMS). Appendix C of the Dolphin Wahoo FMP contains data which indicate that pelagic longlines targeting dolphin do in fact result in a bycatch of HMS species.

For species in the Snapper Grouper FMP, commercial AMs would close species or species groups in season when the ACL is projected to be met. Regulatory discards could increase after a catch limit has been met since fishermen might target co-occurring species. However, the Comprehensive ACL Amendment is establishing species complexes for many species that are often caught together. Therefore reduced catch limits for multiple species or closing co-occurring species at the same time could have the effect of reducing effort, which in turn could reduce bycatch.

If recreational ACLs for many co-occurring species are met, the AM would be to shorten the following fishing season. Extended closures for co-occurring species could reduce bycatch and enhance the reproductive potential of fish stocks, particularly if closures occurred during spawning seasons. Seasonal and/or longer closures of both commercial and recreational fisheries specified in Snapper Grouper Amendment 16 could also reduce bycatch mortality of species included in the Comprehensive ACL Amendment. A longer spawning seasonal closure could enhance the reproductive potential of the stock. For example Amendment 16 established a January - April spawning season closure for gag, red grouper, black grouper, scamp, rock hind, red hind, coney, graysby, yellowfin grouper, yellowmouth grouper, and tiger grouper. These species are in spawning condition from December through April each year and many form spawning aggregations when they are extremely vulnerable to fishing pressure. Groupers change sex from female to male and there is evidence that males can be selectively removed from spawning aggregations, which could affect reproductive success. Furthermore, the largest most fecund females could also be selectively removed by fishing gear. Therefore, a spawning season closure for all shallow water grouper species implemented through Snapper Grouper Amendment 16 would be expected to protect grouper species when they are most vulnerable to capture, reduce bycatch of co-occurring grouper species, increase the percentage of males in grouper populations, enhance reproductive success, and increase the magnitude of recruitment.

Snapper Grouper Amendment 16 required the use of dehooking devices, which could help reduce bycatch of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers could still reduce handling time in removing hooks, thus increasing survival (Cooke et al. 2001). Furthermore, Snapper Grouper Amendment 17A required circle hooks for snapper-grouper species north of 28 degrees latitude, which is expected to reduce bycatch mortality of snapper grouper species.

Actions were taken in the Golden Crab FMP to reduce bycatch including a requirement for at least two escape gaps, degradable escape panels in traps, and a requirement that traps be tended. It is presumed that crabs survive the trauma of capture and regulations specify that females be released. Only 0.5% of the catch can include females.

1.2 Ecological Effects Due to Changes in the Bycatch

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level.

Overall fishing effort could decrease in the commercial and recreational sectors in response to more restrictive ACLs; thereby, reducing the potential for bycatch. Many of the species in the snapper grouper fishery management unit have spatial and temporal coincidence and the benefits could be shared among them.

Data from North Carolina presented to the Council indicated fishermen with snapper grouper permits also fish in the nearshore gillnet fisheries. Fishermen with snapper grouper permits in other areas also participate in various state fisheries. It is expected that if efforts shift to these fisheries, there could be impacts to protected species. Current monitoring programs will allow NOAA Fisheries Service to track and evaluate any increased risk to protected species. If necessary, an Endangered Species Act (ESA) consultation can be re-initiated to address any increased levels of risk to ESA-listed species.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Management measures proposed in the Comprehensive ACL Amendment are intended to prevent overfishing from occurring for species in Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum* FMPs. More restrictive management measures proposed in the Comprehensive ACL Amendment could result in an effort shift to other species and fisheries causing a change in the magnitude of harvest and number of discards in those fisheries. Reduced fishing pressure on species in this amendment would be expected to result in an increase in the mean size and age of species. In addition, biomass and the percentage of males for grouper species would be expected to increase. The relative abundance, size structure, and age structure of other species in other communities could be expected to change in response to reduced fishing pressure on species in the Comprehensive ACL Amendment as well as potential shifts in effort. Thus, ecological changes could occur in the community structure of reef ecosystems through the proposed actions. These ecological changes could affect the nature and magnitude of bycatch over time.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot fishery is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2010 proposed List of Fisheries classifies as a Category II (74 FR 27739; June 11, 2009). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the snapper grouper fishery, the best available data on protected species interactions are from the Southeast Fisheries Science Center (SEFSC) Supplementary Discard Data Program (SDDP) initiated in July of 2001 and sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database). The bottom longline/hook-and-line component of the South Atlantic snapper grouper fishery remains a Category III under the LOF.

Although the black sea bass pot fishery can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot fishery operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3-36.6 meters). There are no known interactions between the black sea bass pot fishery and large whales. NOAA Fisheries Service's biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined the possible adverse effects resulting from the fishery are extremely unlikely. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic EEZ is not likely to adversely affect sperm, fin, sei, and blue whales (NMFS 2006).

North Atlantic right and humpback whales may overlap both spatially and temporally with the black sea bass pot fishery. Recent revisions to the Atlantic Large Whale Take Reduction Plan have folded the Atlantic mixed species trap/pot fisheries into the plan (72 FR 193; October 5, 2007). The new requirements will help further reduce the likelihood of North Atlantic right and humpback whale entanglement in black sea bass pot gear.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished USFWS data). Interaction with fisheries has not been reported as a concern for either of these species.

Fishing effort reductions have the potential to reduce the amount of interactions between the fishery and marine mammals and birds. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the snapper grouper fishery. Thus, it is believed that the snapper grouper fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations. Appendix C of the Dolphin Wahoo FMP (FSEIS for HMS Regulatory Amendment 1) contains data on dolphin wahoo pelagic longline fishery analysis. The data presented on page C-66 and in Table C-4 indicate that pelagic longlines targeting dolphin do result in a bycatch of HMS species. Implementation of regulations Dolphin Wahoo FMP addressed the Magnuson-Stevens Act requirements to reduce bycatch and the mortality of bycatch. Further, the establishment of fixed commercial ACLs for dolphin and wahoo in this amendment could reduce or cap bycatch mortality.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

Actions in the Comprehensive ACL Amendment would be expected to affect the cost of fishing operations. It is likely that all four states (NC, SC, GA & FL) would be affected by the regulations (closures, ACLs, etc.) and the variety/number of species included in this amendment. Additionally, factors such as waterfront property values, availability of less expensive imports, etc. may affect economic decisions made by recreational and commercial fishermen. Amendment 18A (under development) proposes to enhance current data collection programs. This might provide more insight in calculating the changes in fishing, processing, disposal and marketing costs.

1.6 Changes in Fishing Practices and Behavior of Fishermen

Actions proposed in the Comprehensive ACL Amendment could result in a modification of fishing practices by commercial and recreational fishermen, thereby affecting the magnitude of discards. Furthermore, reductions in the season lengths, new or reduced ACLs could cause some commercial and recreational fishermen to reduce effort. However, it is difficult to quantify any of the measures in terms of reducing discards until the magnitude of bycatch has been monitored over several years.

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is needed to understand the effectiveness of proposed management measure in reducing bycatch. Additional work is needed to determine the effectiveness of measures in the Comprehensive ACL Amendment, recently implemented amendments, and by future actions being proposed by the Council to reduce bycatch. Amendment 18A is being developed, which proposes to enhance current data collection programs. Some observer information has recently been provided by MARFIN and Cooperative Research Programs but more is needed. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. The use of electronic logbooks could be enhanced to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Additional administrative and enforcement efforts will be needed to implement and enforce these regulations. NOAA Fisheries Service established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast US waters, addressing both immediate (e.g., red snapper) and long-term fishery-independent data needs, with an overarching goal of improving fishery-independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Preferred management measures, including those that are likely to increase or decrease discards could result in social and/or economic impacts as discussed in Section 4.

1.9 Changes in the Distribution of Benefits and Costs

Attempts were made to ensure ACLs are based on the proportion of historical catches in the commercial and recreational sectors. The extent to which new ACLs and AMs will increase or decrease the magnitudes of discards is unknown. Reduced catches associated with ACLs and reductions in the length of fishing seasons as an AM, should the ACL be exceeded, are likely to provide substantial decreases in bycatch. Some measures specified in Snapper Grouper Amendments 16 and 17A, such as the requirement for dehooking devices, requirement for circle hooks north of 28 degrees latitude, a recreational/commercial seasonal closure for gag, reduction of recreational bag limits, and closing all shallow water groupers when a gag quota is met or during a gag seasonal closure could help to reduce bycatch. It is likely that some ACLs could increase the number of discards. However, this depends on if fishermen shift effort to other species, seasons, or fisheries and if effort decreases in response to more restrictive management measures as well as changes in community structure and age/size structures that could result from ending overfishing.

1.10 Social Effects

The social effects of all the management measure, including those most likely to reduce bycatch, are described in **Section 4**.

1.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, ACLs and AMs proposed in the Comprehensive ACL Amendment could provide substantial decreases in bycatch of species if there are reductions in effort and species groups containing co-occurring species are closed when AMs are triggered. The requirements of dehooking devices, circle hooks, a recreational/commercial seasonal closure for gag, reduction of recreational bag limits, and closing all shallow water groupers when a gag quota is met or during a gag seasonal closure specified in previous amendments could also help to reduce bycatch. It is likely that ACLs could increase the number of discards. However, this depends on if fishermen shift effort to other species, seasons, or fisheries and if effort decreases in response to more restrictive management measures as well as changes in community structure and age/size structures that could result from ending overfishing. Furthermore, overall fishing effort could decrease in the commercial and recreational sectors in response to more restrictive management measures, thereby reducing the potential for bycatch.

Reduced fishing pressure on species in Comprehensive ACL Amendment would be expected to result in an increase in the mean size/age of affected species. In addition, an increase would be expected in the percentage of male groupers and population biomass. Overlapping closures for co-occurring could be expected to reduce bycatch and fishing mortality. The relative abundance, size structure, and age structure of other communities could be expected to change in response to reduced fishing pressure as well as potential shifts in effort. Thus, ecological changes could occur in the community structure of reef ecosystems through actions that would end overfishing. These ecological changes could affect the nature and magnitude of bycatch over time.

Appendix I. Other Applicable Law

1. Other Applicable Law

1.1. Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NOAA Fisheries Service is required to publish notification of proposed rules in the Federal Register and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect. The Council has chosen a requirement for circle hooks in Amendment 17A. This requirement would not be effective until 90 days after the final rule publishes in order to allow fishermen to obtain the necessary gear.

1.2. Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based on the analysis of the environmental consequences of the proposed action in Section 4.0, the Council has concluded this amendment would improve federal management of snapper grouper species.

1.3. Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NOAA Fisheries Service to consult with the appropriate administrative agency (itself for most marine species and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat.

Snapper Grouper Fishery

On June 7, 2006, a formal consultation and associated biological opinion on the continued authorization of the South Atlantic snapper-grouper fishery on sea turtles and smalltooth sawfish was completed. The opinion concluded the continued authorization of the fishery would not affect ESA-listed marine mammals and is not likely to jeopardize the continued existence of any other ESA-listed species. An incidental take statement authorizing a limited number of sea turtle and smalltooth sawfish incidental captures was issued for the fishery. Subsequent to the 2006 biological opinion, two species of coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened and critical habitat for these species was designated. In a consultation memorandum dated July 9, 2007, NOAA Fisheries Service concluded the continued authorization of the South Atlantic snapper-grouper fishery, is not likely to adversely affect these *Acropora* species. In a consultation memorandum dated December 2, 2008, NOAA Fisheries Service concluded the continued authorization of the snapper-grouper fishery is not likely to adversely affect designated *Acropora* critical habitat.

Dolphin Wahoo Fishery
On August 27, 2003, formal consultation was completed on the continued authorization of the Atlantic dolphin-wahoo fishery (NMFS 2003a). The biological opinion concluded the fishery would not affect ESA-listed marine mammals or smalltooth sawfish, and is not likely to jeopardize the continued existence of any listed sea turtle species. An incidental take statement authorizing a limited number of incidental sea turtle captures was issued for the fishery. Subsequent to the 2003 biological opinion, two species of coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened and critical habitat for these species was designated. In a consultation memorandum dated May 18, 2010, NOAA Fisheries Service concluded the continued authorization of the dolphin-wahoo fishery is not likely to adversely affect these *Acropora* species or their designated critical habitat.

Sargassum Fishery
On March 31, 2003, formal consultation was completed on the continued authorization of pelagic *Sargassum* harvest (NMFS 2003b). The biological opinion concluded the continued harvest of *Sargassum* would not affect ESA-listed marine mammals. The opinion also concluded that interactions between the fishery and sea turtles hatchlings and pelagic immature sea turtles were likely, but those interactions were not likely to jeopardize the continued existence of any listed sea turtle species. The opinion authorized the incidental take of a small number neonatal or pelagic-immature green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles over consecutive 5-year periods.

Golden Crab Fishery
Informal consultations on the golden crab fishery were conducted on April 28, 1989, November 14, 1995, and February 22, 2000. These consultations concluded that the management actions in the FMP were not likely to adversely affect listed species. Since the completion of those consultations the smalltooth sawfish and two species of *Acropora* coral have been listed and critical habitat has been designated for *Acropora*. In a May 18, 2010, consultation memorandum NOAA Fisheries Service determined the continued authorization of the fishery was still not likely to adversely affect ESA-listed sea turtles and marine mammals. That memorandum also determined that because the fishery operates at depths beyond those inhabited by smalltooth sawfish and the two *Acropora* species it was unlikely to adversely affect these species.

1.4. Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. The affected states have been closely involved in developing the proposed management measures and the principal state officials responsible for fisheries management in their respective states have not expressed federalism related opposition to the proposed action.

1.5 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NOAA Fisheries Service prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new FMP or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects.

1.6 Executive Order 12898: Environmental Justice

This Executive Order mandates that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. Federal agency responsibilities under this Executive Order include conducting their programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefit of, or subjecting persons to discrimination under, such programs policies, and activities, because of their race, color, or national origin. Furthermore, each federal agency responsibility set forth under this Executive Order shall apply equally to Native American programs.

Specifically, federal agencies shall, to the maximum extent practicable; conduct human health and environmental research and analysis; collect human health and environmental data; collect, maintain and analyze information on the consumption patterns of those who principally rely on fish and/or wildlife for subsistence; allow for public participation and access to information relating to the incorporation of environmental justice principals in federal agency programs or policies; and share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments. The Council conducted a series of scoping meetings for this amendment in which the public was invited to provide input on actions contained therein. A summary of the scoping meetings can be found in Appendix L of this document. Comments received were considered during the development of Amendment 17A, and no environmental justice issues were raised during the scoping process. No Native American programs would be affected by actions contained within this amendment; therefore, no tribal consultation has been initiated.

Section 3.8 describes several areas in North Carolina, South Carolina, Georgia, and Florida where South Atlantic snapper grouper fisheries have a local presence. These communities were identified as key communities involved in the South Atlantic snapper grouper fishery based on fishing permit and employment data. The demographic information reported for these communities were derived from census data. Although the Census Bureau does not supply race or income data at the community level, such data are available for each county in which the fishing communities exist. Based on 2005 Census data, none of the counties within which any of the subject fishing communities is located has a disproportionately high poverty rate[1], or minority population[2]. The proposed actions would be applied to all participants in the fishery, regardless of their race, color, national origin, or income level, and as a result are not expected to result in adverse or disproportionate environmental or public health impacts. Comments received during scoping did not indicate proposed actions are expected to affect any existing subsistence consumption patterns. Therefore, no environmental justice issues are anticipated and no modifications to any proposed actions have been made to address environmental justice issues.

1.7 Executive Order 12962: Recreational Fisheries

E.O. 12962 requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries,

---

[1] Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14 if a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps) (U.S. Census, 2008).

[2] A minority population is one either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (U.S. Census, 2008).

and documenting those effects. Additionally, the order establishes a seven member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among Federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with federal agencies, states and tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda.

APPENDIX J. National Standard 1 Guidelines

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 600

[Docket No. 070717348–81398–03]

RIN 0648–AV60

Magnuson-Stevens Act Provisions; Annual Catch Limits; National Standard Guidelines

AGENCY: National Marine Fisheries Service (NMFS); National Oceanic and Atmospheric Administration (NOAA); Commerce.

ACTION: Final rule.

SUMMARY: This final action amends the guidelines for National Standard 1 (NS1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This action is necessary to provide guidance on how to comply with new annual catch limit (ACL) and accountability measure (AM) requirements for ending overfishing of fisheries managed by Federal fishery management plans (FMPs). It also clarifies the relationship between ACLs, acceptable biological catch (ABC), maximum sustainable yield (MSY), optimum yield (OY), and other applicable reference points. This action is necessary to facilitate compliance with requirements of the Magnuson-Stevens Act to end and prevent overfishing, rebuild overfished stocks and achieve OY.

DATES: Effective February 17, 2009.

ADDRESSES: Copies of the Regulatory Impact Review (RIR)/Regulatory Flexibility Act Analysis (RFAA) can be obtained from Mark R. Millikin, National Marine Fisheries Service, 1315-East-West Highway, Room 13357, Silver Spring, Maryland 20910. The RIR/RFAA document is also available via the internet at *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm*. Public comments that were received can be viewed at the Federal e-Rulemaking portal: *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Mark R. Millikin by phone at 301–713–2341, by FAX at 301–713–1193, or by *e-mail: Mark.Millikin@noaa.gov.*

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Overview of Revisions to the NS1 Guidelines
II. Major Components of the Proposed Action
III. Major Changes Made in the Final Action
IV. Overview of the Major Aspects of the Final Action
A. Stocks in the Fishery and Ecosystem Component Species
B. Definition Framework for OFL, ABC, and ACL
C. Accountability Measures (AMs)
D. SSC Recommendations and Process
E. Management Uncertainty and Scientific Uncertainty
V. Response to Comments
VI. Changes from Proposed Action
VII. References Cited
VIII. Classification

I. Overview of Revisions to the NS1 Guidelines

The MSA serves as the chief authority for fisheries management in the U.S. Exclusive Economic Zone (EEZ). The Act provides for ten national standards (NS) for fishery conservation and management, and requires that the Secretary establish advisory guidelines based on the NS to assist in the development of fishery management plans. Guidelines for the NS are codified in subpart D of 50 CFR part 600. NS1 requires that conservation and management measures ‘‘shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.’’

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) amended the MSA to include new requirements for annual catch limits (ACLs) and accountability measures (AMs) and other provisions regarding preventing and ending overfishing and rebuilding fisheries. To incorporate these new requirements into current NS1 guidance, NMFS initiated a revision of the NS1 guidelines in 50 CFR 600.310. NMFS published a notice of intent (NOI) to prepare an environmental impact statement (EIS) and commenced a scoping period for this action on February 14, 2007 (72 FR 7016), and proposed NS1 guidelines revisions on June 9, 2008 (73 FR 32526). Further background is provided in the above-referenced **Federal Register** documents and is not repeated here. The proposed guidelines provided a description of the reasons that overfishing is still occurring and the categories of reasons for overfishing likely to be addressed by new MSA requirements combined with the NS1 guidelines. The September 30, 2008 NMFS Quarterly Report on the Status of U.S. Fisheries indicates that 41 stocks managed under Federal FMPs are undergoing overfishing.

NMFS solicited public comment on the proposed NS1 guidelines revisions through September 22, 2008, and during that time, held three public meetings, on July 10, 2008 (Silver Spring, Maryland), July 14, 2008 (Tampa, Florida), and July 24, 2008 (Seattle, Washington), and made presentations on the proposed revisions to each of the eight Regional Fishery Management Councils (Councils). NMFS received over 158,000 comments on all aspects of the proposed NS1 guidelines revisions. Many of the comment letters were form letters or variations on a form letter. In general, the environmental community supported the provisions in the proposed action but commented that they needed to be strengthened in the final action. Alternatively, comments from the fishing industry and some of the Councils said the proposed revisions were confusing, too proscriptive or strict, and lacked sufficient flexibility.

II. Major Components of the Proposed Action

Some of the major items covered in the proposed NS1 guidelines were: (1) A description of the relationship between MSY, OY, overfishing limits (OFL), ABC, ACLs, and annual catch targets (ACT); (2) guidance on how to combine the use of ACLs and AMs for a stock to prevent overfishing when possible, and adjust ACLs and AMs, if an ACL is exceeded; (3) statutory exceptions to requirements for ACLs and AMs and flexibility in application of NS1 guidelines; (4) ‘‘stocks in the fishery’’ and ‘‘ecosystem component species’’ classifications; (5) replacement of MSY control rules with ABC control rules and replacement of OY control rules with ACT control rules; (6) new requirements for scientific and statistical committees (SSC); (7) explanation of the timeline to prepare new rebuilding plans; (8) revised guidance on how to establish rebuilding time targets; (9) advice on action to take at the end of a rebuilding period if a stock is not yet rebuilt; and (10) exceptions to the requirements to prevent overfishing.

III. Major Changes Made in the Final Action

The main substantive change in the final action pertains to ACTs. NMFS proposed ACT as a required reference point that needed to be included in FMPs. The final action retains the concept of an ACT and an ACT control rule, but does not require them to be included in FMPs. After taking public comment into consideration, NMFS has decided that ACTs are better addressed as AMs. The final guidelines provide that: ‘‘For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.’’

In response to public comment, this final action also clarifies text on ecosystem component species, OFL, OY specification, ABC control rule and specification, SSC recommendations, the setting of ACLs, sector-ACLs, and AMs, and makes minor clarifications to other text. Apart from these clarifications, the final action retains the same approaches described in the proposed guidelines with regard to: (1) Guidance on how to combine the use of ACLs and AMs for a stock to prevent overfishing when possible, and adjust ACLs and AMs, if an ACL is exceeded; (2) statutory exceptions to requirements for ACLs and AMs and flexibility in application of NS1 guidelines; (3) ''stocks in the fishery'' and ''ecosystem component species'' classifications; (4) new requirements for SSCs; (5) the timeline to prepare new rebuilding plans; (6) rebuilding time targets; (7) advice on action to take at the end of a rebuilding period if a stock is not yet rebuilt; and (8) exceptions to the requirements to prevent overfishing. Further explanation of why changes were or were not made is provided in the ''Response to Comments'' section below. Detail on changes made in the codified text is provided in the ''Changes from Proposed Action'' section.

IV. Overview of the Major Aspects of the Final Action

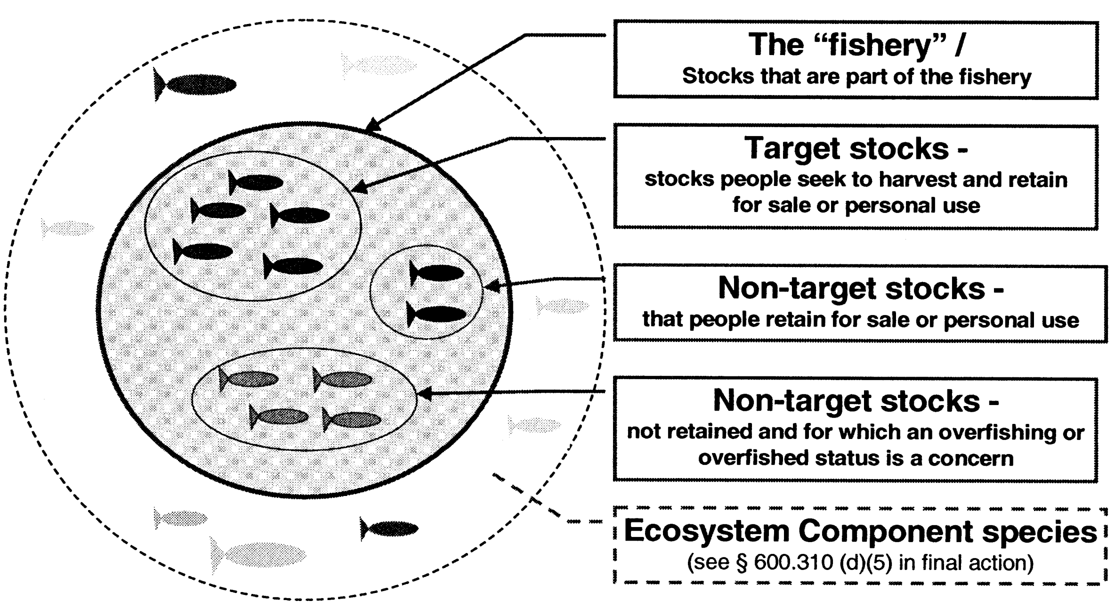
A. Stocks in the Fishery and Ecosystem Component Species

The proposed NS1 guidelines included suggested classifications of ''stocks in the fishery'' and ''ecosystem component (EC) species.'' *See* Figure 1 for diagram of classifications. Public comments reflected confusion about this proposal, so NMFS has clarified its general intent with regard to these classifications. More detailed responses to comments on this issue are provided later in this document.

The classifications in the NS1 guidelines are intended to reflect how FMPs have described ''fisheries,'' and to provide a helpful framework for thinking about how FMPs have incorporated and may continue to incorporate ecosystem considerations. To that end, the proposed NS1 guidelines attempted to describe the fact that FMPs typically include certain target species, and sometimes certain non-target species, that the Councils and/or the Secretary believed required conservation and management. In some FMPs, Councils have taken a broader approach and included hundreds of species, many of which may or may not require conservation and management but could be relevant in trying to further ecosystem management in the fishery.

NMFS wants to encourage ecosystem approaches to management, thus it proposed the EC species as a possible classification a Council or the Secretary could—but is not required to—consider. The final NS1 guidelines do not require a Council or the Secretary to include all target and non-target species as ''stocks in the fishery,'' do not mandate use of the EC species category, and do not require inclusion of particular species in an FMP. The decision of whether conservation and management is needed for a fishery and how that fishery should be defined remains within the authority and discretion of the relevant Council or the Secretary, as appropriate. NMFS presumes that stocks or stock complexes currently listed in an FMP are ''stocks in the fishery,'' unless the FMP is amended to explicitly indicate that the EC species category is being used. ''Stocks in the fishery'' need status determination criteria, other reference points, ACL mechanisms and AMs; EC species would not need them. NMFS recognizes the confusion caused by wording in the proposed action and has revised the final action to be more clear on these points.

Figure 1. General Framework for "Stocks in the Fishery" versus "Ecosystem Component Species." This figure describes the kind of stocks or stock complexes that might fall into the two classifications, but should not be viewed as requiring FMPs to include specific stocks or stock complexes in either category.

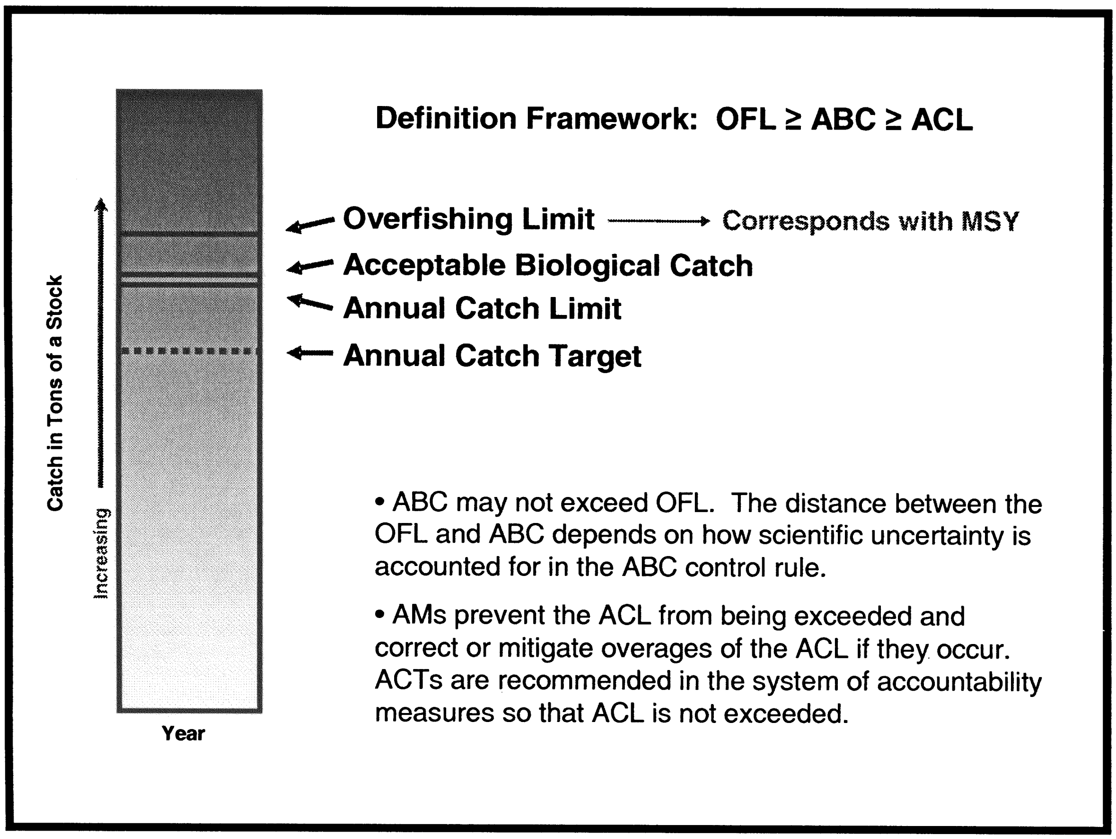


B. Definition Framework for OFL, ABC, and ACL

The MSRA does not define ACLs, AMs, and ABC, so NMFS proposed definitions for these terms in the proposed action. NMFS also proposed definitions for the terms OFL and ACT because it felt that they would be useful tools in helping ensure that ACLs are not exceeded and overfishing does not occur. The proposed NS1 guidelines described the relationship between the terms as: OFL ≥ ABC ≥ ACL ≥ ACT. In response to public comment, the final action revises the definition framework as: OFL ≥ ABC ≥ ACL. As described above, NMFS has retained ACT and the ACT control rule in the NS1 guidelines, but believes that they are more appropriate as AMs. NMFS believes ACTs could prove useful as management tools in fisheries with poor management control over catch (i.e., that frequently exceed catch targets).

NMFS received many comments on the definition framework, and some commenters stated that it should be revised as: OFL > ABC > ACL. Having considered public comment and reconsidered this issue, NMFS has decided to keep the framework as: OFL ≥ ABC ≥ ACL. However, NMFS believes there are few fisheries where setting OFL, ABC, and ACL all equal to each other would be appropriate. While the final action allows ABC to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. NMFS has added a provision to the final NS1 guidelines stating that, if a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. See figure 2 for an illustration of the relationship between OFL, ABC, ACL and ACT. Further detail on the definition framework and associated issues is provided in the ''Response to Comments'' section below.

Figure 2: Relationship between OFL, ABC, ACL and ACT



C. Accountability Measures (AMs)

Another major aspect of the revised NS1 guidelines is the inclusion of guidance on AMs. AMs are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. NMFS has identified two categories of AMs, inseason AMs and AMs for when the ACL is exceeded. As described above, ACTs are recommended in the system of AMs so that ACLs are not exceeded. As a performance standard, if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness.

D. SSC Recommendations and Process

Section 302(h)(6) of the MSA provides that each Council is required to ''develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee or the peer review process established under subsection (g).'' MSA did not define ''fishing level recommendations,'' but in section 302(g)(1)(B), stated that an SSC shall provide ''recommendations for acceptable biological catch, preventing overfishing, maximum sustainable yield, and achieving rebuilding targets,'' and other scientific advice.

NMFS received a variety of public comments regarding interpretation of ''fishing level recommendations.'' Some commenters felt that the SSC's ''fishing level recommendations'' that should constrain ACLs is the overfishing limit (OFL); other commenters stated that ''fishing level recommendations'' should be equated with MSY. NMFS does not believe that MSA requires ''fishing level recommendations'' to be equated to the OFL or MSY. As described above, the MSA specifies a number of things that SSCs recommend to their Councils. Of all of these things, ABC is the most directly relevant to ACL, as both ABC and ACL are levels of annual catch.

The preamble to the proposed NS1 guidelines recommended that the Councils could establish a process in their Statement of Organization, Practices and Procedures (SOPPs) for: establishing an ABC control rule, applying the ABC control rule (i.e., calculating the ABC), and reviewing the resulting ABC. NMFS believes that this may have caused confusion and that some commenters misunderstood the intent of this recommendation. NMFS received comment regarding inclusion of the ABC control rule in the SOPPs, and wants to clarify that the actual ABC control rule should be described in the FMP. NMFS believes it is important to understand how the Councils, SSC, and optional peer review process work together to implement the provisions of the MSA and therefore recommends that the description of the roles and responsibilities of the Council, SSC, and optional peer review process be included in the SOPPs, FMP, or some other public document. The SSC recommends the ABC to the Council whether or not a peer review process is utilized.

E. Management Uncertainty and Scientific Uncertainty

A major aspect of the revised NS1 guidelines is the concept of incorporating management and scientific uncertainty in using ACLs and AMs. Management uncertainty occurs because of the lack of sufficient information about catch (*e.g.*, late reporting, underreporting and misreporting of landings or bycatch). Recreational fisheries generally have late reporting because of the method of surveying catches and the lack of an ability for managers to interview only marine recreational anglers. NMFS is addressing management uncertainty in the recreational fishery by implementing a national registry of recreational fishers in the Exclusive Economic Zone (EEZ) (see proposed rule published in the **Federal Register** (73 FR 33381, June 12, 2008)) and a Marine Recreational Implementation Program that will, in part, revise the sampling design of NMFS's marine recreational survey for fishing activity.

Management uncertainty also exists because of the lack of management precision in many fisheries due to lack of inseason fisheries landings data, lack of inseason closure authority, or the lack of sufficient inseason management in some FMPs when inseason fisheries data are available. The final NS1 guidelines revisions provide that FMPs should contain inseason closure authority that gives NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of a fishery is necessary to prevent overfishing. NMFS believes that such closure authority will enhance efforts to prevent overfishing. Councils can derive some idea of their overall extent of management uncertainty by comparing past actual catches to target catches to evaluate the magnitude and frequency of differences between actual catch and target catch, and how often actual catch exceeded the overfishing limit for a stock.

Scientific uncertainty includes uncertainty around the estimate of a stock's biomass and its maximum fishing mortality threshold (MFMT); therefore, any estimate of OFL has uncertainty. Stock assessment models have various sources of scientific uncertainty associated with them and many assessments have shown a repeating pattern that the previous assessment overestimated near-future biomass, and underestimated near-future fishing mortality rates (i.e., called retrospective patterns).

V. Response to Comments

NMFS received many comments about the proposed definition framework (OFL ≥ ABC ≥ ACL ≥ ACT), especially regarding the ACT and ACT control rule. Some commenters suggested that the ACT and ACT control rule should not be required, while others supported their use. NMFS also received comments expressing: That the proposed terminology should not be required; OFL should always be greater than ABC; and concern that too many factors (i.e., management and scientific uncertainty, and ACT) will reduce future target catches unnecessarily. Some commenters felt additional emphasis should be placed on T_{min} in the rebuilding provisions. Councils, for the most part, are very concerned about the challenge of implementing ACLs and AMs by 2010, and 2011, as required. Some commenters felt the international fisheries exception to ACLs is too broad. Several commenters stated that an EIS should have been or should be prepared and two commenters stated an Initial Regulatory Flexibility Analysis under the Regulatory Flexibility Act should be prepared. NMFS also received many comments regarding the mixed-stock exception.

NMFS received many comments expressing support for the proposed revisions to the Magnuson-Stevens Act National Standard 1 guidelines. Comments included: This good faith effort to implement Congress' intent will work to end overfishing and protect the marine ecosystem; these guidelines reduce the risk of overfishing and will work to rebuild depleted stocks through the use of science based annual catch limits, accountability measures, 'buffers' for scientific and management uncertainty, and protections for weak fish stocks; and this solid framework will ensure not only healthy stocks but healthy fisheries.

Comment 1: Several comments were received regarding NMFS's decision to not prepare an environmental impact statement or environmental assessment for this action. Some supported the decision, while others opposed it and believed that a categorical exclusion under the National Environmental Policy Act (NEPA) is not appropriate.

Response: NMFS believes a categorical exclusion is appropriate for this action. Under §§ 5.05 and 6.03c.3(i) of NOAA's Administrative Order (NAO) 216–6, the following types of actions may be categorically excluded from the requirement to prepare an EA or EIS: ''* * * policy directives, regulations and guidelines of an administrative, financial, legal, technical or procedural nature, or the environmental effects of which are too broad, speculative or conjectural to lend themselves to meaningful analysis and will be subject later to the NEPA process, either collectively or case-by-case. * * *''

In this instance, a Categorical Exclusion is appropriate for this action, because NMFS cannot meaningfully analyze potential environmental, economic, and social impacts at this stage. This action revises NS1 guidelines, which are advisory only; MSA provides that NS guidelines ''shall not have the force and effect of law.'' MSA section 301(b). *See Tutein* v. *Daley*, 43 F. Supp.2d 113, 121–122 (D. Mass. 1999) (reaffirming that the guidelines are only advisory and holding that the national standards are not subject to judicial review under the

MSA). The NS1 guidelines are intended to provide broad guidance on how to comply with new statutory requirements. While the guidelines explain in detail how different concepts, such as ACL, ABC, MSY, and OY, should be addressed, the guidelines do not mandate specific management measures for any fishery. It is not clear what Councils will or will not do in response to the NS1 guidelines. Thus, it is not possible to predict any concrete impacts on the human environment without the necessary intervening actions of the Councils, e.g., consideration of best available scientific information and development of specific conservation and management measures that may be needed based on that information. Any analysis of potential impacts would be speculative at best.

None of the exceptions for Categorical Exclusions provided by § 5.05c of NAO 216–6 apply. While there is controversy concerning the NS1 guidelines revisions, the controversy is primarily related to different views on how new MSA requirements should be interpreted, rather than potential environmental consequences. The NS1 guidelines would not, in themselves, have uncertain environmental impacts, unique or unknown risks, or cumulatively significant or adverse effects upon endangered or threatened species or their habitats. Moreover, this action would not establish a precedent or decision in principle about future proposals. As noted above, the guidelines provide broad guidance on how to address statutory requirements but do not mandate specific management actions.

Comment 2: One commenter criticized NMFS' approach as placing unnecessary burden on the Councils to conduct the NEPA analysis.

Response: No change was made. One of the Councils' roles is to develop conservation and management measures that are necessary and appropriate for management of fisheries under their authority. NMFS believes that Councils should continue to have the discretion to determine what measures may be needed in each fishery and what alternatives should be considered and analyzed as part of the fishery management planning process. Councils routinely incorporate NEPA into this process, and the actions to implement ACLs in specific fisheries must address the NEPA requirements, regardless of the level of analysis conducted for the guidelines. Therefore, having reviewed the issue again, NMFS continues to find that a categorical exclusion is appropriate for this action.

Comment 3: Two commenters stated that NMFS should have prepared an initial regulatory flexibility analysis under the RFA for this action. They said it was not appropriate to certify under the RFA because in their opinion, this action will have significant economic impacts on a substantial number of small entities.

Response: No change was made. The final NS1 guidelines will not have significant economic impacts on a substantial number of small entities. The guidelines are advisory only; they provide general guidance on how to address new overfishing, rebuilding, and related requirements under the MSA. Pursuant to MSA section 301(b), the guidelines do not have the force and effect of law. When the Councils/Secretary apply the guidelines to individual fisheries and implement ACL and AM mechanisms, they will develop specific measures in their FMPs and be able to analyze how the new measures compare with the status quo (e.g., annual measures before the MSRA was signed into law and the NS1 guidelines were revised) with respect to economic impacts on small entities. At this point, any analysis of impacts on small entities across the range of diverse, Federally-managed fisheries would be highly conjectural. Therefore, a certification is appropriate.

Comment 4: Several comments were received that the guidelines are too complex and they contain guidance for things, such as the ACT that are not required by the MSA. They suggested removing these provisions from the guidance, or only providing guidance for terms specifically mentioned in the statute.

Response: NMFS agrees that the guidelines can appear complex. However, the purpose of the guidelines is not simply to regurgitate statutory provisions, rather it is to provide guidance on how to meet the requirements of the statute. As discussed in other comments and responses, MSRA includes new, undefined terms (ABC and ACL), while retaining other long-standing provisions, such as the national standards. In considering how to understand new provisions in light of existing ones, NMFS considered different ways to interpret language in the MSA, practical challenges in fisheries management including scientific and management uncertainty, the fact that there are differences in how fisheries operate, and public comment on proposed approaches in the NS1 guidelines. MSA does not preclude NMFS from including additional terminology or explanations in the NS1 guidelines, as needed, in order to facilitate understanding and effective implementation of MSA mandates. In the case of NS1, conservation and management measures must prevent overfishing while achieving, on a continuing basis, the optimum yield. This is inherently challenging because preventing overfishing requires that harvest of fish be limited, while achieving OY requires that harvest of fish occur. In developing the guidelines, NMFS identified the reasons that overfishing was still occurring in about 20 percent of U.S. Fisheries, and wrote the guidelines to address the primary causes. These include:

(1) Setting OY too close to MSY,

(2) Failure to consider all sources of fishing mortality,

(3) Failure to adequately consider both uncertainty in the reference points provided by stock assessments (scientific uncertainty) and uncertainty in management control of the actual catch (management uncertainty),

(4) Failure to utilize best available information from the fishery for inseason management, and

(5) Failure to identify and correct management problems quickly.

NMFS believes that the guidelines address these causes and appropriately provide practical guidance on how to address them, while providing sufficient flexibility to acknowledge the differences in fisheries. NMFS believes that Congress intended that the ACLs be effective in ending and preventing overfishing. Simply amending the FMPs to include ACL provisions is not enough—the actual performance of the fishery is what ultimately matters. NMFS believes that all of the provisions in the guidelines are essential to achieving that goal, and that if the guidelines are followed, most of the problems that have led to continued overfishing will be addressed. NMFS has made changes in the final action to clarify the guidelines and simplify the provisions therein, to the extent possible. One specific change is that the final guidelines do not require that ACT always be established. Instead, NMFS describes how catch targets, such as ACT, would be used in a system of AMs in order to meet the requirements of NS1 to prevent overfishing and achieve OY. More details on these revisions are covered in responses pertaining to comments 8, 32, 44, 45, and 48.

Comment 5: Several commenters stated that Councils' workloads and the delay of final NS1 guidelines will result in some Councils having great difficulty or not being able to develop ACLs and AMs for overfishing stocks by 2010, and all other stocks by 2011.

Response: The requirements in MSA related to 2010 and 2011 are statutory; therefore ACLs and AMs need to be in place for those fishing years such that overfishing does not occur. NMFS understands that initial ACL measures for some fisheries have been developed before the NS1 guidelines were finalized in order to meet the statutory deadline, and thus may not be fully consistent with the guidelines. ACL mechanisms developed before the final guidelines should be reviewed and eventually revised consistent with the guidelines.

Comment 6: Several commenters stated that certain existing FMPs and processes are already in compliance with the ACL and AM provisions of the MSA and consistent with the proposed guidelines. One commenter stated that NMFS should bear the burden of determining whether current processes are inconsistent with the MSA, and indicate what action Councils should take. Another commenter stated that Congress intended Total Allowable Catch (TAC), which is already used in some fisheries, to be considered to be an ACL. NMFS also received comments stating that certain terms have had longstanding use under FMPs, and changing the terminology could cause too much confusion.

Response: NMFS believes that some existing FMPs may be found to need little or no modification in order to be found to be consistent with the MSA and NS1 guidelines. In general, these are fisheries where catch limits are established and the fishery is managed so that the limits are not exceeded, and where overfishing is not occurring. NMFS agrees that, in some fisheries, the TAC system currently used may meet the requirements of an ACL. However, there are a wide variety of fisheries that use the term TAC, and while some treat it as a true limit, others treat it simply as a target value on which to base management measures. Therefore, NMFS does not agree that the use of a TAC necessarily means the fishery will comply with the ACL and AM provisions of the MSA. NMFS will have to review specific FMPs or FMP amendments. In addition, upon request of a Council, NMFS can provide input regarding any changes to current processes that might be needed for consistency with the MSA and guidance in the NS1 guidelines.

Regarding the comment about terminology, the preamble to the proposed action provided that Councils could opt to retain existing terminology and explain in a proposed rule how the terminology and approaches to the FMPs are consistent with those set forth in the NS1 guidelines. NMFS has given this issue further consideration and believes that a proposed rule would not be necessary or appropriate. Instead, a Council could explain in a **Federal Register** notice why its terminology and approaches are consistent with the NS1 guidelines.

Comment 7: Some commenters thought that before requiring implementation of a new management system, it should first be demonstrated that the current management system is not effective at preventing overfishing or rebuilding stocks that are overfished, and that a new management system would be more effective. Changing a management system that is effective and responsive would not be productive.

Response: While NMFS understands that current conservation and management measures prevent overfishing in some fisheries, the MSA requires a mechanism for specifying ACLs and AMs in all fisheries, including those that are not currently subject to overfishing, unless an exception applies. There is no exception to the requirement for ACLs and AMs for fisheries where other, non-ACL management measures are preventing overfishing. NMFS is required by the MSRA to implement the new provisions in all FMPs, unless an exception applies, even on those whose current management is preventing overfishing. NMFS believes the guidance provides the tools for Councils to implement ACLs in these fisheries that will continue to prevent overfishing without disrupting successful management approaches. The guidelines provide flexibility to deviate from the specific framework described in the guidelines, if a different approach will meet the statutory requirements and is more appropriate for a specific fishery (*see* § 600.310(h)(3) of the final action).

Comment 8: Some commenters supported the use of ACT to address management uncertainty in the fishery. Others did not support ACTs, and commented that ACTs are not required under the MSA and that inclusion of ACTs in the guidelines creates confusion and complexity. One commenter stated that the proposed guidelines were ''out of line'' with NMFS's mandate and authority provided under the MSA because the guidelines for ACTs and associated control rules completely undermine the clear directive Congress provides in National Standard 1 to achieve optimum yield on an ongoing basis.

Response: The proposed guidelines stressed the importance of addressing scientific and management uncertainty in establishing ACL and AM mechanisms. Scientific uncertainty was addressed in the ABC control rule, and management uncertainty was addressed in the ACT control rule. Use of catch targets associated with catch limits is a well-recognized principle of fishery management. The current NS1 guidelines call for establishment of limits, and targets set sufficiently below the limits so that the limits are not exceeded. The revised guidelines are based on this same principle, but, to incorporate the statutory requirements for ABC and ACLs, are more explicit than the current guidelines. While MSA does not refer to the term ACT, inclusion of the term in the NS1 guidelines is consistent with the Act. The NS1 guidelines are supposed to provide advice on how to address MSA requirements, including how to understand terminology in the Act and how to apply that terminology given the practical realities of fisheries management. In developing the proposed guidelines, NMFS considered a system that used ABC as the limit that should not be exceeded, and that required that ACL be set below the ABC to account for management uncertainty. This had the advantage of minimizing the number of terms, but would result in the ACL having been a target catch level. NMFS decided, that since Congress called for annual catch limits to be set, that the ACL should be considered a true limit—a level not to be exceeded. ACT was the term adopted for the corresponding target value which the fishery is managed toward so that the ACL is not exceeded.

Taking public comment into consideration, NMFS has decided to retain ACTs and ACT control rules in the final guidelines, but believes they are better addressed as AMs for a fishery. One purpose of the AMs is to prevent the ACL from being exceeded. Setting an ACT with consideration of management uncertainty is one way to achieve this, but may not be needed in all cases. In fisheries where monitoring of catch is good and in-season management measures are effective, managers may be able to prevent ACLs from being exceeded through direct monitoring and regulation of the fishery. Therefore, the final guidelines make ACTs optional, but, to prevent ACLs from being exceeded, Councils must adequately address the management uncertainty in their fisheries using the full range of AMs.

NMFS disagrees that ACTs undermine NS1. NS1 requires that conservation and management measures prevent overfishing while achieving, on a continuing basis, the OY. The MSA describes that OY is based on MSY, as reduced based on consideration of several factors. In some cases, the amount of reduction may be zero, but in no case may the OY exceed MSY. Therefore, if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

The amount of fishing mortality that results in overfishing is dictated by the biology of the stock and its environment, and establishes a limit that constrains fisheries management. However, the specification of OY and the conservation and management measures for the fishery are both set by fishery managers. To achieve the dual requirements of NS1, Councils must specify an OY and establish conservation and management measures for the fishery that can achieve the OY without overfishing. The closer that OY is set to MSY, the greater degree of control over harvest is necessary in order to meet both objectives. The choice of conservation and management measures for a fishery incorporates social and economic considerations. For example, a Council may prefer to use effort controls instead of hard quotas to have a year-round fishery without a ''race for fish,'' and to provide higher average prices for the fishermen. However, compared to hard quotas, management with effort controls gives more uncertainty in the actual amount of fish that will be caught. Because of this increased uncertainty, the OY needs to be reduced from MSY so that overfishing does not occur. Thus the social and economic considerations of the choice of management measures should be considered in setting the OY.

In cases where the conservation and management measures for a fishery are not capable of achieving OY without overfishing occurring, overfishing must be ended even if it means the OY is not achieved in the short-term. Overfishing a stock in the short term to achieve OY jeopardizes the capacity of the stock to produce OY in the long term, and thus cannot be sustained. Preventing overfishing in a fishery on an annual basis is important to ensure that a fishery can continue to achieve OY on a continuing basis. The specification of OY and the associated conservation and management measures need to be improved so that OY can be achieved without overfishing occurring. In a fishery where the NS1 objectives are fully met, the OY specification will adequately account for the management uncertainty in the associated conservation and management measures. Overfishing will not occur, and the OY will be achieved.

Comment 9: Commenters stated that the designation of the Virgin Islands Coral Reef Monument was not being taken into account in the Caribbean Council's FMPs.

Response: NMFS does not believe any revision of the NS1 guidelines is necessary in response to this comment but will forward the comment to the Council for its consideration.

Comment 10: NMFS received comments in support of the flexibility given to councils to manage stocks for which ACLs are not a good fit, such as management of Endangered Species Act listed species, stocks with unusual life history characteristics, and aquaculture operations. Commenters noted that Pacific salmon should be treated with flexibility under the NS1 guidelines, because they are managed to annual escapement levels that are functionally equivalent to ACLs, and there are accountability, review, and oversight measures in the fishery.

Response: NMFS agrees that flexibility is needed for certain management situations, and clarifies that § 600.310(h)(3) provides for flexibility in application of the NS1 guidelines but is not an exception from requirements of MSA section 303(a)(15) or other sections.

Comment 11: Congress did not mandate that all fisheries be managed by hard quotas, and so NMFS should include guidance for the continuation of successful, non-quota management systems, such as that used to successfully manage the Atlantic sea scallop fishery.

Response: NMFS agrees that the conservation and management measures for a fishery are not required to be ''hard quotas.'' However, NMFS believes that the ACL was intended by Congress to be a limit on annual catch. Therefore, conservation and management measures must be implemented so that the ACL is not exceeded, and that accountability measures must apply whenever the ACL is exceeded. Congress did not exempt any fisheries from the ACL requirement on the basis that current management was successful. If the current conservation and management measures are effective in controlling harvest of sea scallops such that the ACL is not regularly exceeded, the ACL would have little effect on the fishery. If the current management measures are not effective in keeping catch from exceeding the ACL, then consistent with the ACL requirement in the MSA, additional management action should be taken to prevent overfishing.

Comment 12: The summary list of items to be included in FMPs should be ''as appropriate'' (see § 600.310(c) of the final action).

Response: No change was made. NMFS believes that if any item does not apply to a particular fishery, the Council can explain why it is not included, but believes that ''as appropriate'' would create further confusion as there is no clear definition of what appropriate means in this context.

Comment 13: The list of items to include in FMPs related to NS1 is extremely long, and it is unclear whether each item on the list needs to be addressed for all stocks that are ''in the fishery,'' which is a very broad term. Including the extra information is unlikely to materially improve management.

Response: As a default, all the stocks or stock complexes in an FMP are considered ''in the fishery'' (see § 600.310(d)(1)), unless they are reclassified as ecosystem component stocks through an FMP amendment process. Further explanation of these classifications is provided below in other comments and responses. The benefit of including this list of items is to provide transparency in how the NS1 guidelines are being met. In addition, Councils should already have some of the items in their FMPs (ex: MSY, status determination criteria (SDC), and OY). The other items are new requirements of the MSA or a logical extension of the MSA.

Comment 14: NMFS received several comments both supporting and opposing the proposed ''stocks in a fishery'' and ''ecosystem component species'' (EC) classifications of stocks in a FMP. Comments included: EC species are not provided under the MSA and should not be required in FMPs; EC species classification is needed but may lead to duplication in different FMPs; support for the distinction between ''stocks in a fishery'' and EC species; and clarify how data collection only species should be classified.

Response: NMFS provided language for classifying stocks in a FMP into two categories: (1) ''Stocks in the fishery'' and (2) ''ecosystem component species.'' MSA requires that Councils develop ACLs for each of their managed fisheries (see MSA sections 302(h)(6) and 303(a)(15)), but Councils have had, and continue to have, considerable discretion in defining the ''fishery'' under their FMPs. As a result, some FMPs include one or a few stocks (*e.g.* , Bluefish FMP, Dolphin-Wahoo FMP) that have been traditionally managed for OY, whereas others have begun including hundreds of species (e.g., Coral Reef Ecosystem of the Western Pacific Region FMP) in an effort to incorporate ecosystem approaches to management.

While EC species are not explicitly provided in the MSA, in the MSRA, Congress acknowledged that certain Councils have made significant progress in integrating ecosystem considerations, and also included new provisions to support such efforts (*e.g.*, MSA section 303(b)(12)). As noted in the preamble of this action, NMFS wants to continue to encourage Councils to incorporate ecosystem considerations, and having classifications for ''stocks in the fishery'' versus ''ecosystem component species'' could be helpful in this regard. Thus, the final guidelines do not require Councils or the Secretary to change which species are or are not included in FMPs, nor do the guidelines require FMPs to incorporate the EC species classification. NMFS has revised the final guidelines to state explicitly that Councils or the Secretary may—but are not required to—use an EC species classification.

In developing the text regarding EC species and ''stocks in the fishery,'' NMFS examined what existing FMPs are already doing and utilized that in its description of these classifications. For example, based on existing FMPs, the guidelines envision that species included for data collection and other monitoring purposes could be considered EC species (assuming they meet the criteria described in § 600.310(d)(5)(i)). However, such species could also be ''stocks in the fishery,'' as described under the NS3 guidelines (§ 600.320(d)(2)). NMFS recognizes the desire for greater specificity regarding exactly which species could or could not be considered EC species, but does not believe that further detail in the guidelines could clarify things definitively. Determining whether the EC category is appropriate requires a specific look at stocks or stock complexes in light of the general EC species description provided in the NS1 guidelines as well as the broader mandates and requirements of the MSA. If Councils decide that they want to explore potential use of the EC species classification, NMFS will work closely with them to consider whether such a classification is appropriate.

Comment 15: NMFS received several comments regarding the level of interaction that would be appropriate for the EC classification. Comments included: *de minimis* levels of catch should be defined to clarify the difference between ''stocks in a fishery'' and EC species; all stocks that interact with a fishery should be included as ''stocks in a fishery''; requiring non-target stocks to be considered part of the fishery as written supersedes NS9; guidelines should clarify that EC species do not have significant interaction with the fishery; and, bycatch species should not be included as ''stocks in a fishery.''

Response: NMFS is revising the final guidelines to clarify preliminary factors to be taken into account when considering a species for possible classification as an EC species. Such factors include that the species should: (1) Be a non-target species or non-target stock; (2) not be determined to be subject to overfishing, approaching overfished, or overfished; (3) not likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (4) not generally retained for sale or personal use. Factors (2) and (3) are more relevant to species that are currently listed in FMPs and that have specified SDCs. With regard to factor (4), the final guidelines add new language in § 600.310(d)(5)(i)(D)—''not generally retained for sale or personal use''—in lieu of ''*de minimis* levels of catch'' and clarify that occasional retention of a species would not, in itself, preclude consideration of a species in the EC classification. The NS1 guidelines provide general factors to be considered, as well as some examples of possible reasons for using the EC category. However, the decision of whether to use an EC classification requires consideration of the specific fishery and a determination that the EC classification will be consistent with conservation and management requirements of the MSA.

Under the MSA, a Council prepares and submits FMPs for each fishery under its authority that requires conservation and management, and there is considerable latitude in the definition of the fishery under different FMPs. The definition of ''fishery'' is broad, and could include one or more stocks of fish treated as a unit for different purposes, as well as fishing for such stock (see MSA section 3(13)(B)). While some comments encouraged inclusion of all species that might interact with a fishery, all bycatch species, or all species for which there may be ''fishing'' as defined in MSA section 3(13)(B), NMFS does not believe that MSA mandates such a result. MSA does not compel FMPs to include particular stocks or stock complexes, but authorizes the Councils or the Secretary to make the determination of what the conservation and management needs are and how best to address them. Taking the broader approaches noted above would interfere with this discretion and also could result in overlapping or duplicative conservation and management regimes in multiple FMPs under different Council jurisdictions. As National Standard 6 requires that conservation and management measures, where practicable, minimize costs and avoid unnecessary duplication, NMFS believes that Councils should retain the discretion to determine which fisheries require specific conservation and management measures. With regard to bycatch, regardless of whether a species is identified as part of a fishery or not, National Standard 9 requires that FMPs, to the extent practicable, minimize bycatch and to the extent it cannot be avoided minimize bycatch mortality. Additional protections are afforded to some species under the Endangered Species Act, regardless of whether they are listed as stocks in a fishery. Further, as a scientific matter, NMFS disagrees that every bycatch species would require conservation and management measures to protect the species from becoming overfished, because some bycatch species exhibit high productivity levels (*e.g.*, mature early) and low susceptibilities to fishery (*e.g.*, rarely captured) that preclude them from being biologically harmed or depleted by particular fisheries.

Comment 16: NMFS received several comments requesting that the guidelines include a description of vulnerability and how it should be determined, since it is referenced throughout the guidelines.

Response: NMFS agrees, and has added § 600.310(d)(10) to the final action, to define vulnerability. In general, to determine the vulnerability of a species/stock becoming overfished, NMFS suggests using quantitative estimates of biomass and fishing rates where possible; however, when data are lacking, qualitative estimates can be used. NMFS is currently developing a qualitative methodology for evaluating the productivity and susceptibility of a stock to determine its vulnerability to the fishery, and anticipates the methodology to be finalized by February 2009. The methodology is based on the productivity-susceptibility analysis (PSA) developed by Stobutzki *et al.* (2001), which was suggested by many commenters. Stocks that have low susceptibilities (*e.g.*, rarely interact with the fishery, no indirect impacts to habitat, etc.) and high productivities (*e.g.*, mature at an early age, highly fecund, etc.) are considered to have a low vulnerability of becoming overfished, while stocks that have low productivities and high susceptibilities to the fishery are considered highly vulnerable to becoming overfished.

Comment 17: Some commenters noted that the EC classification could be used to avoid reference point specification.

Response: NMFS believes that the guidelines provide mechanisms to address this issue. As a default, NMFS presumes that all stocks or stock complexes that Councils or the Secretary decided to include in FMPs are ''stocks in the fishery'' that need ACL mechanisms and AMs and biological reference points. Whether it would be appropriate to include species in the EC category would require consideration of whether such action was consistent with the NS1 guidelines as well as the MSA as a whole. If a Council or the Secretary wishes to add or reclassify stocks, a FMP amendment would be required, which documents rationale for the decision. However, the guidelines have been modified to note that EC species should be monitored to the extent that any new pertinent scientific information becomes available (*e.g.*, catch trends, vulnerability, etc.) to determine if the stock should be reclassified.

Comment 18: With regard to ecological, economic, and social (EES) factors related to OY, some commenters requested more specific guidance in incorporating the factors, and others commented that accounting for the factors is too time consuming. Other commenters expressed support for the reference to forage fish species and suggested including text on maximum economic yield and fish health.

Response: The NS1 guidelines generally describe OY as the long-term average amount of desired yield from a stock, stock complex, or fishery. OY is prescribed on the basis of MSY as reduced by EES factors (MSA section 3(33)). The NS1 guidelines set forth examples of different considerations for each factor, and NMFS believes the examples provide sufficient guidance on EES factors. NMFS has not made substantive changes from the proposed action, but has clarified that FMPs must address each factor but not necessarily each example.

Comment 19: NMFS received several comments in support of using stock complexes as a management tool in data poor situations and other comments that expressed concern about the use of stock complexes and indicator species. Comments included: stock complexes should only be used when sufficient data are lacking to generate species-specific SDCs and related reference points; there is little ecological basis for using indicator species to set ACLs for stock complexes (see Shertzer and Williams (2008)) as stocks within a stock complex exhibit different susceptibilities to the fishery; if used, stock complexes should be managed using the weakest or most vulnerable stock within the complex as a precautionary approach to management; it would be helpful to have examples of how a data poor stock could be periodically examined to determine if the stock is overfished or subject to overfishing.

Response: NMFS agrees that where possible Councils should generate stock-specific SDCs and related reference points for stocks in fishery; however, there are other circumstances in which stock complex management could be used. NMFS notes in § 600.310(d)(8) of the final action that stocks may be grouped into complexes for various reasons, including: where stocks in a multispecies fishery cannot be targeted independent of one another and MSY can not be defined on a stock-by-stock basis (see § 600.310(e)(1)(iii) of the final action); where there is insufficient data to measure their status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch.

NMFS believes that the guidelines sufficiently addressed the issue that stock complexes should be managed using the most vulnerable stock within the complex. In § 600.310(d)(9) of the final action the guidelines note that ''if the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery.'' Additionally, these guidelines address the concerns of Shertzer and Williams (2008), by recommending that both productivity and susceptibility of the stock (*i.e.*, vulnerability to the fishery) is considered when creating or re-organizing stock complexes.

Lastly, NMFS agrees and has modified the phrase in § 600.310(d)(9) of the proposed action ''Although the indicator stock(s) are used to evaluate the status of the complex, individual stocks within complexes should be examined periodically using available quantitative or qualitative information to evaluate whether a stock has become overfished or may be subject to overfishing'' to provide examples of quantitative or qualitative analysis.

Comment 20: NMFS received comments regarding the process for specifying the ACL for either a stock complex or for a single indicator species. The commenters were concerned that the proper data will not be utilized to determine whether the ACL should be set for the stock complex or for single indicator species. They feel that the use of single indicator species would not represent the stock's abundance, especially in the St. Thomas/St. John and St. Croix fisheries.

Response: NMFS understands the concern, but does not believe the guidelines need to be revised. NMFS will refer this comment to the Council.

Comment 21: NMFS received comments stating that the final action should clarify how SDCs and ACLs should be applied to stocks that are targeted in one fishery and bycatch in another, as well as circumstances where the stock is targeted by two or more FMPs that are managed by different regional councils.

Response: NMFS believes that the guidelines sufficiently addressed this issue in § 600.310(d)(7) of the final action, which notes ''* * * Councils should choose which FMP will be the primary FMP in which management objectives, SDC, the stock's overall ACL and other reference points for the stock are established.'' NMFS believes that the Councils should continue to have the discretion to make such determinations. NMFS, however, suggests that the primary FMP should usually be the FMP under which the stock is targeted. In instances where the stock is targeted in two or more FMPs (*e.g.*, managed by two or more Councils), Councils should work together to determine which FMP is the primary.

Comment 22: Several commenters requested further clarification on how prohibited species should be classified under the proposed classification scheme (see § 600.310(d)) because they felt it was unclear whether a species for which directed catch and retention is prohibited would be classified as ''in the fishery'' or as an ''ecosystem component''.

Response: NMFS believes that the information in § 600.310(d) provides a sufficient framework in which decisions can be made about how to classify a prohibited species under an FMP. Prohibition on directed catch and/or retention can be applied to either a stock that is ''in the fishery'' or an ''ecosystem component'' species. Managers should consider the classification scheme outlined in § 600.310(d) of the final action as well as MSA conservation and management requirements generally. If a stock contains one of the ''in the fishery'' characteristics, then it belongs ''in the fishery'', regardless of the management tools that will be applied to it (*e.g.*, prohibition, bag limits, quotas, seasons, etc.). Also, if the intent is to prohibit directed fishing and retention throughout the exclusive economic zone (EEZ) for which a Council has jurisdiction, then the stock would, most likely, be identified in an FMP as ''in the fishery'' rather than as an ecosystem component of one particular FMP.

Comment 23: Several commenters asked at what level an ACL would be specified for a species for which directed catch and retention is prohibited. Setting the ACL at zero would not be logical because if even one was caught incidentally then AMs would be triggered. Setting it higher would also not be logical because the point is to ensure little to no catch of the stock.

Response: Prohibiting retention is a management measure to constrain the catch to a minimal amount. If listed as a stock in the fishery, the reference points for the species, such as OFL and ABC, should be set based on the MSY for the stock, or, if ESA listed, would be set according to the associated ESA consultation's incidental take statement, regardless of the management approach used. The ACL may not exceed the ABC, but should be set at a level so that the mortality resulting from catch and discard is less than the ACL.

Comment 24: NMFS received a comment stating that the specification of MSY must incorporate risk, be based on gear selectivity and support a healthy, functioning ecosystem. The commenter supported revisions to § 600.310(e)(1) of the proposed action but suggested that it should be strengthened to address ecosystem principles. The commenter cited NOAA Tech Memo NMFS–F/SPO–40 in contending that the concept of MSY contains inherent risks that must be addressed in establishing reference points. Other commenters stated that: Councils establish management measures with high probabilities of success (*e.g.*, 80 percent); ''fishery technological characteristics'' should be re-evaluated every two years; and MSY values normally equate to fishing down a population to forty percent of historic abundance and this may not be consistent with ecosystem based management.

Response: NMFS agrees that ecological conditions and ecosystem factors should be taken into account when specifying MSY and has added additional language to § 600.310(e)(1)(iv) of the final action to highlight this point. Such factors might include establishing a higher target level of biomass than normally associated with the specific stock's B_{msy}. In addition, ecological conditions not directly accounted for in the specification of MSY can be among the ecological factors considered when setting OY below MSY. Regarding the comment about establishing management measures with a high probability of success, this is addressed in comment #63. NMFS does not believe that the NS1 guidelines need to be revised to require that fishery technological characteristics be evaluated every 2 years; such characteristics would be routinely updated with each stock assessment. The MSA bases management of fishery resources on MSY, but provides that OY can be reduced from MSY for ecological factors. NMFS believes the guidelines are consistent with the MSA and allow Councils to implement ecosystem approaches to management.

Comment 25: Several comments requested the guidelines state that specification of reference points should not be required for a stock ''in the fishery'' if its directed catch and retention is prohibited because managers applied the prohibition in an effort to prevent overfishing.

Response: Prohibition of retention does not necessarily mean that overfishing is prevented. Even though the species cannot be retained, the level of fishing mortality may still result in overfishing. Many stocks for which prohibitions are currently in place are considered data-poor. NMFS acknowledges that specifying reference points and AMs will be a challenge for such stocks, but reiterates the requirement to establish ACLs and AMs for all managed fisheries, unless they fall under the two statutory exceptions (see § 600.310(h)(2) of the final action), and also the need to take into consideration best scientific information available per National Standard 2.

Comment 26: NMFS received comments voicing a concern about the NMFS process of determining the overfishing status of a fishery, because fishery management measures have been implemented to end overfishing, but stocks are still listed as subject to overfishing and require ACLs by 2010. The commenters felt that several species under the Caribbean Fishery Management Council's protection should currently be removed from the overfished species list.

Response: NMFS agrees that this is an important issue. Due to the process inherent in determining the status of a stock there is inevitably a lag time between implementation of management measures and a new assessment of the stock's status under those measures. NMFS is required by the MSA to establish new requirements to end and prevent overfishing through the use of ACLs and AMs. The fisheries subject to overfishing, including several in the Caribbean, are required to have ACLs by 2010, and all other fisheries must have ACLs by 2011. The Council's Comprehensive Amendment that implemented the Sustainable Fisheries Act in 2006 included measures designed to end overfishing. Although these measures may have ameliorated fishing pressure for some fishery resources in the U.S. Virgin Islands, the Council will need to evaluate the existing fishery management measures to determine whether they are sufficient to meet the new statutory requirements for ACLs and AMs.

Comment 27: Several commenters stated that NMFS should not include the OFL as the basis for overfishing SDC. Specific comments included: (1) The MSA does not define or require OFL, so NMFS should not use it in the guidelines; (2) catch-based SDC are inconsistent with the Magnuson-Stevens Act intent and SDC should only be based on the fishing mortality rate as it relates to a stock or stock complex's capacity to achieve MSY on a continual basis; (3) the Magnuson-Stevens Act does not require use of the long term average OFL as MSY; (4) NMFS increases the risk of overfishing when theoretical catch estimates or a constant fishing mortality rate (F) are used to manage a fishery especially when a retrospective pattern exists in a stock or stock complex.

Response: The term, OFL, is not defined in the MSA. However, OFL is directly based on requirements of the MSA, including the concept of MSY, and the requirement to prevent overfishing. NMFS does not believe that lack of a definition in the MSA precludes definition and use of OFL in order to meet the objectives of the MSA. The MSA defines overfishing as a rate or level of fishing mortality that jeopardizes the capacity of the stock to produce MSY. This mortality rate is defined by NMFS as the MFMT. The OFL for a year is calculated from the MFMT and the best estimate of biomass for a stock in that year, and thus is simply the MFMT converted into an amount of fish. The OFL is an annual level of catch that corresponds directly to the MFMT, and is the best estimate of the catch level above which overfishing is occurring. OFL is in terms of catch, and thus is in the same units as ABC and ACL. NMFS believes, therefore, that comparing catch to OFL is a valid basis for determining if overfishing has occurred that year. The relationship of MSY to OFL is that MSY is the maximum yield that the stock can provide, in the long term, while OFL is an annual estimate of the amount of catch above which overfishing is occurring. The annual OFL varies above and below the MSY level depending on fluctuations in stock size. Since both MSY and OFL are related to the highest fishing mortality rate that will not result in overfishing, it is expected that the long-term average of OFLs would equate to MSY, provided that the stock abundance is high enough to support MSY.

The NS1 guidelines give the Councils flexibility to determine if overfishing occurs by using either MFMT (F > MFMT) or actual annual catch (catch > OFL) as the criteria for overfishing determinations. There are advantages and disadvantages of using either measure. The advantages of using OFL as a SDC are that catch can be easily understood by constituents, a determination can be made as soon as catch totals are available, and there is no retrospective problem with setting the SDC itself. Use of OFL might not be appropriate for stocks with highly variable recruitment that can not be predicted and therefore incorporated into the forecast of stock condition on which OFL is based. The advantage of using MFMT to determine if overfishing is occurring is because F is based on a stock assessment analyzing the past performance of the fishery. This means that the MFMT method is less sensitive than the OFL method to recent fluctuations in recruitment. However, F cannot not be calculated until an assessment has been updated, which may lag the fishery by several years. Therefore, a status determination based on MFMT could be less current than a determination based on OFL and catch, and reflects past, rather than current, fishery performance. Also, if there is a retrospective pattern in the assessment, then the hindsight estimate of F for a particular year used for the SDC will be different than the forecast estimate of stock condition used when setting target catch levels and management measures for that same year. The choice of SDC for a stock should consider things like the frequency of stock assessments, the ability to forecast future stock size, and any known retrospective patterns in the assessment. If the SDC are appropriately chosen, NMFS does not believe that one method necessarily presents more risk that overfishing will occur.

Comment 28: NMFS received one comment which proposed that instead of being required to choose between OFL or MFMT as the SDC, that Councils should have the flexibility to use both. The comment implied that this would allow Councils to use MFMT as the SDC in years in which there is an assessment and OFL in years in which there is not an assessment.

Response: The NS1 guidelines require documentation for the rationale a Council uses to select the SDC within the FMP including defining overfishing status in terms of the MFMT (*i.e.*, fishing mortality rate) or OFL (*i.e.*, annual total catch) in such a way that overfishing can be monitored and determined on an annual basis. A Council could develop SDC based on both criteria, if sufficient rationale is provided.

Comment 29: NMFS received two comments in opposition to the ''overfished'' definition used by NMFS in the proposed rule. They point out that the current overfished definition could include stocks that are ''depleted'' due to changing environmental conditions not caused by fishing pressure. They propose that NMFS should revise the definition of ''overfished'' and create a ''depleted'' category for stocks that have declined below the minimum stock size threshold (MSST) due to changing environmental conditions.

Response: The overfished definition used by NMFS is consistent with the MSA. NMFS acknowledges that factors other than fishing mortality can reduce stock size below the MSST but NMFS believes the definition of overfished should not be altered. For stocks in a FMP, the MSA requires the Councils to rebuild the stock to a level consistent with producing the MSY regardless of the contributing factors. In most cases, the variation in relative contribution of environmental and fishing factors from year to year in reducing stock abundance is not known. When specifying SDC the Council is required to provide an analysis of how the SDC were chosen and how they relate to the reproductive potential of the stock. Specifically, the MSST should be expressed in terms of reproductive potential or spawning biomass. Furthermore, the stock assessment process can adjust the B_{msy} estimates and associated SDC due to environmental and ecological factors or changes in the estimates of reproductive potential, size/age at maturity, or other biological parameters.

Comment 30: Several comments suggested that NMFS should strike § 600.310(e)(2)(iii)(B) from the proposed action as it contradicts § 600.310(e)(2)(iii)(A) and could increase fishing pressure on a depleted stock by attributing low stock abundance to environmental conditions. Commenters criticized the requirement at § 600.310(e)(2)(iii)(B) that Councils ''must'' take action to modify SDC, and stated that there is little scientific evidence to show linkages between stock size and environmental conditions (citing to Restrepo *et al.* 1998 and NMFS. 2000. Endangered Species Act—Section 7 Consultation Biological Opinion and Incidental Take Statement). Commenters asserted that there is no statutory basis for this provision in the MSA and the legal standard for the word ''affect'' is vague and inadequate for ending overfishing. The comments stated that, in a time of anthropogenic climate change, stock dynamics are likely to change and by establishing this provision in the final action NMFS will undermine the statute's mandate to end overfishing. Commenters asserted that fisheries managers have and will respecify SDC to justify circumventing rebuilding targets, and the final guidelines should establish a high burden of proof to modify SDC due to changing environmental conditions or ''regime change'' (citing Fritz & Hinckley 2005).

Response: Section 600.310(e)(2)(iii) of this final action is essentially the same as text at § 600.310(d)(4) in the current NS1 guidelines, except for clarifications noted below. There is no change in the usage of ''must'' between the current guidance and this final NS1 guidance at § 600.310(e)(2)(iii). NMFS believes that the requirement of NS2, that conservation and management measures be based on the best available science, applies to the establishment of SDC. Therefore, in cases where changing environmental conditions alter the long-term reproductive potential of a stock, the SDC must be modified. As stocks and stock complexes are routinely assessed, long-term trends are updated with current environmental, ecological, and biological data to estimate SDCs. NMFS allows for flexibility in these provisions to account for variability in both environmental changes and variation in a stock's biological reaction to the environment.

The guidelines include language requiring a high standard for changing SDC that is consistent with NMFS Technical Guidance (Restrepo *et al.* 1998). NMFS outlines the relationship of SDC to environmental change in both the short and long-term in

§ 600.310(e)(2)(iii) of the final action. Total mortality of fish stocks includes many factors other than fishing mortality. Short-term environmental changes may alter the size of a stock or complex, for instance, by episodic recruitment failures, but these events are not likely to change the reproductive biology or reproductive potential of the stock over the long-term. In this case the Council should not change the SDC. Other environmental changes, such as some changes in ocean conditions, can alter both a stock's short-term size, and alter long-term reproductive biology. In such instances the Councils are required to respecify the SDC based on the best available science and document how the changes in the SDC relate to reproductive potential. In all cases, fishing mortality must be controlled so that overfishing does not occur. NMFS notes that, depending on the impact of the environmental change on the stock, failure to respecify SDC could result in overfishing, or could result in failure to achieve OY. In both cases, the fishery would not meet the requirements of NS1.

One change from § 600.310(d)(4) of the current NS1 guidelines occurs in § 600.310(e)(2)(iii)(A) of this final action. NMFS clarified that SDC ''should not'' rather than ''need not'' be changed if the long-term reproductive potential of a stock has not been affected by a changing environment. NMFS feels that this is consistent with setting a high standard for changing the SDC due to environmental changes. In addition, this action changes the phrase ''long-term productive capacity'' from the current NS1 guidance to ''long-term reproductive potential.'' NMFS believes the latter phrase is clearer and more accurately reflects the language in MSA section 303(a)(10).

Any changes to SDC are subject to Secretarial approval (§ 600.310(e)(2)(iv) of the final action), and the NS1 guidelines set a high standard for respecification of SDC due to environmental change. The Council must utilize the best available science, provide adequate rationale, and provide a basis for measuring the status of the stock against these criteria, and the SDC must be consistent with § 600.310(e)(2)(iii) of the final action. If manmade environmental changes are partially responsible for the overfished condition, the Council should recommend restoration of habitat and ameliorative programs in addition to curtailing fishing mortality.

Comment 31: NMFS received several comments that state that by requiring reference points to be point estimates NMFS is not acknowledging the uncertainty inherent in fishery management science. The comments expressed that the best way to incorporate uncertainty was to express SDCs as ranges and not point estimates.

Response: NMFS believes that uncertainty in SDC, OFL, and other fishing level quantities is best dealt with by fully analyzing the probability that overfishing will occur and that the stock might decline into an overfished condition, but we recognize that such a full analysis is not possible in many data-limited situations. When using a probability based approach, the distribution of probabilities includes a point estimate and it extends along a range. A probability based approach is already used in many rebuilding plans, for example, what fishing level will provide at least a 70% chance that the stock will be rebuilt in 10 years. NMFS scientists are working on a technical document that will describe some of the currently available methods to do such calculations, as well as some proxy approaches that could be used in situations where available data and methods do not allow calculation of the probability distributions.

Comment 32: NMFS received a number of comments regarding the proposed description of the relationship between ACT and OY—that achieving the ACT on an annual basis would, over time, equate to the OY. Comments requested more clarification, or did not agree with the described ACT–OY relationship.

Response: NMFS has revised the final action to remove the requirement that ACT be established, and instead discussed how targets, including ACT, function within the system of AMs to prevent the ACL from being exceeded. NMFS has also removed the discussion about the relationship of ACT to OY, based on the comments received. The full range of conservation and management measures for a fishery, which include the ACL and AM provisions, are required to achieve the OY for the fishery on a continuing basis. NMFS interprets the phrase ''achieving, on a continuing basis, the optimum yield for each fishery'' to mean producing from each stock or stock complex or fishery a long-term series of catches such that the average catch is equal to OY, overfishing is prevented, the long-term average biomass is near or above B_{msy}, and overfished stocks and stock complexes are rebuilt consistent with timing and other requirements of section 304(e)(4) of the MSA and § 600.310(j) of the final NS1 guidelines. NMFS notes that for fisheries where stock abundance is below the level that can produce the OY without the fishing mortality rate exceeding the MFMT, the annual yield will be less than the long-term OY level. In the case of an overfished fishery, ''optimum'' with respect to yield from a fishery means providing for rebuilding to a level consistent with producing the MSY in such fishery. When stock abundance is above $B_{msy,}$ a constant fishing mortality control rule may allow the annual catch to exceed the long-term average OY without overfishing occurring, but frequent stock assessments need to be conducted to update the level of stock abundance.

Comment 33: One commenter stated that ''OY equates with the acceptable biological catch (''ABC''), which in turn is the level at which ACL should be set.'' Another commenter stated that, in specifying ACLs, a Council should not exceed MSY, because MSY—as opposed to ABC—is the ''fishing level recommendation'' that should not be exceeded per MSA 302(h)(6).

Response: MSA includes the terms ''fishing level recommendations,'' ''acceptable biological catch,'' and ''annual catch limits'' but does not define them. As such, NMFS has considered how to interpret these provisions in light of the statutory text and taking into consideration public comment during scoping and in response to the proposed NS1 guidelines. NMFS believes that ABC refers to a level of ''catch'' that is ''acceptable'' given the ''biological'' characteristics of the stock or stock complex. As such, OY does not equate with ABC. The specification of OY is required to consider a variety of factors, including social and economic factors, and the protection of marine ecosystems, which are not part of the ABC concept. The Councils determine the ACL, which may not exceed the fishing level recommendations of its science advisors. Of the several required SSC recommendations (MSA 302(g)(1)(B)), the ABC is most directly applicable as the constraint on the Council's ACL. Although MSY and ABC are both derived from a control rule, the ABC is the appropriate constraint on ACL because it is the annualized result of applying that control rule (thus is responsive to current stock abundance) whereas the MSY is the expected long-term average from a control rule. The Council should generally set the ACL lower than the ABC to take into account other factors related to preventing overfishing or achieving OY, or it may set the ACL equal to the ABC and take these additional factors into account when setting an ACT below the ACL.

Comment 34: Several commenters stated that NMFS's definition framework for ACLs contains buffers that are not required by the Magnuson-Stevens Act and reduce or prevent the likelihood that OY can be achieved for a stock (Reducing a stock's OFL for scientific and management uncertainty, and OY factors results in too many reductions and makes it too difficult to achieve OY).

Response: NMFS believes that fisheries managers cannot consistently meet the requirements of the MSA to prevent overfishing and achieve, on a continuing basis, OY unless they address scientific and management uncertainty. The reductions in fishing levels that may be necessary in order to prevent overfishing should be only the amount necessary to achieve the results mandated by the MSA. Properly applied, the system described in the guidelines does not result in ''too many deductions,'' but rather, sets forth an approach that will prevent overfishing, achieve on a continuing basis OY, and incorporate sufficient flexibility so that the guidelines can be applied in different fisheries.

Comment 35: Several commenters suggested that NMFS clarify language to ensure that all aspects of fishing mortality (e.g., dead discards and post-release mortality) are accounted for in the estimates of ABC or when setting the ACL, and that all catch is counted against OY. NMFS also received comments that accounting for bycatch mortality in data poor situations should not be required.

Response: NMFS agrees that all sources of fishing mortality, including dead discards and post-release mortality from recreational fisheries must be accounted for, but believes that language in § 600.310(e)(3)(v)(C), (f)(2)(i) and (f)(3)(i) in both the proposed and final action sufficiently explains that catch includes fish that are retained for any purposes, mortality of fish that have been discarded, allocations for scientific research, and mortality from any other fishing activity. NMFS, however, disagrees that, when bycatch data is lacking, managers could ignore this known source of fishing mortality. Ignoring a known source of fishing mortality because data are lacking leads to underestimating catch. Unless this is factored in—for instance, as increased uncertainty leading to more conservative ABC and appropriate AMs (including ACT control rules)—overfishing could occur. NMFS's National Bycatch Report (due to be published in late 2008 or early 2009) provides comprehensive estimates of bycatch of fish, marine mammals, and non-marine mammal protected resources in major U.S. commercial fisheries. For instances where the National Bycatch Report does not provide bycatch data, NMFS suggests developing proxies based on National Bycatch Report bycatch ratios in similar fisheries until better data are available. For more information on the National Bycatch Report, *see http://www.st.nmfs.noaa.gov/st4/nop/Outreach/NBR_Factsheet_Final.pdf.* However, the decision about the best methodology for estimating bycatch should be made by the Council in consultation with its SSC, considering the best available scientific information.

Comment 36: One commenter requested clearer guidance for the specification of ABC and ultimately an ACL in cases where scientific uncertainty ''overwhelms'' the SSC's ability to make a valid ABC recommendation.

Response: The NS1 Guidelines recognize that precise quantitative assessments are not available for all stocks and some stocks do not have sufficient data for any assessment beyond an accounting of historical catch. It remains important to prevent overfishing in these situations, even though the exact level of catch that causes overfishing is not known. The overall guidance is that when stocks have limited information about their potential yield, harvest rates need to be moderated until such information can be obtained. Possible approaches include setting the ABC as 75% of recent average catch; see NMFS' Technical Guidance in Restrepo *et al.* (1998). NMFS is currently working on a report on control rules that will provide additional examples of possible approaches for data-limited situations as well as approaches that can use a better set of information.

Comment 37: ABC and ACT control rules should be revised to require consideration of life history characteristics (e.g., productivity, geographic range, habitat preferences, etc.) of a stock when setting control rules or catch limits.

Response: NMFS agrees that the productivity of stock, as well as the stocks susceptibility to the fishery should be considered when developing the ABC control rule. NMFS refers to these factors together as the vulnerability of stock, which is defined in § 600.310(d)(10) of the final action. The ABC control rule (see § 600.310(f)(4) of the final action) is based on scientific knowledge about the stock, which includes a stock's vulnerability to the fishery.

Regarding the ACT control rule, the final guidelines do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. When used, ACT control rules address management uncertainty, which is not related to the productivity of the stock. As noted in § 600.310(g)(3) of the final action, however, a Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing. In considering the performance standard, a Council should consider if the vulnerability of the stock has been accounted for in the ABC control rule, so as not to double count this type of uncertainty and provide unduly cautious management advice.

Comment 38: NMFS received comments requesting that text in § 600.310(f) of the proposed action be modified to clarify that ABC may not equal or exceed OFL; Councils are required to establish ABC control rules; the ABC and ACT control rules must stipulate the stock level at which fishing will be prohibited; and ACL cannot equal or exceed the ABC.

Response: NMFS does not agree that the guidelines should prohibit ABC from being equal to OFL, or ACL from being equal to ABC. NMFS has added text to the guidelines (§ 600.310(f)(3) and (f)(4)) to clarify that it believes that ABC should be reduced from OFL in most cases, and that if a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. NMFS agrees that an ABC control rule is required. NMFS does not agree, however, that the ABC and ACT control rules must stipulate the level at which fishing is prohibited. Here it is important to distinguish between setting an annual level of catch equal to zero because the stock biomass is low, from prohibiting landings for the remainder of a fishing year because the ACL has already been achieved. For the first type of prohibition, an ABC control rule could stipulate the level at which fishing is prohibited due to low stock biomass, but such a low level of biomass is likely to be below the MSST which will invoke development of a rebuilding plan with associated modification of the ABC control rule for the duration of the plan. NMFS, however, disagrees that the ACT control rule should have a similar stipulation as the primary function of this control rule is to account for management uncertainty and to serve as the target for inseason management actions.

Comment 39: NMFS received several comments that spatial-temporal management of ACLs should be employed as an integral part of effective catch-limit management. The commenters noted that apportioning ACLs by seasons and areas could reduce bycatch, protect sensitive habitats, reduce competition among fishery sectors, avoid localized and serial depletions of stocks, and ensure geographic and seasonal availability of prey to key predators.

Response: NMFS acknowleges that spatial and temporal considerations of fishery removals from a stock can be important. Many fisheries currently incorporate spatial and temporal considerations. However, in the context of NS1, these considerations would be relevant only if the overfishing definition or the OY definition for a stock included spatial or temporal divisions of the stock structure. NMFS believes the guidelines give Councils flexibility to consider spatial and temporal issues in establishing ACLs for a stock, and does not agree that the NS1 guidelines need to specifically address this issue. Apportioning ACLs by seasons and areas could be considered as Councils develop conservation and management measures for a fishery to meet the full range of MSA requirements, including the NS for basing conservation and management measures upon the best scientific information available (NS2); taking into account the importance of fishery resources to fishing communities to provide sustained participation and minimize adverse economic impacts (NS8); minimizing bycatch (NS9); and allocating fishing privileges among various U.S. fishermen that are fair and equitable, reasonably calculated, and carried out in such a manner that no particular entity acquires an excessive share of the catch (NS4).

Comment 40: NMFS received several comments about the role of the SSC in specifying ABC. Several commenters stated that the final ABC recommendation should be provided by the SSC (i.e., final peer review process), rather than an additional peer review process. Some commenters expressed concern that both the SSC and peer review process would recommend an ABC, leaving the Council to use the lower of the two recommended ABC values. One comment stated that the SSC should have the discretion to recommend an ABC that is different from the result of the control rule calculation in cases where there was substantial uncertainty or concern relating to the control rule calculated ABC.

Response: NMFS agrees that the SSC should provide the final ABC recommendation to their Council. In the preamble of the proposed NS1 revisions, NMFS acknowledged that the statutory language could be subject to different interpretations (*see* p. 32532 of 73 FR 32526; June 9, 2008). MSA refers to not exceeding fishing level recommendations of ‘‘scientific and statistical committee or peer review process’’ in one place and SSC recommendations for ABC and MSY in another place. Compare MSA sections 302(h)(6) and 302(g)(1)(B). Section 302(g)(1)(E) of the MSA provides that the Secretary and a Council may, but are not required to, establish a peer review process. NMFS feels that the Council should not receive ABC recommendations from two different sources (SSC and peer review). In order to avoid confusion, and in consideration of the increased role of SSCs in the MSA, NMFS believes that the SSC should provide the ABC recommendation and Councils should establish a clear process for receiving the ABC recommendation (as described in § 600.310(f)(3) of this action). The advance notice of proposed rulemaking (ANPR) (73 FR 54132; September 18, 2008) for potential revision of the National Standard 2 Guidelines includes consideration of the relationship between SSCs and peer review processes. NMFS believes the roles of the peer review process and the SSC complement each other. For example, a peer review process may conduct an extensive technical review of the details of each stock assessment. The SSC can then use the assessment document and its peer review, consider unresolved uncertainties, seek consistency with assessment decisions made for other stocks in the region, and arrive at an ABC recommendation. In addition, NMFS agrees that SSCs could provide an ABC recommendation that differed from the result of the ABC control rule calculation based on the full range of scientific information available to the SSC. The SSC would have explain why the recommendation differed from the calculated value. NMFS has added clarifying language into § 600.310(f)(3) of this action.

Comment 41: NMFS received a variety of comments on the role of the SSC and suggestions that the SSC role should be clarified. Comments included: There should be a mandatory peer review of significant SSC recommendations; the SSC should be directed to draw information and recommendations from the broadest possible range of scientific opinion; the SSC recommendation should include a discussion of alternative recommendations that were considered and alternative methodologies that were explored; what is the role of the SSC in providing recommendations for achieving rebuilding targets?; what is the SSC's role in providing ‘‘reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices''?; the rule should clarify that the SSC is not charged with actually collecting the data and writing reports; the guidelines should specify the appropriate qualifications and membership of the SSCs and peer review process; the guidelines should specify the relative roles of the SSCs, peer review process, and Councils in establishing ACLs; the guidelines should specify the relative roles of NMFS, the Councils, the SSCs and the peer review process in selecting and evaluating AMs; NMFS should establish formal criteria for SSC membership, including formal training and/or experience in fisheries and/or ecological science or economics; NMFS should create oversight mechanisms and responsibility within NMFS to ensure that members are both qualified and acting in the public interest rather than representing stakeholders; NMFS should provide adequate training programs so that new members are well-prepared to meet these challenges; and NMFS should provide a mechanism for SSC members to identify and challenge political interventions, including potentially the development of a new scientific appeal function, staffed by a board of objective, external expert scientists.

Response: In developing the NS1 guidelines, NMFS focused on the SSC recommendation of the ABC as it is an important reference point for the Councils to use when developing ACLs. NMFS feels that the NS1 guidelines as proposed are clear in that the SSC provides the ABC recommendation and the Councils establish the ACLs. Both the ABC control rules and the ACT control rules could be developed with input from the SSC, Council, and peer review process as appropriate. NMFS believes that the NS1 guidelines adequately address the requirements for SSC recommendations that pertain to NS1. NMFS believes that other specific roles of the SSC would be more appropriately addressed in the National Standard 2 (NS2) guidelines.

Comment 42: Some commenters supported the proposed guidelines regarding the SSC, its relation to the Council, and provision of science advice such as ABC, but requested that the guidelines further emphasize that managers follow the advice of their scientific advisors in all cases when setting catch limits. Other commenters opposed the provisions and stated that accounting for scientific uncertainty is a matter of policy, not science and therefore should be delegated to the Council. Instead, the commenters proposed that the SSC should be recommending the OFL and that the Council may not set an ACL in excess of the OFL as determined by the SSC.

Response: NMFS believes that determining the level of scientific uncertainty is not a matter of policy and is a technical matter best determined by stock assessment scientists as reviewed by peer review processes and SSCs. Determining the acceptable level of risk of overfishing that results from scientific uncertainty is the policy issue. The SSC must recommend an ABC to the Council after the Council advises the SSC what would be the acceptable probability that a catch equal to the ABC would result in overfishing. This risk policy is part of the required ABC control rule. The Council should use the advice of its science advisors in developing this control rule and should articulate the control rule in the FMP. In providing guidance on establishing a control rule for the ABC, NMFS recognizes that all estimates of the OFL are uncertain, and that in order to prevent overfishing with more than a 50 percent probability of success, the ABC must be reduced from the OFL. The guidance is clear that the control rule policy on the degree of reduction appropriate for a particular stock is established by the Council. To the extent that it results in the ABC being reduced from the OFL, the SSC is carrying out the policy established by the Council. NMFS disagrees that the SSC should recommend OFL and not ABC. The MSA specifies a number of things that make up the recommendations that SSCs provide to their Council including recommendations for ABC, preventing overfishing, MSY, achieving rebuilding targets, reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures, and sustainability of fishing practices. Of these, the ABC is directly relevant as the fishing level recommendation that constrains the ACL.

Comment 43: One comment expressed that Councils must be allowed to specify information needed in the SAFE report.

Response: NMFS agrees. NMFS has removed the following sentence from § 600.310(b)(2)(v)(B) of the final action: ''The SSC may specify the type of information that should be included in the Stock Assessment and Fishery Evaluation (SAFE) report (see § 600.315).''

The contents of the SAFE report fall under the purview of the National Standard 2 (NS2) guidelines. NMFS is currently considering revising the NS2 guidelines, including modification of the language describing the content and purpose of SAFE reports. NMFS recently published an advance notice of proposed rulemaking (73 FR 54132; September 18, 2008) to revise the NS2 guidelines and encourages the public to provide comment.

Comment 44: One commenter believed the ACT should be a suggested component of a fishery management plan rather than a mandated component of an FMP. Although the ACT may clearly distinguish management uncertainty from other sources of uncertainty, adding a target does not fundamentally improve the process. It is more important to correctly adjust the ACL based on actual performance data than to create a separate target or ACT control rule based on theory to account solely for management uncertainty.

Response: The final guidelines do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. NMFS disagrees that a target does not fundamentally improve the process. ACL is to be treated as a limit—an amount of catch that the fishery should not exceed. The purpose of utilizing an ACT is so that, given uncertainty in the amount of catch that will result from the conservation and management measures in the fishery, the ACL will not be exceeded. Whether or not an ACT is explicitly specified, the AMs must address the management uncertainty in the fishery in order to avoid exceeding the ACL. ACLs are subject to modification by AMs.

Comment 45: One comment stated that the purpose of an ACT is to address ''management uncertainty'' which seems to be a very abstract and unquantifiable concept that the Councils are likely to struggle with.

Response: NMFS disagrees that management uncertainty is an abstract concept. It relates to the difference between the actual catch and the amount of catch that was expected to result from the management measures applied to a fishery. It can be caused by untimely catch data that usually prevents inseason management measures from being effective. Management uncertainty also results from underreporting, late reporting and misreporting and inaccurate assumptions about discard mortality of a stock in commercial and recreational fisheries. One way to estimate management uncertainty is to examine a set of annual actual catches compared to target catches or catch quotas for a stock. If all or most of the catches fall closely around their target catches and don't exceed the OFL then management uncertainty is low; if actual catches often or usually result in overfishing then the management uncertainty is high and should be accounted for when establishing the AMs for a fishery, which may include setting an ACT.

Comment 46: NMFS received several comments regarding scientific and management uncertainty. In general these comments included: Clarify the meaning of scientific uncertainty; clarify that some types of uncertainty may not be considered in the ABC control rule process; increase research efforts in order to deal with scientific uncertainty; provide flexibility in the guidelines regarding how the Councils deal with uncertainty; and recognize that recreational fisheries are unduly impacted by the guidelines due to delayed monitoring of catch.

Response: Scientific uncertainty occurs in estimates of OFL because of uncertainty in calculations of MFMT, projected biomass amounts, and estimates in F (i.e., confidence intervals around those parameter estimates). In addition, retrospective patterns in estimates of future stock biomass and F (i.e., biomass may be overestimated and F underestimated on a regular basis) occur in some stock assessments and should be accounted for in determining ABC. NMFS revised the guidelines to make clear that all sources of scientific uncertainty—not just uncertainty in the level of the OFL—must be considered in establishing the ABC, and that SSCs may incorporate consideration of uncertainty beyond that specifically accounted for in the ABC control rule, when making their ABC recommendation. Management uncertainty should be considered primarily in establishing the ACL and AMs, which could include ACTs, rather than in specification of the ABC.

Comment 47: The definition of ABC in § 600.310(f)(2)(ii) of the proposed rule provides that ABC is a level of catch ''that accounts for scientific uncertainty in the estimate of OFL'' and is specified based on the ABC control rule. Scientific uncertainty is not and should not be limited to the estimate of OFL. That restriction would make it more difficult to implement other appropriate methods for incorporating scientific uncertainty in other quantities such as distribution of long term yield.

Response: NMFS agrees. NMFS has revised §§ 600.310(f)(2)(ii), (f)(2)(iii), and (f)(4) of the action to state that ABC accounts for scientific uncertainty in the estimate of OFL and other scientific uncertainty.

Comment 48: Several commenters stated that buffers, or margins of safety, need to be required between the overfishing level and annual catch limits to account for uncertainty, and that the final action should require the use of such buffers to achieve a high probability that overfishing does not occur. NMFS received comments suggesting that buffers between limit and target fishing levels reduce the chance that overfishing will occur and should be recognized as an accountability measure. Other commenters thought that the provision for setting ACT less than ACL meant that a Council has no discretion but to establish buffers. They said that while buffers may be appropriate in certain circumstances, they may also prevent achievement of OY in some circumstances.

Response: As noted elsewhere, NMFS has revised the final guidelines: they do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. The guidelines are intended only to provide Councils with direction on how the requirements of NS1 can be met, incorporating the requirement for ACLs and AMs such that overfishing does not occur. To prevent overfishing, Councils must address scientific and management uncertainty in establishing ABC, ACLs, and AMs. In most cases, some reduction in the target catch below the limit will result. NMFS does not believe that requiring buffers is appropriate, as there may be circumstances where that is not necessary to prevent overfishing. However, the guidelines require that AMs in a fishery be adequate to prevent ACLs from being exceeded, and that additional AMs are invoked if ACL is exceeded.

Comment 49: Some commenters stated that Councils needed flexibility to effectively tailor fishery management plans to the unique conditions of their fisheries, and that Councils should also have flexibility in how to account for scientific and management uncertainty.

Response: NMFS agrees that Councils should have flexibility, so long as they meet the requirements of the statute. ACLs to prevent overfishing are required, and management and scientific uncertainty must be considered and addressed in the management system in order to achieve that objective. NMFS also believes that Councils should be as transparent and explicit as possible in how uncertainty is determined and addressed, and believes the guidelines provide a good framework to meet these objectives.

Comment 50: One commenter supported NMFS' attention to scientific and management uncertainty, but thought that the better approach to deal with uncertainty is to reduce uncertainty. They stated that to accomplish this objective NMFS must increase its support for agency scientific research specific to stock assessments and ecosystem science.

Response: NMFS agrees. However, the processes proposed in the guidelines will address the current levels of uncertainty and accommodate reduced uncertainty in the future, as improvements in data are made.

Comment 51: Some commenters said that implementing ACLs would lead to economic disruption, particularly in the recreational fishing sector, because of a large degree of management uncertainty. One commenter cited difficulties in obtaining timely and accurate data, particularly for recreational fisheries, and asked if recreational allocations would have to be reduced due to delays in obtaining recreational harvest estimates.

Response: Preventing overfishing is a requirement of the MSA. The ACL mechanisms and AMs for a fishery must be adequate to meet that requirement, and in some cases, reductions in catch levels and economic benefits from a fishery may result. The specific impacts of implementing ACLs in a fishery will be analyzed when the ACLs are established in an FMP.

Comment 52: One commenter stated that the guidelines would require reducing catches well below existing OY levels, and that many species are known to be fished at low levels which are highly unlikely to lead to overfishing. They stated that this is inconsistent with responsible marine management and seems unlikely to represent the intent of Congress.

Response: Nothing in the guidelines would require a reduction in fishing if, in fact, the stocks are fished at low levels which are highly unlikely to lead to overfishing, and this conclusion is supported by science.

Comment 53: One commenter asked if OY could be specified for a fishery or a complex, or if the guidelines would require specification of OY for each species or complex.

Response: The guidelines provide that OY can be specified at the stock, stock complex or fishery level.

Comment 54: NMFS received several comments both supporting and opposing the use of inseason AMs (§ 600.310(g) of the proposed action). The commenters that supported the use of inseason AMs typically suggested that the Councils and NMFS improve their capability to use inseason AMs and/or that NMFS must make inseason closure authority a required element of FMPs. Opponents of inseason AMs commented that it is more reasonable to implement AMs after reviewing annual fishery performance data; there is no requirement in the law to impose inseason measures; inseason closures without individual transferable quotas will generate derby fisheries; and the requirement to use inseason AMs whenever possible would be difficult where monitoring data is not available.

Response: MSA provides for ACLs to be limits on annual catch, thus it is fully appropriate and consistent with the Act that available data be utilized to prevent ACLs from being exceeded. Conservation and management measures for a fishery should be designed so that ACLs are not routinely exceeded. Therefore, FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. NMFS believes that the alternative result, which is that data are available inseason that show an ACL is being exceeded, but no management action is taken to prevent overfishing, would not meet the intent of the MSA. The MSA requires ACLs in all fisheries. It does not provide an exemption based on a concern about derby fishing. NMFS has modified the language in § 600.310(g)(2) of this action to indicate that ''For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.''

Comment 55: NMFS received some comments that generally expressed that AMs will be difficult to implement and that the provisions need to be clarified. Comments included: if an ACL is exceeded, a review by the Council must occur before implementation of the AMs; the Council must examine the ''problem'' that caused the overage—which means nothing will happen quickly; and it is not clear what ''biological consequences'' means in § 600.310(g)(3) of the proposed action.

Response: As proposed, AMs are management measures designed to prevent an ACL from being exceeded, as well as measures to address an overage of an ACL if it does occur. NMFS recommends that, whenever possible, Councils implement AMs that allow inseason monitoring and adjustment of the fishery. The AMs should consider the amount of time required for a Council to conduct analyses and develop new measures. In general, AMs need to be pre-planned so they can be effective/available in the subsequent year, otherwise, there could be considerable delay from the time that an overage occurs to the time when measures are developed to address the overage. Not all overages may warrant the same management response. Consider hypothetically the example of a fishery for which a 3 fish bag limit with 16 inch minimum size is expected to achieve the target catch level without exceeding the ACL. For such a fishery, the Council might implement AMs such that, if the catch was under the ACL or exceeded it by less than 5 percent, the same bag and size limits would apply the following year. If the ACL was exceeded by 5–25 percent, the bag limit the following year would be reduced to 2 fish, and if the ACL was exceeded by more than 25 percent the bag limit would be reduced to 1 fish. The AMs could also address a situation where catch was below the target level, indicating that the initial measures might be too strict. The objective is to have pre-planned management responses to ACL overages that will be implemented in the next season, so that flawed management measures do not result in continuing overages for years while Councils consider management changes. An FMP must contain AMs (see § 600.310(c)(5) of the final action). However, NMFS believes that the FMP could contain more general framework measures and that specific measures, such as those described hypothetically above, could be implemented through harvest specifications or another rulemaking process.

By ''biological consequences,'' NMFS means the impact on the stock's status, such as its ability to produce MSY or achieve rebuilding goals. For example, if information was available to indicate that, because of stronger than expected recruitment, a stock was above its B_{msy} level and continued to grow, even though the ACL was exceeded for the year, that could indicate that the overage did not have any adverse biological consequences that needed to be addressed through the AM. On the other hand, if the ACL for a long lived stock with low reproductive potential was exceeded by 100 percent, AMs should be responsive to the likelihood that some long-term harm to the stock may have been caused by the overage.

Comment 56: One commenter expressed concern about the term ''re-evaluated'' in §§ 600.310(g)(3) and (g)(4) in the proposed action. They stated that this could imply that Councils simply have to increase ACLs when they have ACL exceedances, and suggested that, if catch exceeds ACL more than once in last four years, there should be automatic buffer increases in setting ACL below OFL to decrease likelihood of exceeding ACL.

Response: If the performance standard is not met, the Councils must re-evaluate the system of ACLs and AMs, and modify it if necessary so that the performance standard is met. Since the ACL cannot exceed the ABC recommended by the SSC, NMFS does not believe that the scenario described by the commenter would arise. NMFS also does not believe that the guidelines should recommend automatic buffer increases in this case. The specific factors that caused the performance standard to not be met need to be analyzed and addressed. NMFS also notes that, in addition to this re-evaluation of the system of ACLs and AMs, AMs themselves are supposed to prevent and address ACL overages.

Comment 57: Several comments were received related to accountability measures for when catch exceeds the ACL. Some comments supported the concept that a full payback of ACL overages should be required for all stocks. Comments included: Overage deductions should be normal business for rebuilding and healthy stocks alike; NMFS should require all overages to be accounted for in full for all managed fisheries no later than when the ACL for the following fishing year is determined; and overage deductions must be viewed as an independent requirement from actions geared to preventing overages from occurring in the future, such as modifications of management measures or changes to the full system of ACLs, ACTs, and AMs.

Response: MSRA is silent with regard to mandatory payback of ACL overages. However, in developing the ACL provisions in the MSRA, it appears that Congress considered mandatory paybacks and did not include that requirement in the MSRA. NMFS believes that paybacks may be an appropriate AM in some fisheries, but that they should not be mandated, but rather considered on a case by case basis for stocks and stock complexes that are not in a rebuilding plan.

Comment 58: Several comments opposed the concept of an overage adjustment when catch exceeds the ACL for stocks that are in rebuilding plans (§ 600.310(g)(3) of the proposed action). Comments included: The MSA does not require this, this provision was removed from the drafts of the MSRA, and a full ''payback'' the following year may be unnecessary. Other comments supported the concept but wanted to strengthen § 600.310(g)(3) of the guidelines to remove text that stated: ''unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages.''

Response: NMFS believes that more stringent requirements for AMs are necessary for stocks in rebuilding plans. MSA 304(e)(3) provides that, for overfished stocks, an FMP, FMP amendment, or proposed regulations are needed to end overfishing immediately in the fishery and rebuild overfished stocks. There are a number of examples where failure to constrain catch to planned levels early in a rebuilding plan has led to failure to rebuild and the imposition of severe catch restrictions in later years in order to attempt to meet the required rebuilding timeframe. Thus, for rebuilding stocks, NMFS believes that an AM which reduces a subsequent year's ACL by the amount of any overage is appropriate, and will help prevent stocks failing to rebuild due to annual rebuilding targets being exceeded. NMFS does provide that if there is an analysis to show that all or part of the deduction is not necessary in order to keep the stock on its rebuilding trajectory, the full overage payback is not necessary. For example, an updated stock assessment might show that the stock size has increased faster than expected, in spite of the overage, and that a deduction from the subsequent ACL was not needed. For most rebuilding stocks, assessments cannot be updated annually, and in the absence of such analytical information, NMFS believes that the guideline provision is necessary to achieve rebuilding goals for overfished stocks.

Comment 59: Some commenters expressed support for the AMs as proposed and agreed that AMs should prevent catch from exceeding the ACL and address overages if they should occur. Other commenters suggested that AMs should be tied to overfishing or that AMs should be triggered when catch exceeds the ABC (as opposed to the ACL). Some commenters expressed that the MSA does not require the application of AMs if the ACL is exceeded.

Response: In developing the guidelines, NMFS considered using OFL or ABC as a point at which mandatory AMs should be triggered. However, NMFS believes that Congress intended the ACL to be a limit, and as such, it should not be exceeded. In addition, ''measures to ensure accountability'' are required in association with the ACL in MSA section 303(a)(15). Therefore, it is most appropriate to apply AMs if the ACL is exceeded. In addition, the purpose of ACLs is to prevent overfishing, and AMs triggered at the ACL level should be designed so that the ABC and OFL are not exceeded.

Comment 60: Several comments were received regarding the proposed performance standards. The performance standard that NMFS proposed in the proposed action stated that: ''If catch exceeds the ACL more than once in the last four years, the system of ACLs, ACTs and AMs should be re-evaluated to improve its performance and effectiveness.'' In cases where AMs are based on multi-year average data, the proposed performance standard stated: ''If average catch exceeds the average ACL more than once in the last four years, then the ACL, ACT and AM system should be re-evaluated.'' The commenters that supported the proposed performance standard suggested that it would allow the Council more flexibility in the management of their fisheries with ACLs. Commenters that disliked the proposed performance standard suggested that the Councils should have more flexibility in determining the performance standards, expressed concerns that the performance standard may not be precautionary enough, or expressed that it was arbitrary.

Response: NMFS believes it is important to establish a performance standard to establish accountability for how well the ACL mechanisms and AMs are working that is consistent across all Councils and fisheries. NMFS believes that ACLs are designed to prevent overfishing and that it is important to prevent catches from exceeding ACLs. NMFS also believes that, given scientific and management uncertainty, it is possible that catch will occasionally exceed ACL for a given stock or stock complex. However, it would be unacceptable to allow catch to continually exceed ACL. Therefore, NMFS proposed the performance standard to allow for some flexibility in the management system but also prevent overfishing. It should not limit a Council from establishing stronger performance measures, or from reevaluating their management measures more often. Notwithstanding the performance standard, if, at any time, a Council determines that the conservation and management measures for a fishery are not achieving OY while preventing overfishing, it should revise the measures as appropriate.

Comment 61: Several comments were received that suggested that fishery managers should or be required to re-evaluate the system of ACLs, ACT and AMs every time catch exceeds ACL. In addition, some expressed that NMFS should make clear that the ''reevaluation'' called for in the proposed action does not authorize simply raising ACLs or other numeric fishing restrictions in order to avoid the inconvenient fact that they have been exceeded.

Response: NMFS does not agree that a re-evaluation of the entire system of ACLs and AMs should be required every time an ACL is exceeded. If catch exceeds ACL in any one year, or if the average catch exceeds the average ACL, then AMs will be implemented and they should correct the operational issues that caused the overage, as well as any biological consequences resulting from the overage. Councils should be allowed the opportunity to see if their AMs work to prevent future overages of the ACL.

Comment 62: NMFS received comments that requested clarification or changes to the proposed performance standard. For example, one commenter suggested that NMFS should require a higher performance standard for vulnerable stocks. Two commenters expressed that the performance standard should apply at the stock or stock complex level as opposed to the fishery or FMP level. Another commenter questioned if the performance standard was if catch exceeds the ACL more than once in the last four years or if average catch exceeds the average ACL more than once in the last four years. NMFS also received some comments about the phrase ''to improve its performance and effectiveness'' in paragraph § 600.310(g)(3) of the proposed action. Those comments included: The phrase does not make sense in this context, because simply re-evaluating a system cannot improve its performance or effectiveness (only changing a system can do so); and use of this phrase in § 600.310(g)(3) is inconsistent with a similar sentence in paragraph § 600.310(g)(4) of the proposed action, where the same requirement is expressed, but this phrase does not appear.

Response: NMFS stated in the preamble of the proposed guidelines that a Council could choose a higher performance standard for a stock that is particularly vulnerable to the effects of overfishing. While NMFS agrees that a higher performance standard could be used for a stock or stock complex that is particularly vulnerable, NMFS believes the discretion to use a higher performance standard should be left to the Council. To reiterate this point, NMFS is adding additional language in § 600.310(g)(3) of the final action. NMFS intended that the performance standards would apply at the stock or stock complex level and is adding additional clarifying language in the regulatory text. The National Standard 1 guidelines as proposed offered two performance standards, one applies when annual catch is compared to the ACL for a given stock or stock complex, as described in paragraph § 600.310(g)(3) of this action, the other performance standard applies in instances when the multi-year average catch is compared to the average ACL, as described in § 600.310(g)(4) of this action. NMFS intended that in both scenarios, if the catch exceeds the ACL more than once in the last four years, or if the average catch exceeds the average ACL more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. NMFS has modified language to § 600.310(g)(3) and (4) of this action to clarify this issue.

Comment 63: NMFS received several suggestions to require a specific and high probability of success in either preventing overfishing, preventing catch from exceeding the ACL, or achieving the ACT. Comments included: The rule should make clear that management measures must have a high probability of success in achieving the OY or ACT; we recommend a probability of at least eighty percent of achieving the OY or ACT; NMFS should establish a performance standard that defines low risk, as well as an acceptable probability of successfully managing catch levels of 90 percent; National Standard guidelines should explicitly define the maximum acceptable risk of overfishing. One commenter cited to several court cases (NRDC v. Daley, Fishermen's Dock Coop., and Coastal Conservation Ass'n) and stated that the ACT control rule should be revised to state that the risk of exceeding the ACL due to management uncertainty is no greater than 25 percent.

Response: Considering and making appropriate allowances for uncertainty in science and management is emphasized in the NS1 guidelines. NMFS believes that, if this is done, ACLs will not often be exceeded, and when they are, the overages will typically be small and will not jeopardize the status of the stock. Fisheries where ACLs are exceeded regularly or by large amounts should be quickly modified to improve the measures.

During the initial scoping period, NMFS received many comments on the topic of setting a specific probability of success; some commenters expressed that a 50 percent probability of success is all that is legally required, while other commenters expressed that the probability of success should be higher (e.g. 75 or 100 percent). When developing the definition framework of OFL, ABC, ACL, and ACT, NMFS considered including specific probabilities of success regarding preventing overfishing or preventing catch from exceeding ACL. NMFS did not specify a particular probability in the NS1 guidelines, for a number of reasons. NMFS did not believe it had a basis for picking a specific probability number that would be appropriate for all stocks and stock complexes in a fishery. Councils should analyze a range of alternatives for the probability that ACL will not be exceeded or that overfishing will not occur. NMFS recognizes that fisheries are different and that the biological, social and economic impacts of managing at a specific probability will differ depending on the characteristics of the fishery. NMFS also recognizes that it is not possible to calculate a probability of success in many fisheries, due to data limitations.

NMFS does not believe that MSA and relevant case law require use of specific probabilities. However, a 50 percent probability of success is a lower bound, and NMFS believes it should not simply be used as a default value. Therefore, in § 600.310(f)(4) of the final action, NMFS states that the determination of ABC should be based, when possible, on the probability that catch equal to the stock's ABC would result in overfishing, and that this probability cannot exceed 50 percent and should be a lower value.

To determine if the system of ACLs was working adequately, NMFS decided to establish a performance standard in terms of the frequency that ACLs were exceeded. The comparison of catch to an ACL is a simpler task than calculating a probability of success, and can be applied to all fisheries, albeit some fisheries have more timely catch data than others. This does not preclude the Councils from using the probability based approach to setting limits and targets in their fisheries if they are able to do so.

Comment 64: Several comments were received urging NMFS to either require or encourage the use of sector ACLs and AMs and hold each sector accountable. Comments expressed that to provide the right incentives for conservation, catch reductions and increases must be tied to compliance and performance in adhering to ACLs. One commenter stated that MSA 303(a)(14) compels distinct ACLs and AMs for each sector due in part to the variation in management uncertainty among sectors. Sector management should be required in FMPs to ensure equitable treatment for all stakeholder groups including harvest restrictions and benefits to each sector.

Response: Separate ACLs and AMs for different fishery sectors may be appropriate in many situations, but the Councils should have the flexibility to determine this for each fishery. The decision to use sectors should be at the discretion of each Council. NMFS agrees that, if Councils decide to use sectors, each sector should be held accountable if catches for a sector exceed sector-ACLs. In addition, the NS1 guidelines provide that the ACL/AM system must protect the stock or stock complex as a whole. NMFS does not believe that MSA necessarily compels use of sector ACLs and AMs, thus the final action does not require their use. However, in developing any FMP or FMP amendment, it is important to ensure consistency with MSA 303(a)(14), NS 4, and other MSA provisions. Section 303(a)(14) pertains to allocation of harvest restrictions or recovery benefits fairly and equitably among commercial, recreational, and charter fishing sectors. NS 4, in part, pertains to fair and equitable allocations.

Comment 65: Some commenters expressed that managing recreational fisheries with ACLs and AMs will be difficult as they typically lack timely data. Comments included: The initiative to set ACLs and AMs for any fishery that has a recreational component cannot be done and any attempt will be arbitrary at best; in-season management is impractical in most recreational fisheries; current data collection programs used to evaluate recreational fishing activity do not offer a level of confidence to fisheries managers or fishermen to implement ACL in the recreational sector; and NMFS should improve recreational data collection to a level where inseason management is possible.

Response: NMFS acknowledges that recreational fisheries often do not have timely catch data and that is why NMFS suggested the multi-year averaging provision for AMs. NMFS and the Council still need to meet the mandate of the MSA and have ACLs for all fisheries. NMFS is developing a new data collection program for recreational fisheries to improve the data needed to implement the new provisions of the MSA.

Comment 66: Some commenters suggested that for recreational fisheries, catch limits should be expressed in terms of fishing mortality rates or in terms of numbers of fish instead of pounds of fish.

Response: NMFS intends that ACLs be expressed in terms of weight or numbers of fish. In fact, the definition of ''catch'' in the proposed guidelines indicates that catch is measured in weight or numbers of fish. NMFS disagrees that ACL can be expressed in terms of fishing mortality rates. While conservation and management measures for a fishery can be designed to achieve a target fishing mortality rate, the fishing mortality rates that are achieved can only be estimated by performing a stock assessment. Stock assessments usually lag the fishery by a year or more, and are not suitable as the basis for ACL accountability measures.

Comment 67: One commenter suggested that when recreational fisheries account for a significant portion of the catch, the buffers should be correspondingly larger to account for the management uncertainty.

Response: NMFS believes that management uncertainty should be addressed in all fisheries. Accountability measures may include an ACT set below the ACL based on the degree of uncertainty that the conservation and management measures will achieve the ACL. This applies to all fisheries, commercial or recreational.

Comment 68: NMFS received a few comments expressing that Councils should have flexibility when specifying AMs.

Response: NMFS agrees and believes that the guidelines provide this flexibility.

Comment 69: AMs should be approved by the Secretary of Commerce, should be subject to regular scientific review, and should provide opportunities for public comment; performance must be measurable and AMs must be modified if not working; AMs should be reviewed annually as part of the catch specification process.

Response: AMs will be implemented through public processes used for amending FMPs and implementing regulations. There is no need for additional guidance in the NS1 guidelines.

Comment 70: NMFS received comments that support the use of AMs based on comparisons of average catch to average ACL, if there is insufficient data to compare catch to ACL, either inseason or on an annual basis. In recreational fisheries, the use of a three-year rolling average ACL would moderate wild swings in ACLs due to variable fishing conditions and participation from year to year. Flexibility, such as the use of a multi-year average for the recreational sector, is needed due to limitations in the data collection. However, some commenters expressed concerns about using the multi-year averaging approach and stated that it should be used rarely. In order to use such an approach, Councils should provide clear and compelling reasons in their FMPs as to why the use of multi-year average data are necessary and a plan for moving the fishery to AMs based on annual data. The guidelines should make it clear that AMs will be triggered annually in cases where the average catch exceeds the average ACL. NMFS should engage its quantitative experts in an investigation of the performance of using multi-year averages for managing highly variable fisheries with poor inseason data. Until such results are available, NMFS should use annual statistics for management of all fisheries, including those involving highly variable stocks or catch limits.

Response: Use of AMs based on comparison of average catch to average ACL is only appropriate in a limited number of fisheries, such as fisheries that have high variability in the estimate of total annual catch or highly fluctuating annual catches and no effective way to monitor and control catches inseason. NMFS intends that a comparison of the moving average catch to the average ACL would be conducted annually and that AMs would be implemented if average catch exceeds the average ACL. If the average catch exceeds the average ACL more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. NMFS agrees that the Council should analyze and explain why they are basing AMs on multi-year averaged data. NMFS has added clarifying language to § 600.310(g)(4) of the final action to make these points clear. Future improvements in data and management approaches should also be pursued so that true annual accountability for catch can be achieved. In addition, NMFS believes that AMs such as the use of ACT may be appropriate in fisheries that use the multi-year averaging approach.

Comment 71: Several comments were received regarding ACLs and AMs for fisheries that occur partly in state waters. Some comments stated that accountability measures for State-Federal fisheries could use further elaboration and should specifically address fisheries where management had been delegated to the state. Some commenters supported separate ACLs and AMs for Federal and state portions of the fishery, while others wanted combined overall ACLs and AMs. Some comments disagreed that closure of Federal waters while fishing continues in non-Federal waters is a preferred option, and that efforts should be made to undertake cooperative management that allows coordinated responses.

Response: When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies to prevent overfishing of shared stocks and ensure their sustainability. NMFS encourages collaboration with state managers to develop ACLs and AMs that prevent overfishing of the stock as a whole. As FMPs currently consider whether overfishing is occurring for a stock or stock complex overall, NMFS thinks it is appropriate to specify an overall ACL for the stock or stock complex. This ACL could be subdivided into state and Federal ACLs, similar to the approach used for sector-ACLs. However, NMFS recognizes that Federal management authority is limited to that portion of the fishery under Federal jurisdiction and therefore the NS1 guidelines only require AMs for the Federal fishery. The AMs could include closing the EEZ when the Federal portion of the ACL is reached, closing the EEZ when the overall stock or stock complex's ACL is reached, or other measures. NMFS recognizes the problem that may occur when Federal fisheries are closed but fishing continues in state waters. NMFS will continue to work with states to ensure consistency and effectiveness of management measures. If Councils delegate management under an FMP to the states, the FMPs still need to meet the requirements of the MSA, including establishment of ACLs and AMs.

Comment 72: One commenter asked, in the case where ACLs are exceeded because of the regulatory failures of one state, if other states in the Council's or the Atlantic States Marine Fisheries Commission's (ASMFC) area of jurisdiction be affected through mandatory AMs. Barring state-by-state allocations for all species (as with summer flounder), the proposed regulations could punish commercial fishermen and anglers in all states in a region.

Response: The guidelines acknowledge that NMFS and the Councils cannot mandate AMs on state fisheries. However, NMFS encourages collaboration between state and Federal managers to develop ACLs and AMs to prevent overfishing for the stock as a whole. In cases where there is collaboration, accountability measures for the fishery should be designed to address this issue. Specific AMs that may be needed would have to be evaluated and addressed on a case-by-case basis.

Comment 73: NMFS received a question regarding the meaning of the phrase ''large majority'' in § 600.310(g)(5) of the proposed action. NMFS had stated that: ''For stocks or stock complexes that have a large majority of harvest in state or territorial waters, AMs should be developed for the portion of the fishery under Federal authority and could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.'' The commenter stated that the meaning of the term ''large majority'' and its importance is not clear and should therefore be eliminated.

Response: NMFS agrees that ACL and AMs need to be established for all stocks and stock complexes in Federal fisheries regardless of the whether a large majority of harvest occurs in state waters. NMFS agrees the amount, *i.e.*, ''large majority,'' is not pertinent to this provision. Therefore, § 600.310(f)(5)(iii) and (g)(5) have been revised in the final action.

Comment 74: NMFS received several comments noting that NMFS should require or recommend the use of limited access privilege programs (LAPPs) or catch shares by Councils in the final rule. Many commenters referenced an article on catch shares (Costello *et al.* 2008).

Response: The article cited above and other articles note the potential benefits of LAPPs. NMFS supports use of LAPPs, and believes they can be a beneficial approach to use in implementing effective ACLs. However, while ACLs are required in all fisheries, under the MSRA, LAPPs are optional and at the discretion of each Council. NMFS does not have authority to require Councils to use LAPPs, but is currently developing guidelines on LAPPs that will be published for public comment in the future.

Comment 75: One comment requested that NMFS expand the concept of accountability measures to include effective catch monitoring, data collection and analysis, and enforcement. The commenter suggested that for accountability measures that are not LAPPs, managers should demonstrate how the measures will ensure compliance with the ACLs as well as improve data and enforcement, reduce bycatch, promote safety, and minimize adverse economic impacts at least as well as LAPPs.

Response: NMFS agrees that catch monitoring, data collection and analysis, and enforcement are all important to consider in developing

AMs for a fishery and believes the guidelines are adequate. Under § 600.310(i) of the final action, FMPs, or associated documents such as SAFE reports, must describe data collection methods. In addition, § 600.310(g)(2) of the final action, states that whenever possible, inseason AMs should include inseason monitoring and management measures to prevent catch from exceeding ACLs. NMFS believes the guidelines are clear that catch monitoring data is very important to consider when Councils establish their AMs. Councils are already directed to: minimize adverse economic impacts under National Standard 8; minimize bycatch and bycatch mortality under National Standard 9; and promote safety of human life at sea under National Standard 10. *See* MSA 301(a)(8), (9), and (10) (setting forth specific requirements of the national standards).

Comment 76: NMFS received comments expressing concern about establishing ACL and AM mechanisms in FMPs. One commenter expressed concern that if ACL and AM mechanisms were located in the FMP, it would require a multi-year process to change any measure. They instead suggested that Councils should have the ability to framework the mechanisms and establish an annual or multi-year process for making adjustments. Another commenter suggested that Councils should be required to modify their SOPPs to incorporate a mechanism for specifying ACLs and reviewing AMs annually through regular catch specification procedures. NMFS received another comment that disagreed with the idea that the Council's SOPPs are the proper place to describe the process for establishing ABC Control Rules, including the role of SouthEast Data Assessment and Review (SEDAR) and the SSC. This commenter recommended instead that ABC Control Rules be included in Fishery Management Plans and have the ability to refine management through framework actions.

Response: The FMP needs to contain the ACL mechanisms and AMs, as they are part of the conservation and management measures for the fishery. The ACL mechanisms and AMs can contain framework provisions and utilize specification processes as appropriate. NMFS does not agree that the ACL and AM mechanisms should be established in the SOPPs. Also, NMFS never intended that ABC control rules would be described in the SOPPs and agrees that the ABC control rules should be described in the Fishery Management Plans. However, it is important to understand how the Councils, SSC, and peer review process work together to implement the provisions of the MSA, and that can be explained in the SOPPs, FMP, or some other document.

Comment 77: NMFS received several comments supporting the exception to the ACL rule for stocks with a life cycle of approximately one year. Commenters asked for a list of species which fit the exception, specific guidance on how to set ACLs for these stocks if they become overfished, and expansion of the exception to species with a two year life cycle.

Response: Due to their unique life history, the process for setting ACLs does not fit well for stocks which have a life cycle of approximately one year. The exception for species with an annual life cycle allows flexibility for Councils to use other management measures for these stocks which are more appropriate for the unique life history for each stock and the specifics of the fishery which captures them. NMFS believes that the final guidance should not include a list of stocks which meets these criteria; this is a decision that is best made by the regional Councils. Even though ACLs are not required for these stocks, Councils are still required to estimate other biological reference points such as SDC, MSY, OY, ABC and an ABC control rule. However, the MSA limits the exception and clearly states that if overfishing is occurring on the stock, the exception can not be used, therefore ACLs would be required. MSA only provided for a 1-year life cycle exception, thus NMFS cannot expand the exception to two years. Section (h)(3) of the final action acknowledges that there may be circumstances when flexibility is needed in applying the NS1 guidelines. Whether such flexibility is appropriate for certain two year life cycle species would have to be considered on a case-by-case basis.

Comment 78: NMFS received many comments expressing different interpretations of the MSA's ACL international exception. Some commented that the exception only pertains to the 2010/2011 timing requirement. If fisheries under international agreements were intended to be exempt from ACLs, Congress could have drafted the exception to say that ACLs ''shall not apply'' to such fisheries, similar to language used in the one-year life cycle exception. Several comments stated that by requiring ACLs for U.S. fishermen, the U.S. would be in a better bargaining position in international fora by taking the ''higher ground.'' Others agreed with the exception as set forth in the proposed guidelines but requested clarification. For example, one comment was that the exception should be expanded to cover the US/Canada Resource Sharing Understanding and other arrangements that may not be formal international agreements. Other suggestions included clarifying that the exception applied where a regional fishery management organization had approved a stock assessment, where there were conservation and management measures under an international agreement, or where there were annual catch limits established under international agreement consistent with MSA overfishing and rebuilding requirements.

Response: The ACL international exception is set forth in an uncodified note to MSA section 303. MSRA, Public Law 109–479 section 104(b)(1). The text is vague, and NMFS has spent considerable time looking at different possible interpretations of this text in light of the plain language of the text, public comments, and other relevant MSA provisions. NMFS agrees that one possible interpretation, in light of the text of the one-year life cycle exception (MSRA section 104(b)(2)), is that stocks under international management are only exempt from timing requirements. However, Congress added significant new requirements under the MSRA regarding international fisheries, thus NMFS has tried to interpret the exception in light of these other statutory provisions.

In many fisheries, the U.S. unilaterally cannot end overfishing or rebuild stocks or make any measurable progress towards those goals, even if it were to stop all U.S. harvest. Thus, it has signed onto various treaties and negotiates binding, international conservation and management measures at regional fishery management organizations (RFMOs) to try to facilitate international efforts to end overfishing and rebuild overfished stocks. MSRA acknowledged the challenges facing the United States in international fisheries by, among other things, including a new ''International Overfishing'' section (MSA section 304(i)) that refers domestic regulations to address ''relative impact'' of U.S. vessels; changes to highly migratory species provisions (MSA section 102(b)–(c)); and amendments to the High Seas Driftnet Fishing Moratorium Protection Act, 16 U.S.C. 1826h–1826k, to encourage strengthening of RFMOs and establish a process for identification and certification of nations whose vessels engage in illegal, unreported or unregulated (IUU) fishing and bycatch of protected living marine resources.

While NMFS actively communicates and promotes MSA requirements regarding ending overfishing and rebuilding overfished stocks at the international level (*see*, *e.g.*, MSA section 102(c)), it is unlikely that RFMOs will adopt ACL/AM mechanisms as such mechanisms are understood and required in the context of U.S. domestic fisheries. Given the practical problem of ensuring the U.S. could negotiate such mechanisms, and Congress' clear recognition of U.S. fishing impact versus international fishing effort, NMFS believes that a reasonable interpretation of the exception is that it should apply to the ACL requirement, not just the effective date. If ACLs were required, a likely outcome is that U.S. fishermen may be subject to more restrictive measures than their foreign counterparts, *e.g.*, each country may be assigned a catch quota but the U.S. portion may be subject to further restriction below the assigned amount. Further, requiring ACLs may raise potential conflicts with implementing legislation for some of the international fishery agreements.

NMFS believes that the intent of MSRA is to not unfairly penalize U.S. fishermen for overfishing which is occurring predominantly at the international level. In many cases, applying ACL requirements to U.S. fishermen on just the U.S. portion of the catch or quota, while other nations fished without such additional measures, would not lead to ending overfishing and could disadvantage U.S. fishermen. The guidance given for the international exception allows the Councils to continue managing the U.S. portion of stocks under international agreements, while the U.S. delegation works with RFMOs to end overfishing through international cooperation. The guidelines do not preclude Councils or NMFS from applying ACLs or other catch limits to stocks under international agreements, if such action was deemed to be appropriate and consistent with MSA and other statutory mandates.

NMFS considered different suggestions on how the exception might be clarified, *e.g.*, exception would only apply where there is an approved stock assessment, conservation and management measures, annual catch limits consistent with MSA overfishing and rebuilding requirements, etc. Regardless of how the exception could be revised, establishing ACL mechanisms and AMs on just the U.S. portion of the fishery is unlikely to have any impact on ending overfishing and rebuilding. For these reasons, and taking into consideration possible statutory interpretations and public comment, NMFS has decided not to revise the international exception.

With regard to whether an arrangement or understanding is an ''international agreement,'' it will be important to consider the facts and see if the arrangement or understanding qualifies as an ''international agreement'' as understood under MSA section 3(24) (defining ''international fishery agreement'') and as generally understood in international negotiation. The Case-Zablocki Act, 1 U.S.C. 112b, and its implementing regulations provide helpful guidance on interpreting the term ''international agreement.''

Comment 79: With regard to fisheries data (§ 600.310(i) of NS1 guidelines), comments included: data collection guidelines are burdensome, clarification is needed on how the Councils would implement the data collection requirements, and that data collection performance standards and real-time accounting are needed.

Response: NMFS believes that § 600.310(i) of the final action provides sufficient guidance to the Councils in developing and updating their FMPs, or associated public documents such as SAFE reports, to address data needed to meet the new requirements of the MSRA. There is a close relationship between the data available for fishery management and the types of conservation and management measures that can be employed. Also, for effective prevention of overfishing, it is essential that all sources of fishing mortality be accounted for. NMFS believes that detailing the sources of data for the fishery and how they are used to account for all sources of fishing mortality in the annual catch limit system will be beneficial. NMFS revised the final guidelines to clarify that a SAFE report, or other public document adopted by a Council, can be used to document the required fishery data elements.

Comment 80: NMFS received several comments requesting that better data be used when creating conservation and management measures.

Response: NMFS agrees that improvements in fishery data can lead to more effective conservation and management measures, including ACLs. NMFS is aware of the various gaps in data collection and analysis for FMPs in U.S. fisheries, and has ongoing and future plans to improve the data needed to implement the new provisions of the MSRA. NMFS programs and initiatives that will help produce better quality data include the: Marine Recreational Information Program (MRIP), National Permits System, and Fisheries Information and National Saltwater Angler Registry.

Comment 81: Some comments recognized the ongoing programs to improve data, but were concerned that the time that it would take to implement and fold these new data into the management process could cause overly restrictive measures when implementing ACLs on fisheries that are data poor (*e.g.* recreational fisheries).

Response: ACLs must be implemented using the best data and information available. Future improvements in data will allow corresponding improvements in conservation and management measures. This is an incremental process. NMFS believes that Councils must implement the best ACLs possible with the existing data, but should also look for opportunities to improve the data and the ACL measures in the future. It is important that the ACL measures prevent overfishing without being overly restrictive. In data poor situations, it is important to monitor key indicators, and have accountability measures that quickly adjust the fishery in response to changes in those indicators.

Comment 82: Some commenters noted they want more transparency in the data being used to manage fisheries.

Response: NMFS believes the NS1 guidelines provide sufficient guidance to the Councils in developing and updating their FMPs, or associated public documents such as SAFE reports, to address data needed to meet the new requirements of the MSRA. NMFS agrees that transparency in the Council process and NMFS decision process in regard to data and data analysis is critical to the public and user groups understanding of how fisheries are managed. NMFS is aware of this issue and will continue to seek improvements in such processes.

Comment 83: NMFS received several comments about the timing associated with submitting a rebuilding plan. Commenters asked for clarification on when the clock started for the implementation of the plan, stated that Councils should have two years to submit the plan to the Secretary, and suggested that a 6-month review/implementation period be used instead of a 9-month period. Commenters noted that MSA provides for specific time periods for Secretarial review.

Response: Ending overfishing and rebuilding overfished stocks is an important goal of the MSA and the performance of NMFS is measured by its ability to reach this goal. Currently, the Council has 12 months to submit an FMP, FMP amendment, or proposed regulations to the Secretary, but there is no time requirement for implementation of such actions. MSA section 304(e)(3), which is effective July 12, 2009, requires that a Council prepare and implement an FMP, FMP amendment, or proposed regulations within 2 years of the Secretary notifying the council that the stock is overfished or approaching a condition of being overfished. The guidelines provide that such actions should be submitted to the Secretary within 15 months so NMFS has 9 months to review and implement the plan and regulations. NMFS recognizes that there are timing requirements for Secretarial review of FMPs and regulations (MSA section 304(a),(b)). The 15-month period was not intended to expand the time for Secretarial review, but rather, to address the new requirement that actions be implemented within two years. NMFS believes the timing set forth in the guidelines is appropriate as a general rule: it would continue to allow for 60 days for public comment on an FMP, 30 days for Secretarial review, and 6 months for NMFS to implement the rebuilding plan. However, in specific cases NMFS and a Council may agree on a schedule that gives the Council more time, if the overall objective can still be met.

Comment 84: NMFS received many comments in support of the language regarding ending overfishing immediately. One comment, however, stated that intent of the MSA is to end all overfishing, not just chronic overfishing, as described in the preamble.

Response: NMFS agrees that the intent of the MSA is to end overfishing, and in the context of a rebuilding plan, overfishing must be ended immediately. However, as long as fishing is occurring, there always is a chance that overfishing may occur given scientific and management uncertainty. The guidelines explain how to incorporate scientific and management uncertainty so that fishing may continue but with an appropriately low likelihood of overfishing. The term ''chronic overfishing'' is used to mean that annual fishing mortality rates exceed the MFMT on a consistent basis over a period of years. The MSA definition of overfishing is ''* * * a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.'' NMFS believes that the best way to ensure that overfishing does not occur is to keep annual fishing mortality rates below the MFMT. However, exceeding the MFMT occasionally does not necessarily jeopardize the capacity of a fishery to produce the MSY on a continuing basis. The more frequently MFMT is exceeded, the more likely it becomes that the capacity of a fishery to produce the MSY on a continuing basis is jeopardized. Thus, NMFS believes that ACLs and AMs should be designed to prevent overfishing on an annual basis, but that conservation and management measures need not be so conservative as to prevent any possibility that the fishing mortality rate exceeds the MFMT in every year.

Comment 85: NMFS received several comments regarding what happens when a rebuilding plan reaches T_{max} but the stock is not fully rebuilt. Commenters supported the approach in the proposed action that provided that the rebuilding F should be reduced to no more than 75 percent of MFMT until the stock or stock complex is rebuilt. One commenter suggested clarifying the final guidelines text to provide: ''If the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75% of the MFMT, whichever is less.'' Other commenters stated that 75 percent MFMT is not precautionary enough and that 50 percent MFMT (or less) should be used.

Response: This new language in the guidelines fills a gap in the current guidelines which did not prescribe how to proceed when a stock had reached T_{max} but had not been fully rebuilt. NMFS believes that requiring that F does not exceed $F_{rebuild}$ or 75 percent MFMT, whichever is lower, is an appropriate limit, but Councils should consider a lower mortality rate to meet the requirement to rebuild stocks in as short a time as possible, pursuant to the provisions in MSA section 304(e)(4)(a)(i). NMFS agrees that the suggested edit would clarify the provision, and has revised the guidelines.

Comment 86: NMFS received many comments on the relationship between T_{min}, T_{target} and T_{max}. Some comments supported the proposed guidelines and others stated that the guidelines should be modified. Comments included: T_{min} is inconsistent with MSA's requirement to take into account needs of fishing communities and should include those needs when evaluating whether rebuilding can occur in 10 years or less; management measures should be designed to achieve rebuilding by the T_{target} with at least a 50% probability of success and achieve T_{max} with a 90% probability of success; as in the 2005 proposed NS1 guidelines revisions, T_{max} should be calculated as T_{min} plus one mean generation time for purposes of determining whether rebuilding can occur in 10 years or less; per *NRDC* v. *NMFS,* 421 F.3d 872 (9th Cir. 2005), T_{target} should be as close to T_{min} as possible without causing a short-term disaster; rebuilding timeframes should only be extended above T_{min} where ''unusually severe impacts on fishing communities can be demonstrated, and where biological and ecological implications are minimal;'' rebuilding times for stock complexes must not be used to delay recovery of complex member species; and the ''generation time'' calculation for T_{max} should refer to generation time of the current population.

Response: In developing the guidance for rebuilding plans, NMFS developed guidelines for Councils which, if followed, are strong enough to rebuild overfished stocks, yet flexible enough to work for a diverse range of fisheries. The timeline for a rebuilding plan is based on three time points, T_{min}, T_{target} and T_{max}. T_{min} is the amount of time, in the absence of any fishing mortality, for the stock to have a 50% probability of reaching the rebuilding goal, B_{msy}. T_{min} is the basis for determining the rebuilding period, consistent with section 304(e)(4)(A)(ii) of the MSA which requires that rebuilding periods not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise. T_{min} provides a biologically determined lower limit to T_{target}. Needs of fishing communities are not part of the criteria for determining whether a rebuilding period can or cannot exceed 10 years, but are an important factor in establishing T_{target}.

Just as T_{min} is a helpful reference point of the absolute shortest time to rebuild, T_{max} provides a reference point of the absolute longest rebuilding period that could be consistent with the MSA. T_{max} is clearly described in the guidelines as either 10 years, if T_{min} is 10 years or less, or T_{min} plus one generation time for the stock if T_{min} is greater than 10 years. NMFS agrees that this calculation can cause a discontinuity problem when calculating T_{max}, and proposed revisions to the NS1 guidelines in 2005 that would have addressed the issue by basing T_{max} on T_{min} + one generation time in all cases, which would have removed the requirement that T_{max} is 10 years in all cases where T_{min} was less than 10 years. NMFS did not finalize those revisions, but proposed the same changes to the MSA in the Administration's proposed MSA reauthorization bill. However, when MSRA was passed, Congress did not accept the Administration's proposal and chose to keep the existing provision. NMFS has, therefore, not revised this aspect of the NS1 guidelines.

The generation time is defined in the guidelines as ''the average length of time between when an individual is born and the birth of its offspring.'' Typically this is calculated as the mean age of the spawners in the absence of fishing mortality (per Restrepo *et al.,* 1998), but the exact method is not specified in the guidance.

T_{max} is a limit which should be avoided. When developing a rebuilding plan, it is good practice for Councils to calculate the probability of the potential management alternatives to achieve rebuilding by T_{max}, in order to inform their decision.

T_{target} is bounded by T_{min} and T_{max} and is supposed to be established based on the factors specified in MSA section 304(e)(4). Section 600.310(j)(3) of the final action reiterates the statutory criteria on specifying rebuilding periods that are ''as short as possible,'' taking into account specified factors. Management measures put in place by the rebuilding plan should be expected (at least 50% probability) to achieve rebuilding by T_{target}. NMFS does not believe these sections should be revised to focus on ''short-term disasters'' or ''unusually severe'' community impacts, as the MSA provides for several factors to be considered. NMFS believes the final guidelines provide sufficient general guidance on the MSA requirements, but acknowledges that there is case law in different jurisdictions (such as NRDC v. NMFS), that fishery managers should consider in addition to the general guidance.

Comment 87: A commenter stated that § 600.310(j)(3)(i)(E) of the proposed action should be revised to state that ''as short as possible'' is a mandate, not just a priority.

Response: NMFS deleted the ''priority'' text in § 600.310 (j)(3)(i)(E) of the final action. That text is unnecessary given that § 600.310 (j)(3)(i) of the guidelines explains ''as short as possible'' and other rebuilding time period requirements from MSA section 304(e)(4).

Comment 88: Commenters raised several questions about the relationship of NS1 and National Standard 8 (NS 8), including whether NS 1 ''trumps'' NS 8 and whether the ACL guidance provides sufficient flexibility to address NS 8 considerations.

Response: NS 1 states: ''Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.'' MSA section 301(a)(1). NS 8 states: ''Conservation and management measures shall, *consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks,* take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2) [*i.e.*, National Standard 2] , in order to (A) provide for sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.'' MSA section 301(a)(8) (*emphasis added*).

The objectives in NS8 for sustained participation of fishing communities and minimization of adverse economic impacts do not provide a basis for continuing overfishing or failing to rebuild stocks. The text of NS8 explicitly provides that conservation and management measures must prevent overfishing and rebuild overfished stocks. MSA does provide, however, for flexibility in the specific conservation and management measures used to achieve its conservation goals, and NMFS took this into consideration in developing the revised NS1 guidelines.

Comment 89: NMFS received many comments regarding § 600.310(m) of the proposed action, a provision commonly called the ''mixed stock exception.'' One comment supported the revision as proposed. Some commenters noted that the provision is very important in managing specific mixed stock fisheries, and that changes in the proposed guidelines would make it impossible to use. Specific concern was noted about text that stated that the ''resulting rate of fishing mortality will not cause any stock or stock complex to fall below its MSST more than 50 percent of the time in the long term.'' In addition, commenters stated that the proposed revisions do not allow for social and economic aspects to be taken in to account adequately and would negatively impact several fisheries and fishing communities. Many others commented that the provision should be removed entirely, because it is contrary to the intent of the MSA. The MSA, as amended by the MSRA, requires preventing and ending overfishing, and a mixed stock exception would allow for chronic overfishing on vulnerable fish stocks within a complex.

Response: MSRA amended overfishing and rebuilding provisions of the MSA, reflecting the priority to be given to the Act's conservation goals. NMFS believes that the final NS1 guidelines provide helpful guidance on the new statutory requirements and will strengthen efforts to prevent overfishing from occurring in fisheries. Preventing overfishing and achieving, on a continuing basis, the OY is particularly challenging in mixed stock fisheries. To address this issue, the proposed action retained a mixed stock exception. NMFS recognizes the concerns raised about how the exception will impact efforts to prevent and end overfishing, and thus, revised the current NS1 guidelines text in light of new MSRA provisions.

The current mixed stock exception allows overfishing to occur on stocks within a complex so long as they do not become listed under the Endangered Species Act (ESA). As explained in the proposed guidelines, NMFS believes that ESA listing is an inappropriate threshold, and that stocks should be managed so they retain their potential to achieve MSY. The revised guidelines propose a higher threshold, limiting F to a level that will not lead to the stock becoming overfished in the long term. In addition, if any stock, including those under the mixed stock exception, were to drop below its MSST, it would be subject to the rebuilding requirements of the MSA, which require that overfishing be ended immediately and that the stock be rebuilt to B_{msy} (see § 600.310(j)(2)(ii)(B) of the final action). The exception, as revised, addresses concerns regarding social, economic, and community impacts as it could allow for continued harvest of certain stocks within a mixed stock fishery.

Having considered public comments on the proposed guidelines, NMFS has decided to retain the mixed stock exception as proposed in the guidance. While NMFS has chosen in the NS1 guidelines to emphasize the importance of stock-level analyses, MSA refers to preventing overfishing in a fishery and provides for flexibility in terms of the specific mechanisms and measures used to achieve this goal. The mixed stock exception provides Councils with needed flexibility for managing fisheries, while ensuring that all stocks in the fishery continue to be subject to strong conservation and management. However, NMFS believes that the mixed stock exception should be applied with a great deal of caution, taking into consideration new MSRA requirements and NS1 guidance regarding stock complexes and indicator species. NMFS also believes that Councils should work to improve selectivity of fishing gear and practices in their mixed-stock fisheries so that the need to apply the mixed stock exception is reduced in the future.

VI. Changes From Proposed Action

Annual catch target (ACT) is described as a management option, rather than a required reference point in paragraphs (f)(1), (f)(2)(v), (f)(6), (f)(6)(i), and (g)(2) in the final action.

The following sentence was deleted from paragraph (b)(2)(v)(B): ''The SSC may specify the type of information that should be included in the Stock Assessment and Fishery Evaluation (SAFE) report (*see* § 600.315).'' Paragraph (b)(2)(v)(C) was revised to make some clarifying edits regarding the SSC and peer review process. The following sentence was included in (b)(2)(v)(D): ''The SSC recommendation that is the most relevant to ACLs is ABC, as both ACL and ABC are levels of annual catch.''

Paragraph (c)(5) is removed because ''ACT control rule'' is no longer a required part of the definition framework. Paragraph (c)(6) in the proposed action is re-designated as paragraph (c)(5) in the final action. Paragraph (c)(7) in the proposed action is re-designated as paragraph (c)(6) in the final action.

Paragraph (d)(1) was revised to clarify that Councils may, but are not required to, use the ''ecosystem component'' species classification. Paragraphs (d)(2) through (d)(7) were revised to better clarify the classification system for stocks in an FMP. Paragraph (d)(9) is revised to emphasize that indicator stocks are stocks with SDC that can be used to help manage more poorly known stocks that are in a stock complex. Paragraph (d)(10) has been added to describe in general how to evaluate ''vulnerability'' of a stock.

Paragraph (e)(1)(iv) was revised to clarify that ecological conditions should be taken into account when specifying MSY. The following sentence was added to paragraph (e)(2)(i)(C): ''The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.'' The following sentence was added to paragraph (e)(2)(i)(D): ''The OFL is an estimate of the catch level above which overfishing is occurring.'' The following sentence was deleted from (e)(2)(ii)(A)(*1*): ''The MFMT must not exceed F_{msy}.'' Paragraph (e)(3)(iv) was revised to improve clarity. The following sentence was deleted from (e)(3)(v)(A): ''As a long-term average, OY cannot exceed MSY.''

Paragraph (f)(1) was revised to give examples of scientific and management uncertainty. Paragraphs (f)(2)(ii) and (iii) were revised to clarify that scientific uncertainty in the OFL and any other scientific uncertainty should be accounted for when specifying ABC and the ABC control rule. Paragraph (f)(3) was revised to improve clarity; to acknowledge that the SSC may recommend an ABC that differs from the result of the ABC control rule calculation; and to state that while the ABC is allowed to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. Paragraph (f)(4) on the ABC control rule was revised to include the following sentences: ''The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50 percent and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed.'' Paragraph (f)(5)(i) was revised to include the following sentences: ''ACLs in coordination with AMs must prevent overfishing (see MSA section 303(a)(15)). If a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach.'' Also, paragraph (f)(5)(i) was revised to clarify that ''a multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are triggered for the next year consistent with paragraph (g)(3) of this section.'' Paragraph (f)(5)(ii) now clarifies that ''if the management measures for different sectors differ in degree of management uncertainty, then sector-ACLs may be necessary so appropriate AMs can be developed for each sector.'' Paragraphs (f)(5)(iii) and (g)(5) were revised to remove the phrase ''large majority'' from both provisions. The description of the relationship between OFL to MSY and ACT to OY was removed from paragraph (f)(7) and is replaced with the following sentence: ''A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and if used ACT.''

Paragraph (g)(2) on inseason AMs was revised to include the following sentences: ''FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.'' Paragraph (g)(3) was revised to improve clarity and to include the following sentence: ''A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.'' Paragraph (g)(4) on AMs based on multi-year average data was revised to clarify: That Councils should explain why basing AMs on a multi-year period is appropriate; that AMs should be implemented if the average catch exceeds the average ACL; the performance standard; and that Councils can use a stepped approach when initially implementing AMs based on multi-year average data.

Paragraph (h) was revised to include the sentence: ''These mechanisms should describe the annual or multiyear process by which specific ACLs, AMs, and other reference points such as OFL, and ABC will be established.'' Paragraph (h)(1)(v) was removed because the requirement to describe fisheries data is covered under paragraph (i). Paragraph (i) is revised to clarify that Councils must describe ''in their FMPs, or associated public documents such as SAFE reports as appropriate,'' general data collection methods.

Paragraph (j)(2)(ii)(C) was removed and paragraph (j)(2)(ii)(B) was revised to include information about stocks or stock complexes that are approaching an overfished condition. Paragraph (j)(3)(i)(E) was revised to remove the ''priority'' text. That text is unnecessary given that section (j)(3)(i) explains ''as short as possible'' and other rebuilding time period requirements from MSA section 304(e)(4). Paragraph (j)(3)(ii) was revised to clarify that ''if the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75 percent of the MFMT, whichever is less.''

Introductory language (General) has been added to paragraph (l) to clarify the relationship of other national standards to National Standard 1. Also, paragraph (l)(4) has been revised to ensure that the description about the relationship between National Standard 8 with National Standard 1 reflects more accurately, section 301(a)(8) of the Magnuson-Stevens Act.

The words ''should'' or ''recommended'' in the proposed rule are changed to ''must'' or ''are required'' or ''need to'' in this action's codified text if NMFS interprets the guidance to refer to ''requirements of the Magnuson-Stevens Act'' and ''the logical extension thereof'' (see section 600.305(c) of the MSA). In the following, items in paragraphs of § 600.310 are followed by an applicable MSA section that contains pertinent requirements:

Paragraph (b)(3) is revised to state that Councils ''must take an approach that considers uncertainty in scientific information and management control of the fishery'' because it needs to meet requirements in MSA section 303(a)(15).

Paragraph (c) is revised to state ''* * * Councils must include in their FMPs * * *'' because it needs to meet various requirements in MSA section 303(a).

Paragraph (c) is revised to state ''Councils must also describe fisheries data * * *'' because it needs to meet requirements of various portions of MSA sections 303(a) and 303(a)(15).

Paragraph (c) is revised to state ''* * * Councils must evaluate and describe the following items in their FMPs * * *'' because it needs to meet requirements of various portions of MSA sections 303(a) and 303(a)(15).

Paragraph (e)(1) is revised to state that ''Each FMP must include an estimate of MSY * * *'' because it needs to meet requirements of MSA section 303(a)(3).

Paragraph (e)(2)(ii) is revised to state that a Council ''must provide an analysis of how the SDC were chosen * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (e)(2)(ii)(A) is revised to state ''each FMP must describe which of the following two methods * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (e)(2)(ii)(B) is revised to state ''the MSST or reasonable proxy must be expressed in terms of spawning biomass * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (f)(4) is revised to state each Council ''must establish an ABC control rule * * *'' because it needs to meet requirements of MSA sections 303(a)(15) and 302(g)(1)(B).

Paragraph (f)(4) is revised to state ''The ABC control rule must articulate how ABC will be set compared to the OFL * * *'' because it needs to meet requirements of MSA sections 303(a)(15) and 301(a)(2).

Paragraph (f)(5)(i) is revised to state ''A multiyear plan must include a mechanism for specifying ACLs for each year * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (f)(5)(i) is also revised to state ''A multiyear plan must provide that, if an ACL is exceeded * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (f)(6)(i) is revised to state ''Such analyses must be based on best available scientific * * *'' because it needs to meet requirements of MSA section 301(a)(2).

Paragraph (g)(3) is revised to state a Council ''must determine as soon as possible after the fishing year if an ACL is exceeded * * *'' because it needs to meet requirements of MSA sections 303(a)(15), 301(a)(1) and 301(a)(2).

Paragraph (h) is revised to state FMPs or FMP amendments ''must establish ACL mechanisms and AMs * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (h)(3) is revised to state ''Councils must document their rationale for any alternative approaches * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (j)(2) is revised to state ''FMPs or FMP amendments must establish ACL and AM mechanisms in 2010 * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (j)(2)(i)(A) is revised to state that '' * * * ACLs and AMs themselves must be specified * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (k) is revised to state that ''The Secretary, in cooperation with the Secretary of State, must immediately take appropriate action at the international level * * *'' because it needs to meet requirements of MSA section 304(i)—INTERNATIONAL OVERFISHING.

Paragraph (k)(3) is revised to state that ''Information used to determine relative impact must be based upon the best available scientific * * *'' because it needs to meet requirements of MSA section 301(a)(2).

Paragraph (l)(2) is revised to state that ''Also scientific assessments must be based on the best information * * *'' because it needs to meet requirements of MSA section 301(a)(2).

VII. References Cited

A complete list of all the references cited in this final action is available online at: *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm* or upon request from Mark Millikin [*see* **FOR FURTHER INFORMATION CONTACT**].

VIII. Classification

Pursuant to the Magnuson-Stevens Act, the NMFS Assistant Administrator has determined that these final NS1 guidelines are consistent with the Magnuson-Stevens Act, and other applicable law.

The final NS1 guidelines have been determined to be significant for purposes of Executive Order 12866. NOAA prepared a regulatory impact review of this rulemaking, which is available at: *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm.* This analysis discusses various policy options that NOAA considered in preparation of the proposed action, given NOAA's interpretation of the statutory terms in the MSRA, such as the appropriate meaning of the word ''limit'' in ''Annual Catch Limit,'' and NOAA's belief that it has become necessary for Councils to consider separately the uncertainties in fishery management and the scientific uncertainties in stock evaluation in order to effectively set fishery management policies and ensure fulfillment of the goals to end overfishing and rebuild overfished stocks.

The Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration during the proposed rule stage that these revisions to the NS1 guidelines, if adopted, would not have any significant economic impact on a substantial number of small entities. The factual basis for the certification was published in the proposed action and is not repeated here. Two commenters stated that an initial regulatory flexibility analysis should be prepared, and NMFS has responded to those comments in the ''Response to Comments.'' After considering the comments, NMFS has determined that a certification is still appropriate for this action. Therefore, a regulatory flexibility analysis is not required for this action and none was prepared.

List of Subjects in 50 CFR Part 600

Fisheries, Fishing, Reporting and recordkeeping requirements.

Dated: January 9, 2009.

James W. Balsiger,

Acting Assistant Administrator, for Fisheries, National Marine Fisheries Service.

PART 600—MAGNUSON-STEVENS ACT PROVISIONS

■ 1. The authority citation for part 600 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*

■ 2. Section 600.310 is revised to read as follows:

§ 600.310 National Standard 1—Optimum Yield.

(a) *Standard 1.* Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery for the U.S. fishing industry.

(b) *General.* (1) The guidelines set forth in this section describe fishery management approaches to meet the objectives of National Standard 1 (NS1), and include guidance on:

(i) Specifying maximum sustainable yield (MSY) and OY;

(ii) Specifying status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks and stock complexes that are part of a fishery;

(iii) Preventing overfishing and achieving OY, incorporation of scientific and management uncertainty in control rules, and adaptive management using annual catch limits (ACL) and measures to ensure accountability (AM); and

(iv) Rebuilding stocks and stock complexes.

(2) *Overview of Magnuson-Stevens Act concepts and provisions related to NS1*—(i) *MSY.* The Magnuson-Stevens Act establishes MSY as the basis for fishery management and requires that: The fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex be rebuilt to a level that is capable of producing MSY; and OY not exceed MSY.

(ii) *OY.* The determination of OY is a decisional mechanism for resolving the Magnuson-Stevens Act's conservation and management objectives, achieving a fishery management plan's (FMP) objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation. OY is based on MSY as reduced under paragraphs (e)(3)(iii) and (iv) of this section. The most important limitation on the specification of OY is that the choice of OY and the conservation and management measures proposed to achieve it must prevent overfishing.

(iii) *ACLs and AMs.* Any FMP which is prepared by any Council shall establish a mechanism for specifying ACLs in the FMP (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability (Magnuson-Stevens Act section 303(a)(15)). Subject to certain exceptions and circumstances described in paragraph (h) of this section, this requirement takes effect in fishing year 2010, for fisheries determined subject to overfishing, and in fishing year 2011, for all other fisheries (Magnuson-Stevens Act section 303 note). ''Council'' includes the Regional Fishery Management Councils and the Secretary of Commerce, as appropriate (*see* § 600.305(c)(11)).

(iv) *Reference points.* SDC, MSY, acceptable biological catch (ABC), and ACL, which are described further in paragraphs (e) and (f) of this section, are collectively referred to as ''reference points.''

(v) *Scientific advice.* The Magnuson-Stevens Act has requirements regarding scientific and statistical committees (SSC) of the Regional Fishery Management Councils, including but not limited to, the following provisions:

(A) Each Regional Fishery Management Council shall establish an SSC as described in section 302(g)(1)(A) of the Magnuson-Stevens Act.

(B) Each SSC shall provide its Regional Fishery Management Council recommendations for ABC as well as other scientific advice, as described in Magnuson-Stevens Act section 302(g)(1)(B).

(C) The Secretary and each Regional Fishery Management Council may establish a peer review process for that Council for scientific information used to advise the Council about the conservation and management of a fishery (see Magnuson-Stevens Act section 302(g)(1)(E)). If a peer review process is established, it should investigate the technical merits of stock assessments and other scientific information used by the SSC or agency or international scientists, as appropriate. For Regional Fishery Management Councils, the peer review process is not a substitute for the SSC and should work in conjunction with the SSC. For the Secretary, which does not have an SSC, the peer review process should provide the scientific information necessary.

(D) Each Council shall develop ACLs for each of its managed fisheries that may not exceed the ''fishing level recommendations'' of its SSC or peer review process (Magnuson-Stevens Act section 302(h)(6)). The SSC recommendation that is the most relevant to ACLs is ABC, as both ACL and ABC are levels of annual catch.

(3) *Approach for setting limits and accountability measures, including targets, for consistency with NS1.* In general, when specifying limits and accountability measures intended to avoid overfishing and achieve sustainable fisheries, Councils must take an approach that considers uncertainty in scientific information and management control of the fishery. These guidelines describe how to address uncertainty such that there is a low risk that limits are exceeded as described in paragraphs (f)(4) and (f)(6) of this section.

(c) *Summary of items to include in FMPs related to NS1.* This section provides a summary of items that Councils must include in their FMPs and FMP amendments in order to address ACL, AM, and other aspects of the NS1 guidelines. As described in further detail in paragraph (d) of this section, Councils may review their FMPs to decide if all stocks are ''in the fishery'' or whether some fit the category of ''ecosystem component species.'' Councils must also describe fisheries data for the stocks, stock complexes, and ecosystem component species in their FMPs, or associated public documents such as Stock Assessment and Fishery Evaluation (SAFE) Reports. For all stocks and stock complexes that are ''in the fishery'' (see paragraph (d)(2) of this section), the Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing:

(1) MSY and SDC (see paragraphs (e)(1) and (2) of this section).

(2) OY at the stock, stock complex, or fishery level and provide the OY specification analysis (see paragraph (e)(3) of this section).

(3) ABC control rule (see paragraph (f)(4) of this section).

(4) Mechanisms for specifying ACLs and possible sector-specific ACLs in relationship to the ABC (see paragraphs (f)(5) and (h) of this section).

(5) AMs (see paragraphs (g) and (h)(1) of this section).

(6) Stocks and stock complexes that have statutory exceptions from ACLs (see paragraph (h)(2) of this section) or which fall under limited circumstances which require different approaches to meet the ACL requirements (see paragraph (h)(3) of this section).

(d) *Classifying stocks in an FMP*—(1) *Introduction.* Magnuson-Stevens Act section 303(a)(2) requires that an FMP contain, among other things, a description of the species of fish involved in the fishery. The relevant Council determines which specific target stocks and/or non-target stocks to include in a fishery. This section provides that a Council may, but is not required to, use an ''ecosystem component (EC)'' species classification. As a default, all stocks in an FMP are considered to be ''in the fishery,'' unless they are identified as EC species (see § 600.310(d)(5)) through an FMP amendment process.

(2) *Stocks in a fishery.* Stocks in a fishery may be grouped into stock complexes, as appropriate. Requirements for reference points and management measures for these stocks are described throughout these guidelines.

(3) ''Target stocks'' are stocks that fishers seek to catch for sale or personal use, including ''economic discards'' as defined under Magnuson-Stevens Act section 3(9).

(4) ''Non-target species'' and ''non-target stocks'' are fish caught incidentally during the pursuit of target stocks in a fishery, including ''regulatory discards'' as defined under Magnuson-Stevens Act section 3(38). They may or may not be retained for sale or personal use. Non-target species may be included in a fishery and, if so, they should be identified at the stock level. Some non-target species may be identified in an FMP as ecosystem component (EC) species or stocks.

(5) *Ecosystem component (EC) species.* (i) To be considered for possible classification as an EC species, the species should:

(A) Be a non-target species or non-target stock;

(B) Not be determined to be subject to overfishing, approaching overfished, or overfished;

(C) Not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and

(D) Not generally be retained for sale or personal use.

(ii) Occasional retention of the species would not, in and of itself, preclude consideration of the species under the EC classification. In addition to the general factors noted in paragraphs (d)(5)(i)(A)–(D) of this section, it is important to consider whether use of the EC species classification in a given instance is consistent with MSA conservation and management requirements.

(iii) EC species may be identified at the species or stock level, and may be grouped into complexes. EC species may, but are not required to, be included in an FMP or FMP amendment for any of the following reasons: For data collection purposes; for ecosystem considerations related to specification of OY for the associated fishery; as considerations in the development of conservation and management measures for the associated fishery; and/or to address other ecosystem issues. While EC species are not considered to be ''in the fishery,'' a Council should consider measures for the fishery to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem. EC species do not require specification of reference points but should be monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. If necessary, they should be reclassified as ''in the fishery.''

(6) *Reclassification.* A Council should monitor the catch resulting from a fishery on a regular basis to determine if the stocks and species are appropriately classified in the FMP. If the criteria previously used to classify a stock or species is no longer valid, the Council should reclassify it through an FMP amendment, which documents rationale for the decision.

(7) *Stocks or species identified in more than one FMP.* If a stock is identified in more than one fishery, Councils should choose which FMP will be the primary FMP in which management objectives, SDC, the stock's overall ACL and other reference points for the stock are established. Conservation and management measures in other FMPs in which the stock is identified as part of a fishery should be consistent with the primary FMP's management objectives for the stock.

(8) *Stock complex.* ''Stock complex'' means a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar. At the time a stock complex is established, the FMP should provide a full and explicit description of the proportional composition of each stock in the stock complex, to the extent possible. Stocks may be grouped into complexes for various reasons, including where stocks in a multispecies fishery cannot be targeted independent of one another and MSY can not be defined on a stock-by-stock basis (*see* paragraph (e)(1)(iii) of this section); where there is insufficient data to measure their status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch. The vulnerability of stocks to the fishery should be evaluated when determining if a particular stock complex should be established or reorganized, or if a particular stock should be included in a complex. Stock complexes may be comprised of: one or more indicator stocks, each of which has SDC and ACLs, and several other stocks; several stocks without an indicator stock, with SDC and an ACL for the complex as a whole; or one of more indicator stocks, each of which has SDC and management objectives, with an ACL for the complex as a whole (this situation might be applicable to some salmon species).

(9) *Indicator stocks.* An indicator stock is a stock with measurable SDC that can be used to help manage and evaluate more poorly known stocks that are in a stock complex. If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical status of each stock within the complex, due to similarity in vulnerability. If the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery. More than one indicator stock can be selected to provide more information about the status of the complex. When indicator stock(s) are used, periodic re-evaluation of available quantitative or qualitative information (e.g., catch trends, changes in vulnerability, fish health indices, etc.) is needed to determine whether a stock is subject to overfishing, or is approaching (or in) an overfished condition.

(10) *Vulnerability.* A stock's vulnerability is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MSY and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts to the fishery (e.g., loss of habitat quality). Councils in consultation with their SSC, should analyze the vulnerability of stocks in stock complexes where possible.

(e) *Features of MSY, SDC, and OY.*—(1) *MSY.* Each FMP must include an estimate of MSY for the stocks and stock complexes in the fishery, as described in paragraph (d)(2) of this section).

(i) *Definitions.* (A) *MSY* is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.

(B) *MSY fishing mortality rate (F_{msy})* is the fishing mortality rate that, if applied over the long term, would result in MSY.

(C) *MSY stock size (B_{msy})* means the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate measure of the stock's reproductive potential that would be achieved by fishing at F_{msy}.

(ii) *MSY for stocks.* MSY should be estimated for each stock based on the best scientific information available (see § 600.315).

(iii) *MSY for stock complexes.* MSY should be estimated on a stock-by-stock basis whenever possible. However, where MSY cannot be estimated for each stock in a stock complex, then MSY may be estimated for one or more indicator stocks for the complex or for the complex as a whole. When indicator stocks are used, the stock complex's MSY could be listed as ''unknown,'' while noting that the complex is managed on the basis of one or more indicator stocks that do have known stock-specific MSYs, or suitable proxies, as described in paragraph (e)(1)(iv) of this section. When indicator stocks are not used, MSY, or a suitable proxy, should be calculated for the stock complex as a whole.

(iv) *Specifying MSY.* Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available (*see* § 600.315), and should be re-estimated as required by changes in long-term environmental or ecological conditions, fishery technological characteristics, or new scientific information. When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential, based on the best scientific information available, that can serve as reasonable proxies for MSY, F_{msy}, and B_{msy}, to the extent possible. The MSY for a stock is influenced by its interactions with other stocks in its ecosystem and these interactions may shift as multiple stocks in an ecosystem are fished. These ecological conditions should be taken into account, to the extent possible, when specifying MSY. Ecological conditions not directly accounted for in the specification of MSY can be among the ecological factors considered when setting OY below MSY. As MSY values are estimates or are based on proxies, they will have some level of uncertainty associated with them. The degree of uncertainty in the estimates should be identified, when possible, through the stock assessment process and peer review (*see* § 600.335), and should be taken into account when specifying the ABC Control rule. Where this uncertainty cannot be directly calculated, such as when proxies are used, then a proxy for the uncertainty itself should be established based on the best scientific information, including comparison to other stocks.

(2) *Status determination criteria*—(i) *Definitions.* (A) *Status determination criteria (SDC)* mean the quantifiable factors, MFMT, OFL, and MSST, or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. Magnuson-Stevens Act (section 3(34)) defines both ''overfishing'' and ''overfished'' to mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the MSY on a continuing basis. To avoid confusion, this section clarifies that ''overfished'' relates to biomass of a stock or stock complex, and ''overfishing'' pertains to a rate or level of removal of fish from a stock or stock complex.

(B) *Overfishing* (to overfish) occurs whenever a stock or stock complex is subjected to a level of fishing mortality or annual total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

(C) *Maximum fishing mortality threshold (MFMT)* means the level of fishing mortality (F), on an annual basis, above which overfishing is occurring. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(D) *Overfishing limit (OFL)* means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish. The OFL is an estimate of the catch level above which overfishing is occurring.

(E) *Overfished.* A stock or stock complex is considered ''overfished'' when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis.

(F) *Minimum stock size threshold (MSST)* means the level of biomass below which the stock or stock complex is considered to be overfished.

(G) *Approaching an overfished condition.* A stock or stock complex is approaching an overfished condition when it is projected that there is more than a 50 percent chance that the biomass of the stock or stock complex will decline below the MSST within two years.

(ii) *Specification of SDC and overfishing and overfished determinations.* SDC must be expressed in a way that enables the Council to monitor each stock or stock complex in the FMP, and determine annually, if possible, whether overfishing is occurring and whether the stock or stock complex is overfished. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC as follows (*see* paragraphs (e)(2)(ii)(A) and (B) of this section):

(A) *SDC to determine overfishing status.* Each FMP must describe which of the following two methods will be used for each stock or stock complex to determine an overfishing status.

(*1*) *Fishing mortality rate exceeds MFMT.* Exceeding the MFMT for a period of 1 year or more constitutes overfishing. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(*2*) *Catch exceeds the OFL.* Should the annual catch exceed the annual OFL for 1 year or more, the stock or stock complex is considered subject to overfishing.

(B) *SDC to determine overfished status.* The MSST or reasonable proxy must be expressed in terms of spawning biomass or other measure of reproductive potential. To the extent possible, the MSST should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years, if the stock or stock complex were exploited at the MFMT specified under paragraph (e)(2)(ii)(A)(*1*) of this section. Should the estimated size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.

(iii) *Relationship of SDC to environmental change.* Some short-term environmental changes can alter the size of a stock or stock complex without affecting its long-term reproductive potential. Long-term environmental changes affect both the short-term size of the stock or stock complex and the long-term reproductive potential of the stock or stock complex.

(A) If environmental changes cause a stock or stock complex to fall below its MSST without affecting its long-term reproductive potential, fishing mortality must be constrained sufficiently to allow rebuilding within an acceptable time frame (*also see* paragraph (j)(3)(ii) of this section). SDC should not be respecified.

(B) If environmental changes affect the long-term reproductive potential of the stock or stock complex, one or more components of the SDC must be respecified. Once SDC have been respecified, fishing mortality may or may not have to be reduced, depending on the status of the stock or stock complex with respect to the new criteria.

(C) If manmade environmental changes are partially responsible for a stock or stock complex being in an overfished condition, in addition to controlling fishing mortality, Councils should recommend restoration of habitat and other ameliorative programs, to the extent possible (see also the guidelines issued pursuant to section 305(b) of the Magnuson-Stevens Act for Council actions concerning essential fish habitat).

(iv) *Secretarial approval of SDC.* Secretarial approval or disapproval of proposed SDC will be based on consideration of whether the proposal:

(A) Has sufficient scientific merit;

(B) Contains the elements described in paragraph (e)(2)(ii) of this section;

(C) Provides a basis for objective measurement of the status of the stock or stock complex against the criteria; and

(D) is operationally feasible.

(3) *Optimum yield*—(i) *Definitions*—(A) *Optimum yield (OY).* Magnuson-Stevens Act section (3)(33) defines ‘‘optimum,’’ with respect to the yield from a fishery, as the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of an overfished fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery. OY may be established at the stock or stock complex level, or at the fishery level.

(B) In NS1, use of the phrase ‘‘achieving, on a continuing basis, the optimum yield from each fishery’’ means producing, from each stock, stock complex, or fishery: a long-term series of catches such that the average catch is equal to the OY, overfishing is prevented, the long term average biomass is near or above B_{msy}, and overfished stocks and stock complexes are rebuilt consistent with timing and other requirements of section 304(e)(4) of the Magnuson-Stevens Act and paragraph (j) of this section.

(ii) *General.* OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. An FMP must contain conservation and management measures, including ACLs and AMs, to achieve OY on a continuing basis, and provisions for information collection that are designed to determine the degree to which OY is achieved. These measures should allow for practical and effective implementation and enforcement of the management regime. The Secretary has an obligation to implement and enforce the FMP. If management measures prove unenforceable—or too restrictive, or not rigorous enough to prevent overfishing while achieving OY—they should be modified; an alternative is to reexamine the adequacy of the OY specification. Exceeding OY does not necessarily constitute overfishing. However, even if no overfishing resulted from exceeding OY, continual harvest at a level above OY would violate NS1, because OY was not achieved on a continuing basis. An FMP must contain an assessment and specification of OY, including a summary of information utilized in making such specification, consistent with requirements of section 303(a)(3) of the Magnuson-Stevens Act. A Council must identify those economic, social, and ecological factors relevant to management of a particular stock, stock complex, or fishery, and then evaluate them to determine the OY. The choice of a particular OY must be carefully documented to show that the OY selected will produce the greatest benefit to the Nation and prevent overfishing.

(iii) *Determining the greatest benefit to the Nation.* In determining the greatest benefit to the Nation, the values that should be weighed and receive serious attention when considering the economic, social, or ecological factors used in reducing MSY to obtain OY are:

(A) The benefits of food production are derived from providing seafood to consumers; maintaining an economically viable fishery together with its attendant contributions to the national, regional, and local economies; and utilizing the capacity of the Nation's fishery resources to meet nutritional needs.

(B) The benefits of recreational opportunities reflect the quality of both the recreational fishing experience and non-consumptive fishery uses such as ecotourism, fish watching, and recreational diving. Benefits also include the contribution of recreational fishing to the national, regional, and local economies and food supplies.

(C) The benefits of protection afforded to marine ecosystems are those resulting from maintaining viable populations (including those of unexploited species), maintaining adequate forage for all components of the ecosystem, maintaining evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles), maintaining the evolutionary potential of species and ecosystems, and accommodating human use.

(iv) *Factors to consider in OY specification.* Because fisheries have limited capacities, any attempt to maximize the measures of benefits described in paragraph (e)(3)(iii) of this section will inevitably encounter practical constraints. OY cannot exceed MSY in any circumstance, and must take into account the need to prevent overfishing and rebuild overfished stocks and stock complexes. OY is prescribed on the basis of MSY as reduced by social, economic, and ecological factors. To the extent possible, the relevant social, economic, and ecological factors used to establish OY for a stock, stock complex, or fishery should be quantified and reviewed in historical, short-term, and long-term contexts. Even where quantification of social, economic, and ecological factors is not possible, the FMP still must address them in its OY specification. The following is a non-exhaustive list of potential considerations for each factor. An FMP must address each factor but not necessarily each example.

(A) *Social factors.* Examples are enjoyment gained from recreational fishing, avoidance of gear conflicts and resulting disputes, preservation of a way of life for fishermen and their families, and dependence of local communities on a fishery (e.g., involvement in fisheries and ability to adapt to change). Consideration may be given to fishery-related indicators (e.g., number of fishery permits, number of commercial fishing vessels, number of party and charter trips, landings, ex-vessel revenues etc.) and non-fishery related indicators (e.g., unemployment rates, percent of population below the poverty level, population density, etc.). Other factors that may be considered include the effects that past harvest levels have had on fishing communities, the cultural place of subsistence fishing, obligations under Indian treaties, proportions of affected minority and low-income groups, and worldwide nutritional needs.

(B) *Economic factors.* Examples are prudent consideration of the risk of overharvesting when a stock's size or reproductive potential is uncertain (*see* § 600.335(c)(2)(i)), satisfaction of consumer and recreational needs, and encouragement of domestic and export markets for U.S. harvested fish. Other factors that may be considered include: The value of fisheries, the level of capitalization, the decrease in cost per unit of catch afforded by an increase in stock size, the attendant increase in catch per unit of effort, alternate employment opportunities, and economic contribution to fishing communities, coastal areas, affected states, and the nation.

(C) *Ecological factors.* Examples include impacts on ecosystem component species, forage fish stocks, other fisheries, predator-prey or competitive interactions, marine mammals, threatened or endangered species, and birds. Species interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration should be given to managing forage stocks for higher biomass than B_{msy} to enhance and protect the marine ecosystem. Also important are ecological or environmental conditions that stress marine organisms, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.

(v) *Specification of OY.* The specification of OY must be consistent with paragraphs (e)(3)(i)–(iv) of this section. If the estimates of MFMT and current biomass are known with a high level of certainty and management controls can accurately limit catch then OY could be set very close to MSY, assuming no other reductions are necessary for social, economic, or ecological factors. To the degree that such MSY estimates and management controls are lacking or unavailable, OY should be set farther from MSY. If management measures cannot adequately control fishing mortality so that the specified OY can be achieved without overfishing, the Council should reevaluate the management measures and specification of OY so that the dual requirements of NS1 (preventing overfishing while achieving, on a continuing basis, OY) are met.

(A) The amount of fish that constitutes the OY should be expressed in terms of numbers or weight of fish.

(B) Either a range or a single value may be specified for OY.

(C) All catch must be counted against OY, including that resulting from bycatch, scientific research, and all fishing activities.

(D) The OY specification should be translatable into an annual numerical estimate for the purposes of establishing any total allowable level of foreign fishing (TALFF) and analyzing impacts of the management regime.

(E) The determination of OY is based on MSY, directly or through proxy. However, even where sufficient scientific data as to the biological characteristics of the stock do not exist, or where the period of exploitation or investigation has not been long enough for adequate understanding of stock dynamics, or where frequent large-scale fluctuations in stock size diminish the meaningfulness of the MSY concept, OY must still be established based on the best scientific information available.

(F) An OY established at a fishery level may not exceed the sum of the MSY values for each of the stocks or stock complexes within the fishery.

(G) There should be a mechanism in the FMP for periodic reassessment of the OY specification, so that it is responsive to changing circumstances in the fishery.

(H) Part of the OY may be held as a reserve to allow for factors such as uncertainties in estimates of stock size and domestic annual harvest (DAH). If an OY reserve is established, an adequate mechanism should be included in the FMP to permit timely release of the reserve to domestic or foreign fishermen, if necessary.

(vi) *OY and foreign fishing.* Section 201(d) of the Magnuson-Stevens Act provides that fishing by foreign nations is limited to that portion of the OY that will not be harvested by vessels of the United States. The FMP must include an assessment to address the following, as required by section 303(a)(4) of the Magnuson-Stevens Act:

(A) *DAH.* Councils and/or the Secretary must consider the capacity of, and the extent to which, U.S. vessels will harvest the OY on an annual basis. Estimating the amount that U.S. fishing vessels will actually harvest is required to determine the surplus.

(B) *Domestic annual processing (DAP).* Each FMP must assess the capacity of U.S. processors. It must also assess the amount of DAP, which is the sum of two estimates: The estimated amount of U.S. harvest that domestic processors will process, which may be based on historical performance or on surveys of the expressed intention of manufacturers to process, supported by evidence of contracts, plant expansion, or other relevant information; and the estimated amount of fish that will be harvested by domestic vessels, but not processed (*e.g.*, marketed as fresh whole fish, used for private consumption, or used for bait).

(C) *Joint venture processing (JVP).* When DAH exceeds DAP, the surplus is available for JVP.

(f) *Acceptable biological catch, annual catch limits, and annual catch targets.* The following features (see paragraphs (f)(1) through (f)(5) of this section) of acceptable biological catch and annual catch limits apply to stocks and stock complexes in the fishery (see paragraph (d)(2) of this section).

(1) *Introduction.* A control rule is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases. Examples of scientific uncertainty include uncertainty in the estimates of MFMT and biomass. Management uncertainty may include late catch reporting, misreporting, and underreporting of catches and is affected by a fishery's ability to control actual catch. For example, a fishery that has inseason catch data available and inseason closure authority has better management control and precision than a fishery that does not have these features.

(2) *Definitions.* (i) *Catch* is the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

(ii) *Acceptable biological catch (ABC)* is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (see paragraph (f)(3) of this section), and should be specified based on the ABC control rule.

(iii) *ABC control rule* means a specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (*see* paragraph (f)(4) of this section).

(iv) *Annual catch limit (ACL)* is the level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed the ABC, but may be divided into sector-ACLs (*see* paragraph (f)(5) of this section).

(v) *Annual catch target (ACT)* is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. ACTs are recommended in the system of accountability measures so that ACL is not exceeded.

(vi) *ACT control rule* means a specified approach to setting the ACT for a stock or stock complex such that the risk of exceeding the ACL due to management uncertainty is at an acceptably low level.

(3) *Specification of ABC.* ABC may not exceed OFL (see paragraph (e)(2)(i)(D) of this section). Councils should develop a process for receiving scientific information and advice used to establish ABC. This process should: Identify the body that will apply the ABC control rule (*i.e.* , calculates the ABC), and identify the review process that will evaluate the resulting ABC. The SSC must recommend the ABC to the Council. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why. For Secretarial FMPs or FMP amendments, agency scientists or a peer review process would provide the scientific advice to establish ABC. For internationally-assessed stocks, an ABC as defined in these guidelines is not required if they meet the international exception (*see* paragraph (h)(2)(ii)). While the ABC is allowed to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. Also, *see* paragraph (f)(5) of this section for cases where a Council recommends that ACL is equal to ABC, and ABC is equal to OFL.

(i) *Expression of ABC.* ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC.

(ii) *ABC for overfished stocks.* For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan.

(4) *ABC control rule.* For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its SSC. The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50 percent and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed. The process of establishing an ABC control rule could also involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E). The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC control rule should consider uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, and projections. The control rule may be used in a tiered approach to address different levels of scientific uncertainty.

(5) *Setting the annual catch limit*—(i) *General.* ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing (see MSA section 303(a)(15)). If a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. A ''multiyear plan'' as referenced in section 303(a)(15) of the Magnuson-Stevens Act is a plan that establishes harvest specifications or harvest guidelines for each year of a time period greater than 1 year. A multiyear plan must include a mechanism for specifying ACLs for each year with appropriate AMs to prevent overfishing and maintain an appropriate rate of rebuilding if the stock or stock complex is in a rebuilding plan. A multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are triggered for the next year consistent with paragraph (g)(3) of this section.

(ii) *Sector-ACLs.* A Council may, but is not required to, divide an ACL into sector-ACLs. ''Sector,'' for purposes of this section, means a distinct user group to which separate management strategies and separate catch quotas apply. Examples of sectors include the commercial sector, recreational sector, or various gear groups within a fishery. If the management measures for different sectors differ in the degree of management uncertainty, then sector ACLs may be necessary so that appropriate AMs can be developed for each sector. If a Council chooses to use sector ACLs, the sum of sector ACLs must not exceed the stock or stock complex level ACL. The system of ACLs and AMs designed must be effective in protecting the stock or stock complex as a whole. Even if sector-ACLs and AMs are established, additional AMs at the stock or stock complex level may be necessary.

(iii) *ACLs for State-Federal Fisheries.* For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments should include an ACL for the overall stock that may be further divided. For example, the overall ACL could be divided into a Federal-ACL and state-ACL. However, NMFS recognizes that Federal management is limited to the portion of the fishery under Federal authority (*see* paragraph (g)(5) of this section). When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies, and scientific capacity to support such strategies (including AMs for state or territorial and Federal waters), to prevent overfishing of shared stocks and ensure their sustainability.

(6) *ACT control rule.* If ACT is specified as part of the AMs for a fishery, an ACT control rule is utilized for setting the ACT. The ACT control rule should clearly articulate how management uncertainty in the amount of catch in the fishery is accounted for in setting ACT. The objective for establishing the ACT and related AMs is that the ACL not be exceeded.

(i) *Determining management uncertainty.* Two sources of management uncertainty should be accounted for in establishing the AMs for a fishery, including the ACT control rule if utilized: Uncertainty in the ability of managers to constrain catch so the ACL is not exceeded, and uncertainty in quantifying the true catch amounts (*i.e.,* estimation errors). To determine the level of management uncertainty in controlling catch, analyses need to consider past management performance in the fishery and factors such as time lags in reported catch. Such analyses must be based on the best available scientific information from an SSC, agency scientists, or peer review process as appropriate.

(ii) *Establishing tiers and corresponding ACT control rules.* Tiers can be established based on levels of management uncertainty associated with the fishery, frequency and accuracy of catch monitoring data available, and risks of exceeding the limit. An ACT control rule could be established for each tier and have, as appropriate, different formulas and standards used to establish the ACT.

(7) A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and if used ACT.

(g) *Accountability measures.* The following features (see paragraphs (g)(1) through (5) of this section) of accountability measures apply to those stocks and stock complexes in the fishery.

(1) *Introduction.* AMs are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages and correct the problems that caused the overage in as short a time as possible. NMFS identifies two categories of AMs, inseason AMs and AMs for when the ACL is exceeded.

(2) *Inseason AMs.* Whenever possible, FMPs should include inseason monitoring and management measures to prevent catch from exceeding ACLs. Inseason AMs could include, but are not limited to: ACT; closure of a fishery; closure of specific areas; changes in gear; changes in trip size or bag limits; reductions in effort; or other appropriate management controls for the fishery. If final data or data components of catch are delayed, Councils should make appropriate use of preliminary data, such as landed catch, in implementing inseason AMs. FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.

(3) *AMs for when the ACL is exceeded.* On an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered and implemented as soon as possible to correct the operational issue that caused the ACL overage, as well as any biological consequences to the stock or stock complex resulting from the overage when it is known. These AMs could include, among other things, modifications of inseason AMs or overage adjustments. For stocks and stock complexes in rebuilding plans, the AMs should include overage adjustments that reduce the ACLs in the next fishing year by the full amount of the overages, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages. If catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.

(4) *AMs based on multi-year average data.* Some fisheries have highly variable annual catches and lack reliable inseason or annual data on which to base AMs. If there are insufficient data upon which to compare catch to ACL, either inseason or on an annual basis, AMs could be based on comparisons of average catch to average ACL over a three-year moving average period or, if supported by analysis, some other appropriate multi-year period. Councils should explain why basing AMs on a multi-year period is appropriate. Evaluation of the moving average catch to the average ACL must be conducted annually and AMs should be implemented if the average catch exceeds the average ACL. As a performance standard, if the average catch exceeds the average ACL for a stock or stock complex more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. The initial ACL and management measures may incorporate information from previous years so that AMs based on average ACLs can be applied from the first year. Alternatively, a Council could use a stepped approach where in year-1, catch is compared to the ACL for year-1; in year-2 the average catch for the past 2 years is compared to the average ACL; then in year 3 and beyond, the most recent 3 years of catch are compared to the corresponding ACLs for those years.

(5) *AMs for State-Federal Fisheries.* For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments must, at a minimum, have AMs for the portion of the fishery under Federal authority. Such AMs could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.

(h) *Establishing ACL mechanisms and AMs in FMPs.* FMPs or FMP amendments must establish ACL mechanisms and AMs for all stocks and stock complexes in the fishery, unless paragraph (h)(2) of this section is applicable. These mechanisms should describe the annual or multiyear process by which specific ACLs, AMs, and other reference points such as OFL, and ABC will be established. If a complex has multiple indicator stocks, each indicator stock must have its own ACL; an additional ACL for the stock complex as a whole is optional. In cases where fisheries (e.g., Pacific salmon) harvest multiple indicator stocks of a single species that cannot be distinguished at the time of capture, separate ACLs for the indicator stocks are not required and the ACL can be established for the complex as a whole.

(1) In establishing ACL mechanisms and AMs, FMPs should describe:

(i) Timeframes for setting ACLs (e.g., annually or multi-year periods);

(ii) Sector-ACLs, if any (including set-asides for research or bycatch);

(iii) AMs and how AMs are triggered and what sources of data will be used (e.g., inseason data, annual catch compared to the ACL, or multi-year averaging approach); and

(iv) Sector-AMs, if there are sector-ACLs.

(2) *Exceptions from ACL and AM requirements*—(i) *Life cycle.* Section 303(a)(15) of the Magnuson-Stevens Act ''shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species'' (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately 1 year and that the individual has only one breeding season in its lifetime. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.

(ii) *International fishery agreements.* Section 303(a)(15) of the Magnuson-Stevens Act applies ''unless otherwise provided for under an international agreement in which the United States participates'' (Magnuson-Stevens Act section 303 note). This exception applies to stocks or stock complexes subject to management under an international agreement, which is defined as ''any bilateral or multilateral treaty, convention, or agreement which relates to fishing and to which the United States is a party'' (see Magnuson-Stevens Act section 3(24)). These stocks would still need to have SDC and MSY.

(3) *Flexibility in application of NS1 guidelines*. There are limited circumstances that may not fit the standard approaches to specification of reference points and management measures set forth in these guidelines. These include, among other things, conservation and management of Endangered Species Act listed species, harvests from aquaculture operations, and stocks with unusual life history characteristics (e.g., Pacific salmon, where the spawning potential for a stock is spread over a multi-year period). In these circumstances, Councils may propose alternative approaches for satisfying the NS1 requirements of the Magnuson-Stevens Act than those set forth in these guidelines. Councils must document their rationale for any alternative approaches for these limited circumstances in an FMP or FMP amendment, which will be reviewed for consistency with the Magnuson-Stevens Act.

(i) *Fisheries data*. In their FMPs, or associated public documents such as SAFE reports as appropriate, Councils must describe general data collection methods, as well as any specific data collection methods used for all stocks in the fishery, and EC species, including:

(1) Sources of fishing mortality (both landed and discarded), including commercial and recreational catch and bycatch in other fisheries;

(2) Description of the data collection and estimation methods used to quantify total catch mortality in each fishery, including information on the management tools used (i.e., logbooks, vessel monitoring systems, observer programs, landings reports, fish tickets, processor reports, dealer reports, recreational angler surveys, or other methods); the frequency with which data are collected and updated; and the scope of sampling coverage for each fishery; and

(3) Description of the methods used to compile catch data from various catch data collection methods and how those data are used to determine the relationship between total catch at a given point in time and the ACL for stocks and stock complexes that are part of a fishery.

(j) *Council actions to address overfishing and rebuilding for stocks and stock complexes in the fishery*—(1) *Notification*. The Secretary will immediately notify in writing a Regional Fishery Management Council whenever it is determined that:

(i) Overfishing is occurring;

(ii) A stock or stock complex is overfished;

(iii) A stock or stock complex is approaching an overfished condition; or

(iv) Existing remedial action taken for the purpose of ending previously identified overfishing or rebuilding a previously identified overfished stock or stock complex has not resulted in adequate progress.

(2) *Timing of actions*—(i) *If a stock or stock complex is undergoing overfishing*. FMPs or FMP amendments must establish ACL and AM mechanisms in 2010, for stocks and stock complexes determined to be subject to overfishing, and in 2011, for all other stocks and stock complexes (*see* paragraph (b)(2)(iii) of this section). To address practical implementation aspects of the FMP and FMP amendment process, paragraphs (j)(2)(i)(A) through (C) of this section clarifies the expected timing of actions.

(A) In addition to establishing ACL and AM mechanisms, the ACLs and AMs themselves must be specified in FMPs, FMP amendments, implementing regulations, or annual specifications beginning in 2010 or 2011, as appropriate.

(B) For stocks and stock complexes still determined to be subject to overfishing at the end of 2008, ACL and AM mechanisms and the ACLs and AMs themselves must be effective in fishing year 2010.

(C) For stocks and stock complexes determined to be subject to overfishing during 2009, ACL and AM mechanisms and ACLs and AMs themselves should be effective in fishing year 2010, if possible, or in fishing year 2011, at the latest.

(ii) *If a stock or stock complex is overfished or approaching an overfished condition*. (A) For notifications that a stock or stock complex is overfished or approaching an overfished condition made before July 12, 2009, a Council must prepare an FMP, FMP amendment, or proposed regulations within one year of notification. If the stock or stock complex is overfished, the purpose of the action is to specify a time period for ending overfishing and rebuilding the stock or stock complex that will be as short as possible as described under section 304(e)(4) of the Magnuson-Stevens Act. If the stock or stock complex is approaching an overfished condition, the purpose of the action is to prevent the biomass from declining below the MSST.

(B) For notifications that a stock or stock complex is overfished or approaching an overfished condition made after July 12, 2009, a Council must prepare and implement an FMP, FMP amendment, or proposed regulations within two years of notification, consistent with the requirements of section 304(e)(3) of the Magnuson-Stevens Act. Council actions should be submitted to NMFS within 15 months of notification to ensure sufficient time for the Secretary to implement the measures, if approved. If the stock or stock complex is overfished and overfishing is occurring, the rebuilding plan must end overfishing immediately and be consistent with ACL and AM requirements of the Magnuson-Stevens Act.

(3) *Overfished fishery*. (i) Where a stock or stock complex is overfished, a Council must specify a time period for rebuilding the stock or stock complex based on factors specified in Magnuson-Stevens Act section 304(e)(4). This target time for rebuilding (T_{target}) shall be as short as possible, taking into account: The status and biology of any overfished stock, the needs of fishing communities, recommendations by international organizations in which the U.S. participates, and interaction of the stock within the marine ecosystem. In addition, the time period shall not exceed 10 years, except where biology of the stock, other environmental conditions, or management measures under an international agreement to which the U.S. participates, dictate otherwise. SSCs (or agency scientists or peer review processes in the case of Secretarial actions) shall provide recommendations for achieving rebuilding targets (*see* Magnuson-Stevens Act section 302(g)(1)(B)). The above factors enter into the specification of T_{target} as follows:

(A) The ''minimum time for rebuilding a stock'' (T_{min}) means the amount of time the stock or stock complex is expected to take to rebuild to its MSY biomass level in the absence of any fishing mortality. In this context, the term ''expected'' means to have at least a 50 percent probability of attaining the B_{msy}.

(B) For scenarios under paragraph (j)(2)(ii)(A) of this section, the starting year for the T_{min} calculation is the first year that a rebuilding plan is implemented. For scenarios under paragraph (j)(2)(ii)(B) of this section, the starting year for the T_{min} calculation is 2 years after notification that a stock or stock complex is overfished or the first year that a rebuilding plan is implemented, whichever is sooner.

(C) If T_{min} for the stock or stock complex is 10 years or less, then the maximum time allowable for rebuilding (T_{max}) that stock to its B_{msy} is 10 years.

(D) If T_{min} for the stock or stock complex exceeds 10 years, then the maximum time allowable for rebuilding a stock or stock complex to its B_{msy} is T_{min} plus the length of time associated with one generation time for that stock or stock complex. ''Generation time'' is the average length of time between when an individual is born and the birth of its offspring.

(E) T_{target} shall not exceed T_{max}, and should be calculated based on the factors described in this paragraph (j)(3).

(ii) If a stock or stock complex reached the end of its rebuilding plan period and has not yet been determined to be rebuilt, then the rebuilding F should not be increased until the stock or stock complex has been demonstrated to be rebuilt. If the rebuilding plan was based on a T_{target} that was less than T_{max}, and the stock or stock complex is not rebuilt by T_{target}, rebuilding measures should be revised, if necessary, such that the stock or stock complex will be rebuilt by T_{max}. If the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75 percent of the MFMT, whichever is less.

(iii) Council action addressing an overfished fishery must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery.

(iv) For fisheries managed under an international agreement, Council action addressing an overfished fishery must reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

(4) *Emergency actions and interim measures.* The Secretary, on his/her own initiative or in response to a Council request, may implement interim measures to reduce overfishing or promulgate regulations to address an emergency (Magnuson-Stevens Act section 304(e)(6) or 305(c)). In considering a Council request for action, the Secretary would consider, among other things, the need for and urgency of the action and public interest considerations, such as benefits to the stock or stock complex and impacts on participants in the fishery.

(i) These measures may remain in effect for not more than 180 days, but may be extended for an additional 186 days if the public has had an opportunity to comment on the measures and, in the case of Council-recommended measures, the Council is actively preparing an FMP, FMP amendment, or proposed regulations to address the emergency or overfishing on a permanent basis.

(ii) Often, these measures need to be implemented without prior notice and an opportunity for public comment, as it would be impracticable to provide for such processes given the need to act quickly and also contrary to the public interest to delay action. However, emergency regulations and interim measures that do not qualify for waivers or exceptions under the Administrative Procedure Act would need to follow proposed notice and comment rulemaking procedures.

(k) *International overfishing.* If the Secretary determines that a fishery is overfished or approaching a condition of being overfished due to excessive international fishing pressure, and for which there are no management measures (or no effective measures) to end overfishing under an international agreement to which the United States is a party, then the Secretary and/or the appropriate Council shall take certain actions as provided under Magnuson-Stevens Act section 304(i). The Secretary, in cooperation with the Secretary of State, must immediately take appropriate action at the international level to end the overfishing. In addition, within one year after the determination, the Secretary and/or appropriate Council shall:

(1) Develop recommendations for domestic regulations to address the relative impact of the U.S. fishing vessels on the stock. Council recommendations should be submitted to the Secretary.

(2) Develop and submit recommendations to the Secretary of State, and to the Congress, for international actions that will end overfishing in the fishery and rebuild the affected stocks, taking into account the relative impact of vessels of other nations and vessels of the United States on the relevant stock. Councils should, in consultation with the Secretary, develop recommendations that take into consideration relevant provisions of the Magnuson-Stevens Act and NS1 guidelines, including section 304(e) of the Magnuson-Stevens Act and paragraph (j)(3)(iv) of this section, and other applicable laws. For highly migratory species in the Pacific, recommendations from the Western Pacific, North Pacific, or Pacific Councils must be developed and submitted consistent with Magnuson-Stevens Reauthorization Act section 503(f), as appropriate.

(3) *Considerations for assessing ''relative impact.''* ''Relative impact'' under paragraphs (k)(1) and (2) of this section may include consideration of factors that include, but are not limited to: Domestic and international management measures already in place, management history of a given nation, estimates of a nation's landings or catch (including bycatch) in a given fishery, and estimates of a nation's mortality contributions in a given fishery. Information used to determine relative impact must be based upon the best available scientific information.

(l) *Relationship of National Standard 1 to other national standards—General.* National Standards 2 through 10 provide further requirements for conservation and management measures in FMPs, but do not alter the requirement of NS1 to prevent overfishing and rebuild overfished stocks.

(1) *National Standard 2 (see § 600.315).* Management measures and reference points to implement NS1 must be based on the best scientific information available. When data are insufficient to estimate reference points directly, Councils should develop reasonable proxies to the extent possible (*also see* paragraph (e)(1)(iv) of this section). In cases where scientific data are severely limited, effort should also be directed to identifying and gathering the needed data. SSCs should advise their Councils regarding the best scientific information available for fishery management decisions.

(2) *National Standard 3 (see § 600.320).* Reference points should generally be specified in terms of the level of stock aggregation for which the best scientific information is available (*also see* paragraph (e)(1)(iii) of this section). Also, scientific assessments must be based on the best information about the total range of the stock and potential biological structuring of the stock into biological sub-units, which may differ from the geographic units on which management is feasible.

(3) *National Standard 6 (see § 600.335).* Councils must build into the reference points and control rules appropriate consideration of risk, taking into account uncertainties in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors.

(4) *National Standard 8 (see § 600.345).* National Standard 8 directs the Councils to apply economic and social factors towards sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities within the context of preventing overfishing and rebuilding overfished stocks as required under National Standard 1. Therefore, calculation of OY as reduced from MSY

should include economic and social factors, but the combination of management measures chosen to achieve the OY must principally be designed to prevent overfishing and rebuild overfished stocks.

(5) *National Standard 9 (see § 600.350).* Evaluation of stock status with respect to reference points must take into account mortality caused by bycatch. In addition, the estimation of catch should include the mortality of fish that are discarded.

(m) *Exceptions to requirements to prevent overfishing.* Exceptions to the requirement to prevent overfishing could apply under certain limited circumstances. Harvesting one stock at its optimum level may result in overfishing of another stock when the two stocks tend to be caught together (This can occur when the two stocks are part of the same fishery or if one is bycatch in the other's fishery). Before a Council may decide to allow this type of overfishing, an analysis must be performed and the analysis must contain a justification in terms of overall benefits, including a comparison of benefits under alternative management measures, and an analysis of the risk of any stock or stock complex falling below its MSST. The Council may decide to allow this type of overfishing if the fishery is not overfished and the analysis demonstrates that all of the following conditions are satisfied:

(1) Such action will result in long-term net benefits to the Nation;

(2) Mitigating measures have been considered and it has been demonstrated that a similar level of long-term net benefits cannot be achieved by modifying fleet behavior, gear selection/configuration, or other technical characteristic in a manner such that no overfishing would occur; and

(3) The resulting rate of fishing mortality will not cause any stock or stock complex to fall below its MSST more than 50 percent of the time in the long term, although it is recognized that persistent overfishing is expected to cause the affected stock to fall below its B_{msy} more than 50 percent of the time in the long term.

[FR Doc. E9–636 Filed 1–15–09; 8:45 am]

BILLING CODE 3510–22–P

Appendix K.

SUMMARY OF SCOPING AND PUBLIC HEARING COMMENTS ON THE COMPREHENSIVE ANNUAL CATCH LIMIT AMENDMENT

Prepared by SAFMC Staff

Scoping meetings for the Comprehensive Annual Catch Limit Amendment were held during the weeks of January 26-30, 2009 and February 2-5, 2009. Meetings took place in New Bern, NC; Charleston, SC; Pooler, GA; Cocoa Beach, FL; and Key Largo, FL.

Public hearings for this amendment were held from January 24, 2011 to February 3, 2011 in New Bern, NC; Charleston, SC; Pooler, GA; Jacksonville, FL; Cocoa Beach, FL and Key Largo, FL.

Summary of Scoping Comments

General

- Supports ACL Comprehensive Amendment and supports work with the SSC to determine the ACLs.
- Existing draft of Amendment 17 (December version) as drafted by the staff presents a well-thought out and elegant system of implementing the ACL requirement and we think it is fully compliant with the Congressional and NOAA Fisheries mandates. We encourage the Council to use the framework system of ACLs, ACTs, and AMs proposed generally as in the draft Amendment 17 document.

ACLs

- ACLs/ACTs should be done by state.
- ACL should be divided by the states according to historical harvest; ACL should be managed by the states.
- The amendment should include Control Rules for ABCs, ACLs (if a consideration), and ACTs (if a consideration). The control rules should account for management and scientific uncertainty.
- The amendment should describe how the process how ACL would be updated.

Allocations

- Allocations should be done on long-term, historical basis.
- For-hire should be included in recreational.
- For-hire operator was in favor of separating for-hire and private recreational.
- For-hire and private recreational should be separate. No way to keep track of recreational sector and better accountability of the headboat sector.

- Charter captains should be given their own allocations.

<u>Ecosystem Component</u>

- Should include designation of certain species as Ecosystem Components. Strongly against removing species from FMU as anything that is retained for any purpose – including bycatch and dead discards – needs to be considered. Only 11 of 73 species are historically broken out in the recreational data. Difficult to establish history of landing for most of these species. There is a risk of designating something as Ecosystem Component if the species is ignored and species could become targeted that weren't targeted before. Council should Implement some mechanism to enforce designation of ecosystem species. As an example, there could be a group cap for porgies to track landings. This would not be the same as species groupings. It would be a management cap and not a scientific cap.

<u>Accountability Measures</u>

- Recreational fishermen have overproduced by 300% each year. If you put a quota on the recreational fishermen, there is no way to track it and shut them down.
- Should include accountability measures when fisheries are expected to meet the targets. Should be accountability measures for failed rebuilding timelines.

<u>Management Measures</u>

- Change the trip limit of greater amberjack from 1000 to 2000 pounds a trip since the quota has often not been filled.
- Objects to restrictions to the recreational sector while there is a commercial fishery.
- Objects to any commercial landings while there is a reduction of the recreational landings.
- Object to limits and targets put into place until reliable data collection system put into place (MRFSS not collecting reliable data).
- Stick with daily trip limits and closed areas/seasons in order to discourage highgrading and discards.
- Best thing that could be done are area closures.
- Should develop a lottery system for goliath grouper that would allow catch.
- Prohibit all commercial spearfishing.

<u>Summary of Public Hearing Comments</u>

- Received approximately 1,900 comments.
- Strong opposition to proposed management measures for dolphin and wahoo.
- Opposition to species groupings approach.
- Opposition to harvest of *Sargassum.*
- Council should be clear and consistent on whether ACLs are based on landed catch or total mortality.

- Opposition to the exclusion of Warsaw grouper and speckled hind from tables.
- Request that Council provide an update on bycatch monitoring tools, including costs and percentage of use throughout fishery sectors.
- Request that the Council provide an update on the status of implementing ACCSP.
- Request that Council consider the lack of management buffer for the commercial sector either via a buffer between ABC and ACL or the use of an ACT.
- Opposition to removal of species from the FMU vs designation as EC species.
- Support for retaining the aggregate commercial and recreational ACLs for gag/black/red
- Support for retaining dolphin allocations.
- Concern that management uncertainty is not accounted for in the ACLs.

Appendix L.

DOCUMENTATION. This workbook provides several tabs summarizing average landings in whole weight (lbs) for managed species in the Gulf and South Atlantic for various time periods between 1986-2008. Data sources: SEFSC ACL Datasets from late 2010 (recreational dataset ACLspec_rec81_10wv3_15Sep10.xlsx, commercial dataset ALS_ACL_8OCT2010_WITH_JURISDICTION.xlsx). Each tab provides a summary for 'all' species, a table legend, then an additional table restricted to just managed species. **Note confidentiality issues may be associated with several tabs in this workbook (described at the bottom of this text box). The 'Gulf (NONCONF)' and 'SAFMC (NONCONF)' contain NONCONFIDENTIAL summaries of the landings data.** Note only landings from 1986 on were provided for both regions commercial sector, and for South Atlantic recreational sector, hence all summaries based on 1986-onward. In tables, the column 'Data Issues' denotes instances where at least one sector during the time series summarized had landings of 0 lbs for the species in question. For example, if gag had 0 landings in the for-hire sector in 1990, the line for gag on the 1986-2009 summary would indicate a possible data issue. See "Other Notes" for further details.

<u>GUIDANCE FROM SEFSC REGARDING ACL DATASETS AND THEIR USE:</u>

"In general the information corresponds to the information in the basic data bases used by SEFSC to prepare the data for the SER. Because of the relatively simple methods used to extract the data we recommend that these data will likely be useful for species not currently assessed and that the data not be used for the species for which assessments have been conducted. We think that using these landings only for un-assessed species is compatible with the intended use of the data by the SSCs for examining landings trends of un-assessed species As the SERO knows the SEFSC extractions are relatively simple treatments of the data which should be useful for most of the species managed by the two councils, though not necessarily for the species which have gone through complex assessments. For the assessed species the more simple treatments used in the SEFSC 'ACL' data extractions generally do not replicate the more complex treatments used in preparing data for assessment.

...For South Atlantic wreckfish we recommend not using the data at this time; we are working with ACCSP to revise some extraction routines particularly for South Carolina in recent years.

The relatively simple treatment of the data for these extractions means that the recreational catches from Monroe county, FL are assigned to the Gulf of Mexico. For several important species including king mackerel, greater amberjack, red grouper and gag it is highly likely that the ACL recreational data would not reflect the assessment data. The commercial data are likely geographically accurately separated for greater amberjack and red grouper. No attempt has been made to assign king mackerel to migratory group. For species such as greater amberjack, gag and black grouper for which landings under other species codes are combined or re-apportioned for stock assessments, the ACL files would not reflect the assessment data. Please be aware that the species lists used for the commercial tabulations and the recreational tabulations differ. We will attempt to standardized those lists in the future. The recreational data may include information for a species in a region even though that species in not in a regional FMU (it would be in an FMU from the other region). If SER tabulates the data only for the regional FMUs then there should not be a problem. Given the above comments the trends in abundance for Gulf of Mexico gag, red snapper and yellowedge grouper were similar to those used for assessment. Similarly the trends for tilefish and bluline tilefish were quite similar to those used for assessment after 1991; before 1992 the assessment workshop reclassified the tilefish landings by species ans so the trends differ. Some fraction of Gulf yellowfin grouper may actually be yellowedge grouper. Keeping in mind the above statements, the trends in landings of the South Atlantic species are thought to be similar to the trends of landings used in assessments." (SEFSC, 4 June 2010).

<u>RECREATIONAL:</u>

Note ACL recreational dataset landings estimates may differ from MRFSS website queries because 'For Hire' includes headboat and charter, and SEFSC has used improved weight substitution and charter boat estimation procedures that differ from those on the MRFSS website. Note 'Atlantic' for recreational data includes MRFSS: SE Atl. states (NC-FLE) and Headboat: Atlantic (NC-FL Keys areas 1-17). Note gag and black grouper landings have been adjusted for misidentification prior to 1990.

<u>COMMERCIAL</u>:

Commercial landings are based on ALS data and are subsetted by region based on fisher reported 'Catch Area', which should accurately partition Monroe County landings to Gulf vs. South Atlantic side.

1. Confidentiality is determined by a count of dealers in the "Dealers" column, less than 3 dealers and the cell is considered confidential.

2. REGION is assigned by referring
(a) to the 'WATERBODY' code
(b) the state (or coast for FL) landed. PLEASE NOTE THAT LOUISIANA HAS NO WATERBODY CODES FROM 1993-1999 except for shrimp and menhaden.
(c) in NE data, the region was assigned by landing region code first (1 = New England = 'NATL', 2 = Mid-Atlantic='MATL', 3 =. Chesapeake='MATL'...), then overwritten with 'SATL' where catch area data indicated US South Atlantic waters ('6310' -'7999').

3. Jurisdiction, State vs Federal (or International) was assigned by the waterbody code and distance from shore (where available). It is unfortunate that many state coastal offshore codes (typically ending in '0') are assigned to data that are sometimes from the EEZ. For this reason these codes were assigned an 'UNKNOWN' jurisdiction. Nevertheless, records are subject to review and edit and so the data could be accepted as STATE jurisdiction unless there are obvious gear/species data in the record which countermand that. This extract does not attempt to make that determination. List of water codes will be provided. Only distance from shore was used in determining NE data jurisdiction....

4. A filter field, 'INCLUDE_RECORD' is assigned as a SUGGESTED filter (Y for Yes, N for No), based on FMP boundaries (see esp. Black Sea Bass and Scup/Porgy, as well as some migratory species), as well as species assigned to FMP. Example: Bluefish has a 'USE_THIS_RECORD' ='Y' in the GULF region, and 'N' in rest. It is only managed in SE under the GULF Coastal Migratory FMP, the Atlantic catch is managed outside of the SE region, Thus any Atlantic catch will receive a 'USE_THIS_RECORD' ='N' for bluefish (even though the recirds are present.
(a) Trawl data for Atlantic SG species after 1988 are labled as 'USE_THIS_RECORD' =N
(b) Black Sea Bass and Scup north of Cape Hatteras are labled as 'USE_THIS_RECORD' ='N'

ONLY INFORMATION WITH 'INCLUDE RECORD" = YES is included in summaries.

<u>OTHER NOTES:</u>
You can filter the Gulf (NONCONF) and SAFMC (NONCONF) by Managed = 1, to see only managed Reef Fish (Gulf) and Snapper-Grouper (SAFMC).
Species with potential data issues for this time series are noted in the 'Data Issues?' column; data issues may arise because that species is either 1) not landed or 2) not identified to species for a given sector during one or several years in the time series.

Note that weight estimates in gutted lbs may not be available for all species, especially for recreational fisheries. With regards to gutted vs. total lbs, the SEFSC has recommended the following:

(1) The SEFSC does not really have any preference, one way or another, as to whether the fish units are expressed in terms of "gutted weight" or "whole weight." At the pragmatic level, whatever unit is actually used by SERO/Council in managing the fishery should also be the unit used in the analysis for consistency, to simplify the management and communication process, and to minimize errors.

However, (2) If we are required to choose just one standard unit, SEFSC scientists would rather choose "whole weight" rather than "gutted weight" due to the following reasons: (a) At some point in their lives, all fish are caught/landed whole (not gutted), (b) Not all fish/species are landed gutted, (c) Whole weight makes more sense in terms of stock assessments and biological measurements, (d) There is no standard conversion factor in place for all species, and (e) As practiced, gutting methods tend to change with time, which creates serious standardization and conversion problems.

NOTE: Wreckfish landings in ACL dataset do not accurately reflect wreckfish landings. Wreckfish landings post-1992 from Wreckfish IFQ Logbook Dataset (SEFSC). Note 2 records of wreckfish landings (1 in 2006, 1 in 2007) are from landings outside of SAFMC juridictional waters, but were landed in Florida and have been kept in the dataset; these landings total ~2000 lbs.

NOTE: These tables may contain CONFIDENTIAL data for fisheries with limited participants; please take care in its distribution.

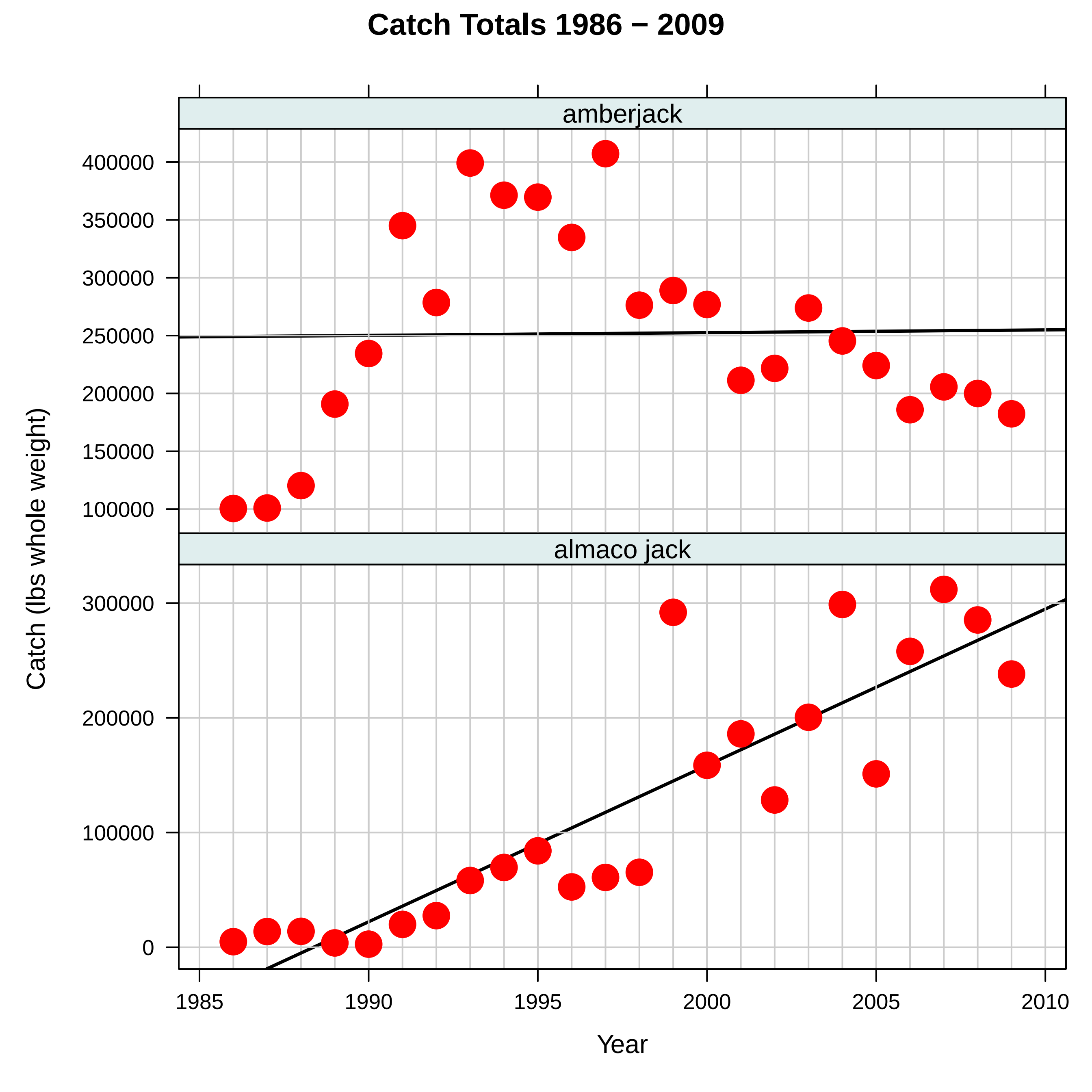
POSSIBLY CONFIDENTIAL COLUMNS: Any 'Commercial', 'For-Hire', or 'Recreational' landings or percent years column might be confidential; suggest providing only COMMON NAME, DATA ISSUES, and TOTAL LANDINGS to Councils or SSCs. REMOVE WRECKFISH ENTIRELY.

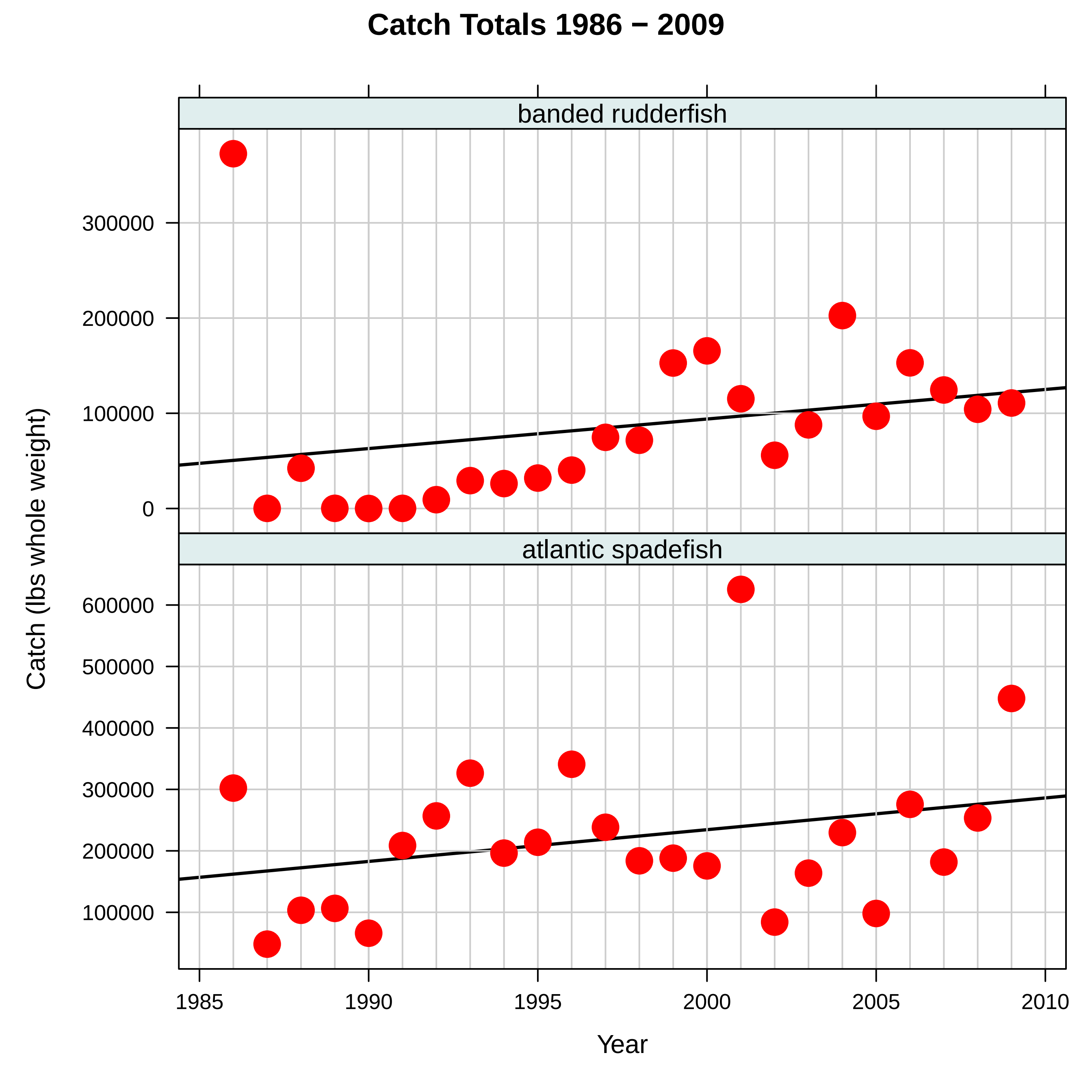
Row Labels	Average 2005-2009 Commercial	For-Hire	Private	TOTAL Average 2005-2009	Data Issues? Commercial	For-Hire	Private	TOTAL Data Issues?
almaco jack	141,026	71,643	36,469	**249,138**				**0**
amberjack genus	199,639	515	11,439	**211,593**				**0**
atlantic spadefish	33,429	119,780	131,699	**284,908**				**0**
banded rudderfish	35,397	65,490	17,043	**117,929**				**0**
bank sea bass	355	4,223	990	**5,567**				**0**
bar jack	4,528	4,711	1,487	**10,726**				**0**
black grouper$_1$	78,390	32,479	116,377	**149,581**				**0**
black margate	0	44,694	41,734	**86,428**	maybe			**1**
black sea bass	493,702	239,047	451,109	**1,183,858**				**0**
black snapper	141	0	0	**141**				**0**
blackfin snapper	816	339	932	**2,087**				**0**
blackline tilefish	0	0	0	**0**	maybe			**1**
blue runner	173,419	525,292	300,415	**999,126**				**0**
bluefish	0	1,498,389	727,193	**2,225,582**	maybe			**1**
blueline tilefish	246,691	165,506	81,102	**493,299**				**0**
bluestriped grunt	0	20,549	24,324	**44,873**	maybe			**1**
cero	5,216	20,502	32,335	**58,053**				**0**
cobia	93,910	175,884	697,272	**967,067**				**0**
coney	8	293	2,152	**2,453**				**0**
cottonwick	0	6	0	**6**	maybe			**1**
crevalle jack	208,540	402,779	148,352	**759,671**				**0**
cubera snapper	4,823	6,690	7,213	**18,726**				**0**
dog snapper	528	586	5,344	**6,458**				**0**
dolphin	779,527	3,532,845	5,146,878	**9,459,249**				**0**
dwarf sand perch	0	0	0	**0**	maybe			**1**
french grunt	0	57	1,086	**1,142**	maybe			**1**
gag	618,711	163,248	371,778	**1,153,737**				**0**
golden tilefish	359,150	0	0	**359,150**		maybe	maybe	**2**
goldface tilefish	0	0	0	**0**	maybe		maybe	**2**
goliath grouper	0	11	546	**557**				**0**
grass porgy	0	137	654	**791**	maybe			**1**
gray snapper	111,210	256,374	372,371	**739,956**				**0**
gray triggerfish	0	177,742	240,823	**418,565**	maybe			**1**
graysby	520	7,981	6,147	**14,648**				**0**
greater amberjack	643,791	503,206	445,519	**1,592,516**				**0**
grunt family	154,161	25,711	48,470	**228,342**				**0**
hogfish	38,620	4,278	100,240	**143,138**				**0**
jack family	0	209,271	53,476	**262,747**	maybe			**1**
jolthead porgy	2,361	19,084	19,521	**40,966**				**0**
king and cero mackerel	4,158,734	0	0	**4,158,734**		maybe	maybe	**2**
king mackerel	0	1,143,678	3,914,232	**5,057,911**	maybe			**1**
knobbed porgy	20,487	12,456	4,674	**37,618**				**0**
lane snapper	6,151	30,698	58,269	**95,118**				**0**
leatherjacket family	0	79	4,963	**5,042**	maybe			**1**
lesser amberjack	5,100	3,602	1,410	**10,112**				**0**
little tunny	332,073	383,593	823,573	**1,539,239**				**0**
longspine porgy	12	360	0	**372**				**0**
mahogany snapper	8	125	334	**467**				**0**
margate	3,576	12,191	6,575	**22,342**				**0**
misty grouper	1,833	0	0	**1,834**				**0**
mutton snapper$_1$	82,891	157,229	321,429	**561,549**				**0**
nassau grouper	0	12	0	**12**				**0**

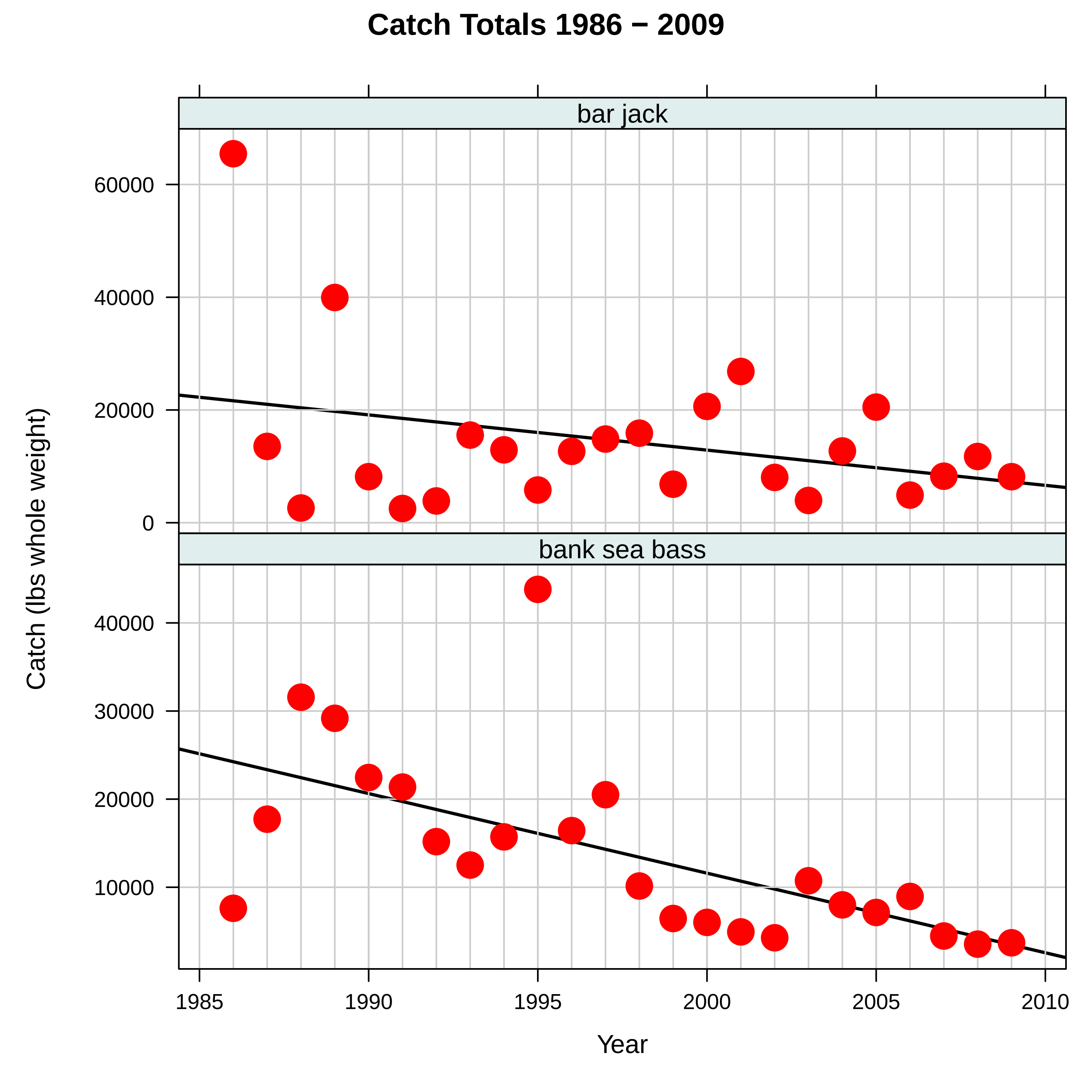
Table. SAFMC mean landings (2005-2009; lbs whole weight) for all species, by sector. For-hire includes headboat and charter landings. Private includes shore and private/rental boat. Data issues denoted if landings in any sector equal to zero for any year in the time series 2005-2009. 1 Post-stratifies MRFSS data for Monroe County to the South Atlantic.

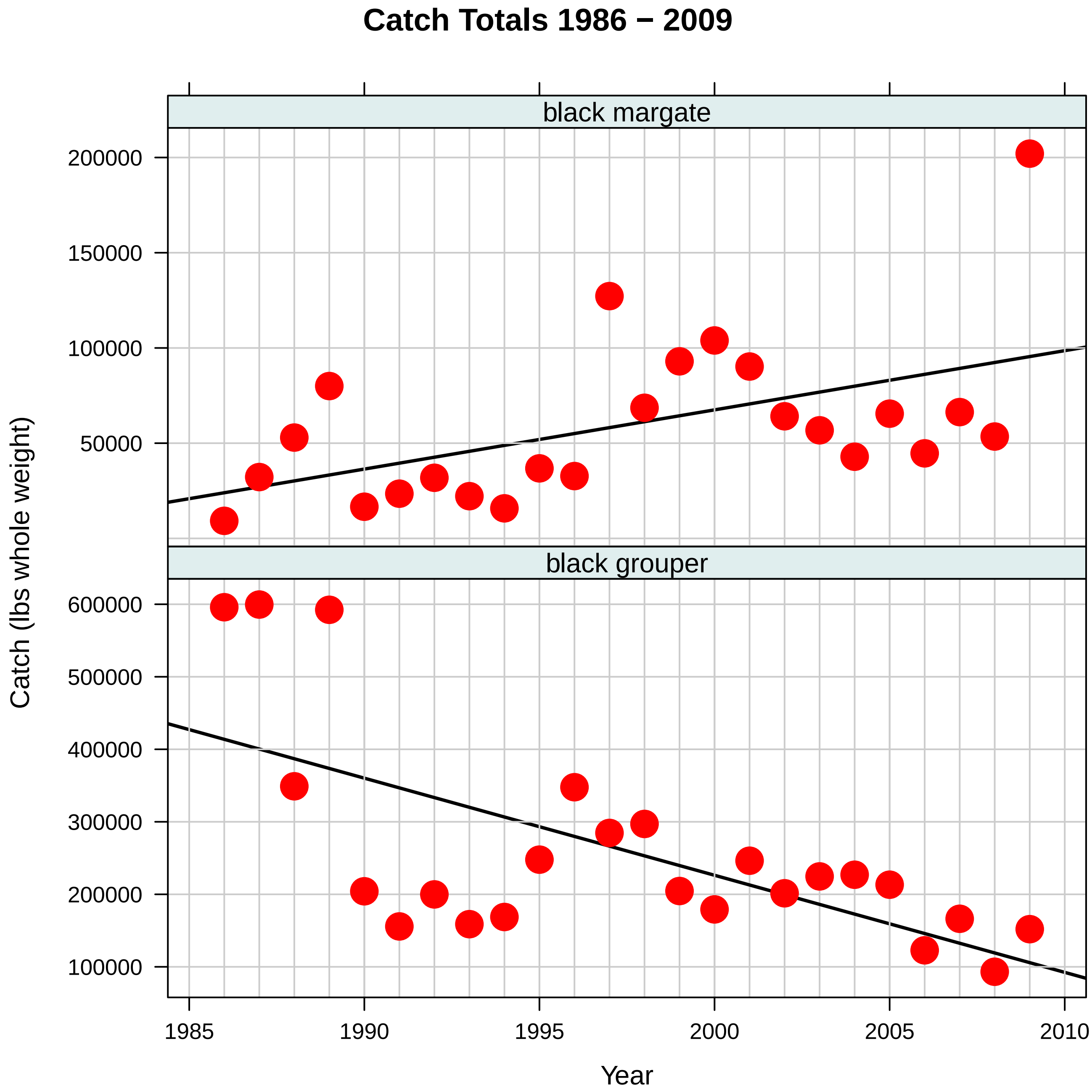
ocean triggerfish	0	1,892	9,070	**10,962**	maybe			**1**
porgy family	0	1,422	8,326	**9,749**	maybe			**1**
porkfish	0	4,689	16,068	**20,756**	maybe			**1**
puddingwife	0	4	415	**418**	maybe			**1**
queen snapper	4,804	0	282	**5,086**				**0**
queen triggerfish	0	1,971	1,532	**3,503**	maybe			**1**
red drum	193,568	269,857	1,127,834	**1,591,259**				**0**
red grouper	475,981	90,399	473,814	**1,040,195**				**0**
red hind	15,366	1,660	3,705	**20,731**				**0**
red porgy	122,134	86,891	31,517	**240,542**				**0**
red snapper	190,176	216,435	340,548	**747,160**				**0**
rock hind	22,786	7,196	4,473	**34,454**				**0**
rock sea bass	609	604	1,112	**2,325**				**0**
royal red shrimp	319,327	0	0	**319,327**		maybe	maybe	**2**
sailors choice	0	9,255	9,983	**19,239**	maybe			**1**
sand perch	0	5,882	4,575	**10,458**	maybe			**1**
sand tilefish	2,205	2,491	6,472	**11,168**				**0**
saucereye porgy	0	863	1,112	**1,975**				**0**
scamp	319,350	84,939	57,840	**462,128**				**0**
schoolmaster	186	678	4,559	**5,423**				**0**
scup	0	8,058	453	**8,511**	maybe			**1**
scups or porgies	9,719	0	0	**9,719**		maybe	maybe	**2**
sea bass family	4,388	437	2,482	**7,307**				**0**
sheepshead	251,552	349,752	1,393,620	**1,994,924**				**0**
silk snapper	16,402	5,353	173	**21,928**				**0**
slipper lobster	557	0	0	**557**		maybe	maybe	**2**
smallmouth grunt	0	0	0	**0**	maybe			**1**
snapper family	849	1,934	9,956	**12,739**				**0**
snowy grouper	160,656	55,565	29,830	**246,050**				**0**
spanish grunt	0	0	138	**138**	maybe			**1**
spanish mackerel	3,500,407	532,943	1,149,196	**5,182,546**				**0**
speckled hind	2,311	2,127	95	**4,533**				**0**
spiny lobster	1,765,070	0	0	**1,765,070**		maybe	maybe	**2**
stone crab	261,612	0	0	**261,612**		maybe	maybe	**2**
temperate bass genus	0	0	0	**0**	maybe			**1**
tiger grouper	0	0	0	**0**	maybe		maybe	**2**
tilefish	0	49,387	21,699	**71,086**	maybe			**1**
tilefish family	0	833	2,038	**2,871**	maybe			**1**
tomtate	15	35,765	30,891	**66,671**				**0**
triggerfishes	317,626	0	0	**317,626**		maybe	maybe	**2**
vermilion snapper	1,040,602	489,378	112,206	**1,642,186**				**0**
wahoo	43,118	225,450	729,051	**997,619**				**0**
warsaw grouper	832	3,761	9,867	**14,460**				**0**
wenchman	0	0	0	**0**	maybe	maybe		**2**
white grunt	31,092	235,234	150,185	**416,512**				**0**
whitebone porgy	7	7,307	13,750	**21,064**				**0**
wrasse family	0	0	0	**0**	maybe			**1**
wreckfish	86,911	0	0	**86,911**		maybe	maybe	**2**
yellow jack	8	21,185	14,024	**35,217**				**0**
yellowedge grouper	18,641	545	5,111	**24,297**				**0**
yellowfin grouper	5,562	711	6,657	**12,930**				**0**
yellowmouth grouper	17	1,490	1,997	**3,504**				**0**
yellowtail snapper$_1$	826,722	144,615	231,581	**1,202,918**				**0**

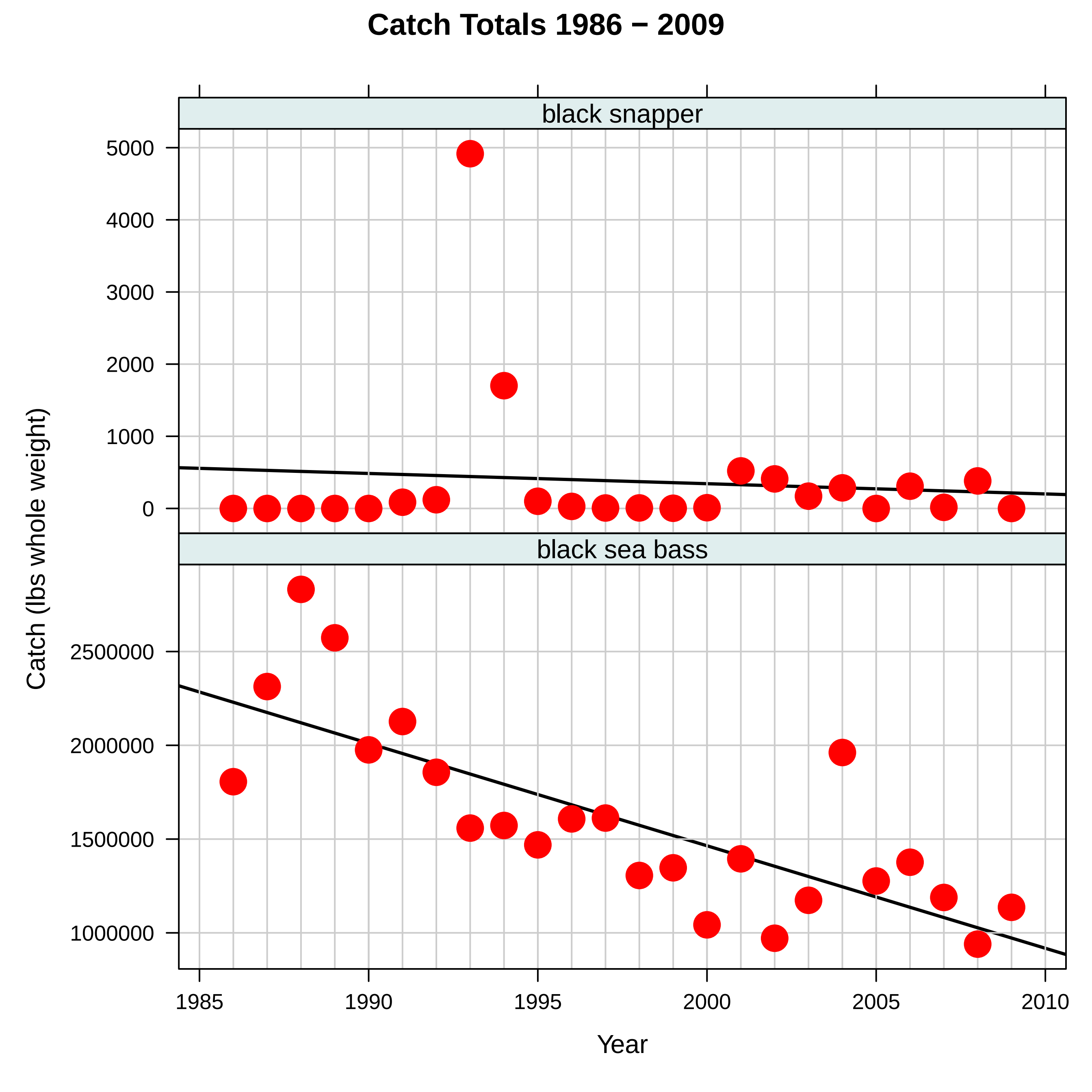
APPENDIX M. Landings Trends for Snapper Grouper Species 1986-2009


Catch Totals 1986 − 2009
amberjack
almaco jack
400000
350000
300000
250000
200000
150000
100000
300000
200000
100000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

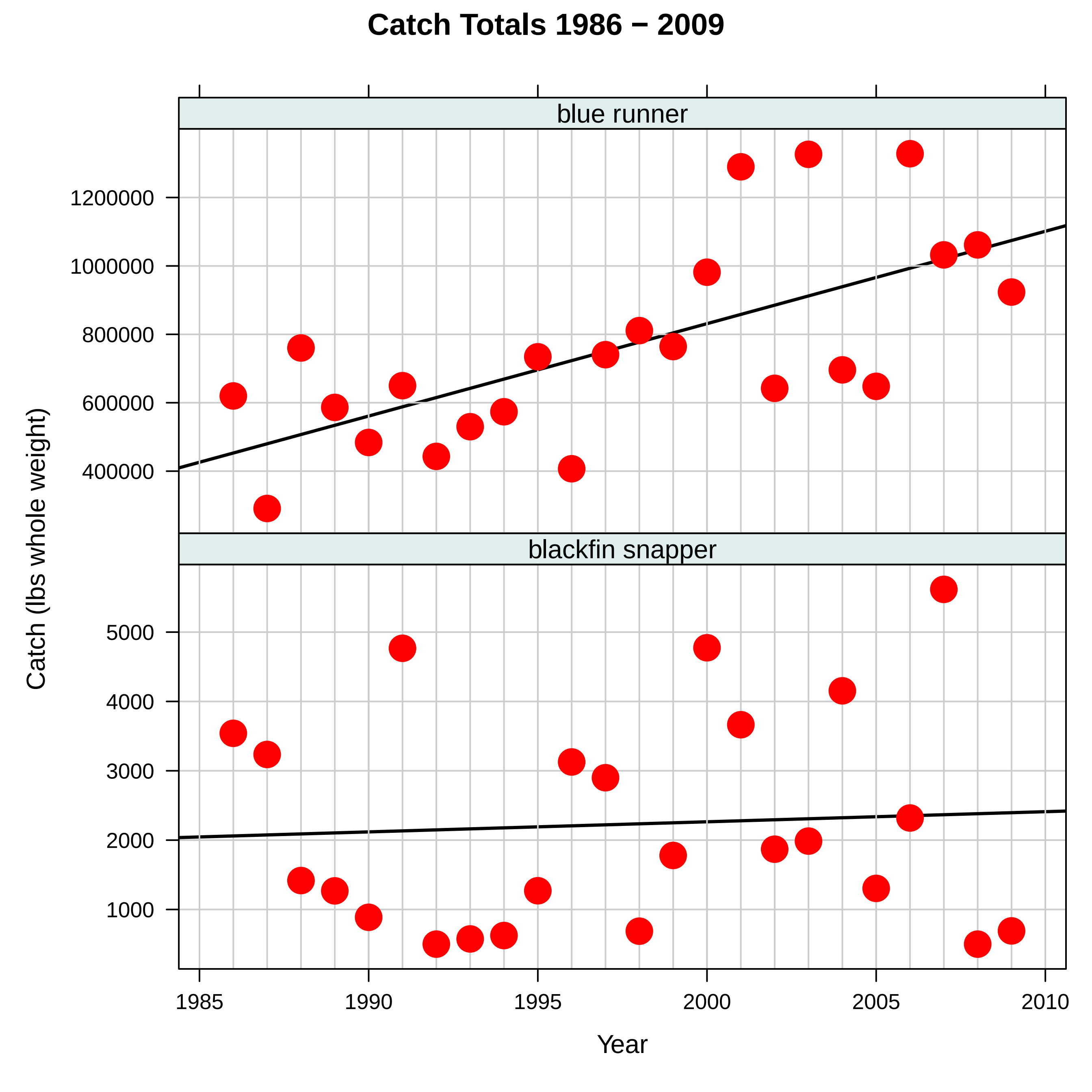

Catch Totals 1986 − 2009
banded rudderfish
atlantic spadefish
Catch (lbs whole weight)
Year
0
100000
200000
300000
400000
500000
600000
1985
1990
1995
2000
2005
2010


Catch Totals 1986 − 2009
bar jack
bank sea bass
Catch (lbs whole weight)
Year
0
20000
40000
60000
10000
20000
30000
40000
1985
1990
1995
2000
2005
2010

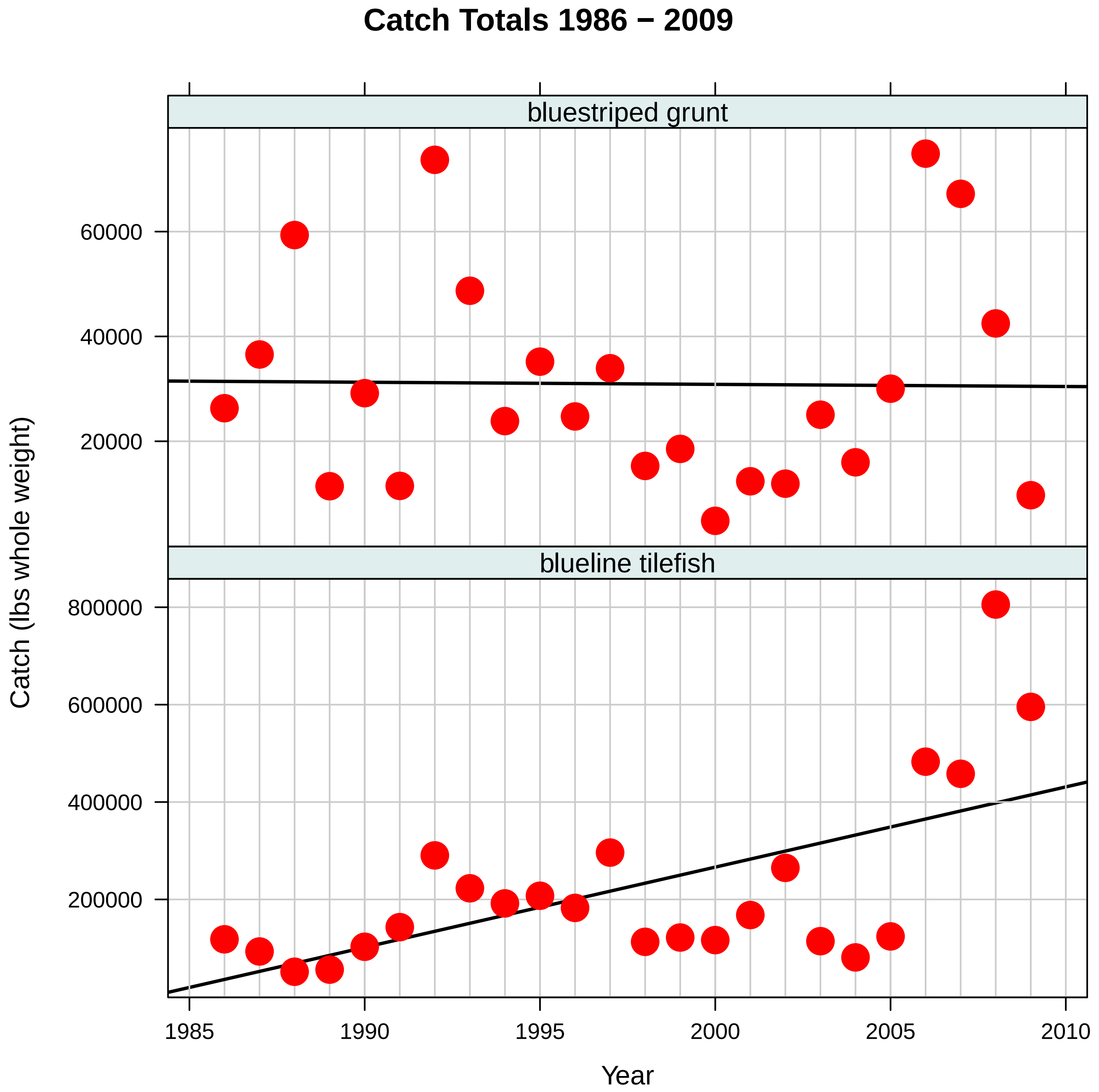

Catch Totals 1986 − 2009
black margate
black grouper
Catch (lbs whole weight)
Year
200000
150000
100000
50000
600000
500000
400000
300000
200000
100000
1985
1990
1995
2000
2005
2010

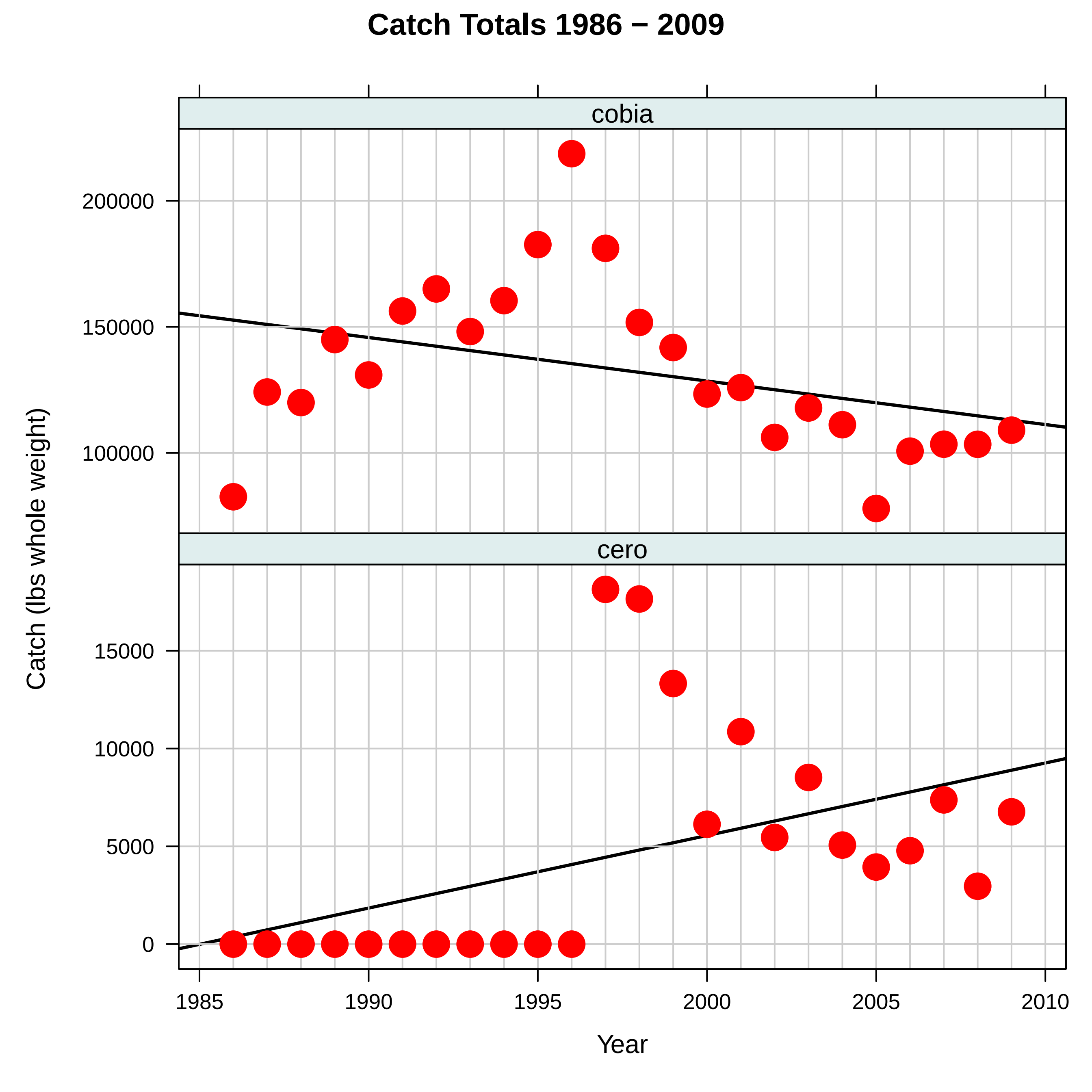


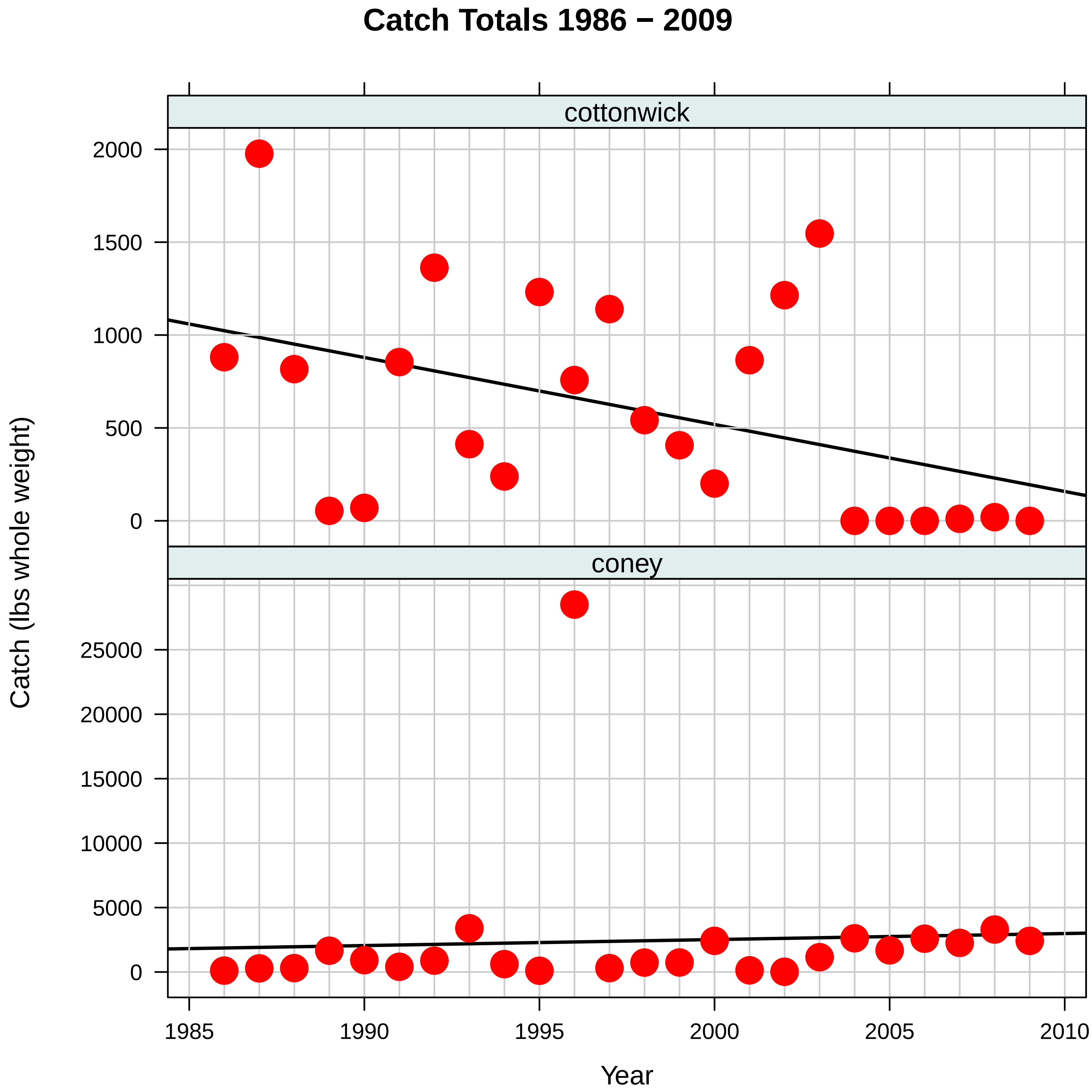
Catch Totals 1986 – 2009
black snapper
black sea bass
5000
4000
3000
2000
1000
0
2500000
2000000
1500000
1000000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

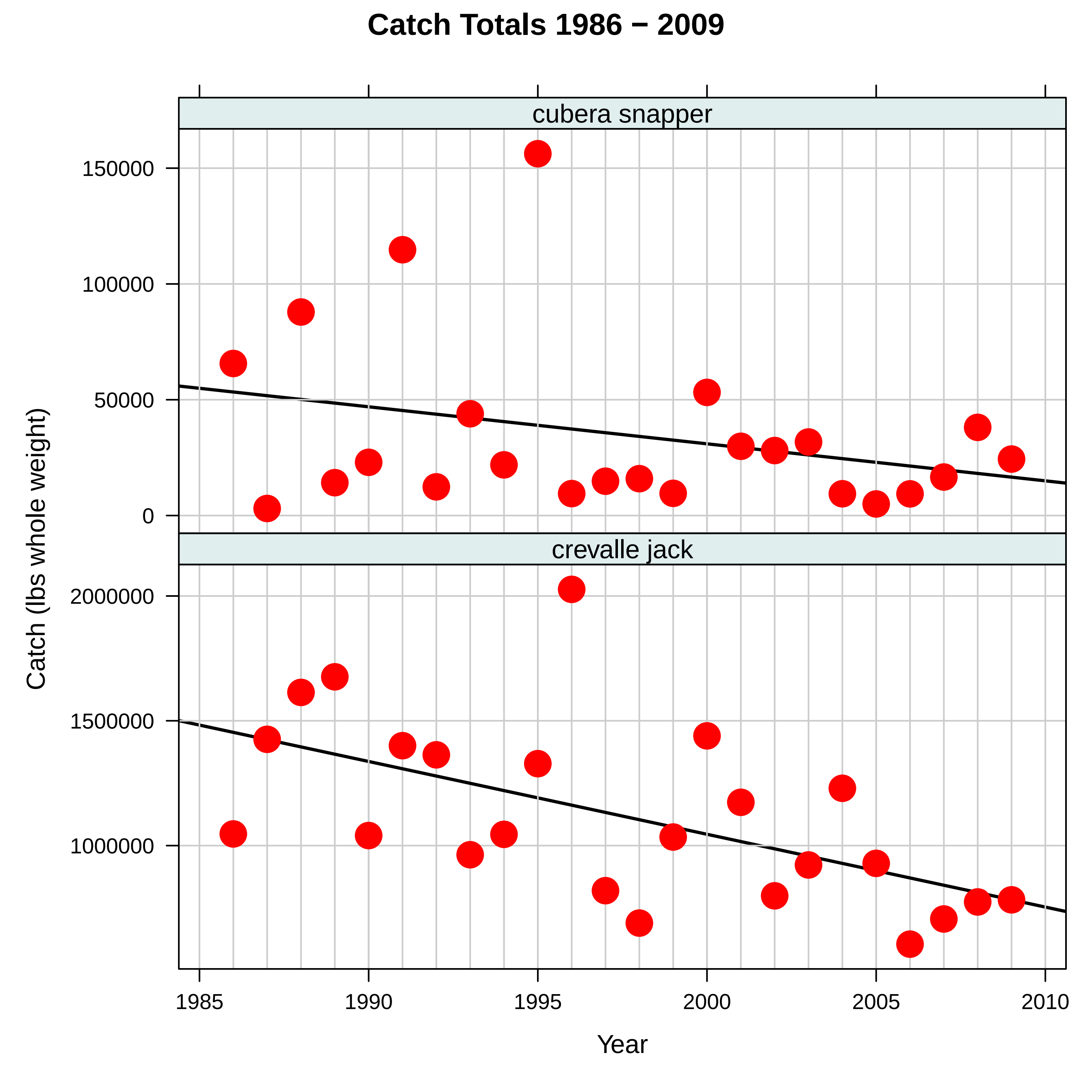


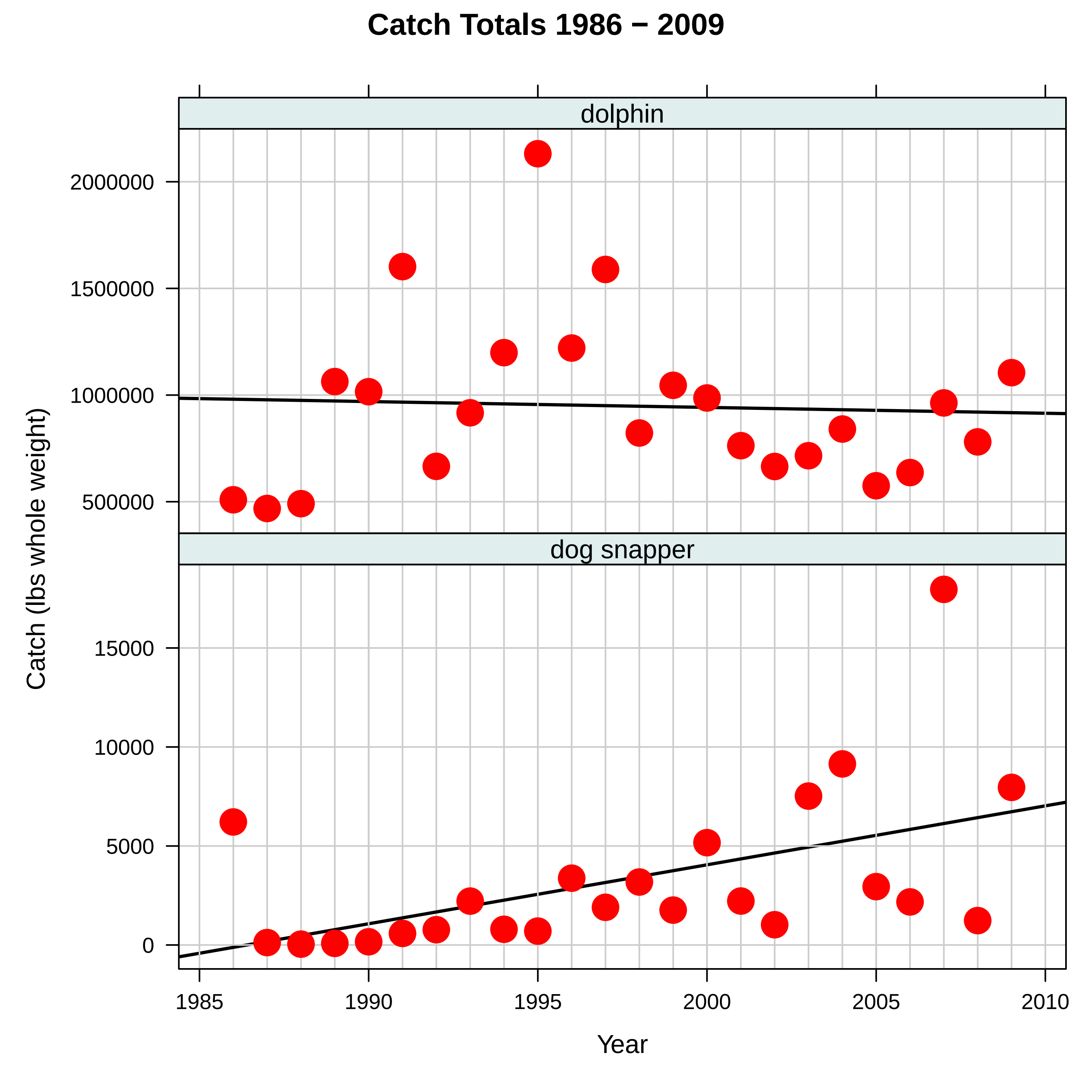
Catch Totals 1986 − 2009
blue runner
blackfin snapper
1200000
1000000
800000
600000
400000
5000
4000
3000
2000
1000
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year

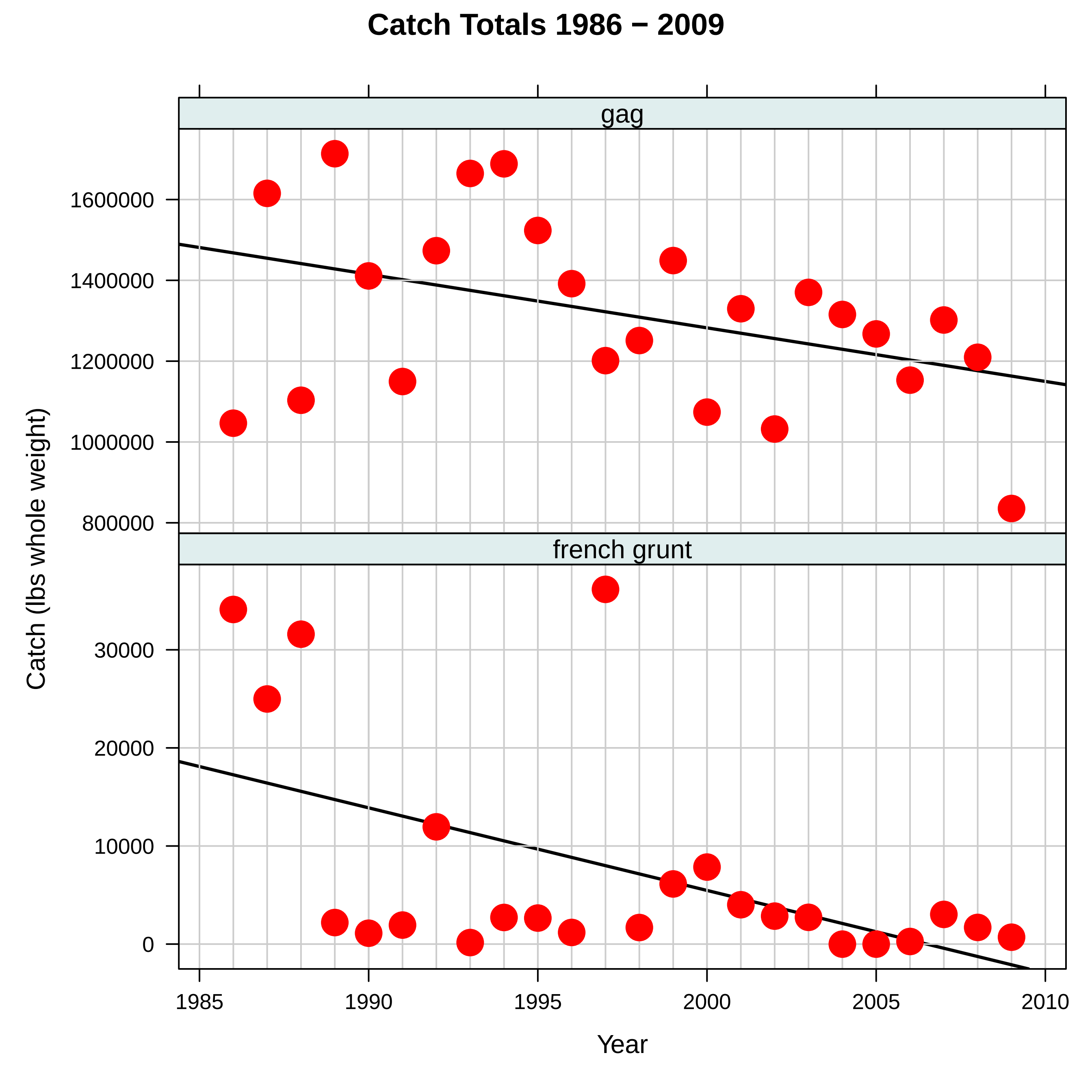

Catch Totals 1986 − 2009
bluestriped grunt
blueline tilefish
60000
40000
20000
800000
600000
400000
200000
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year

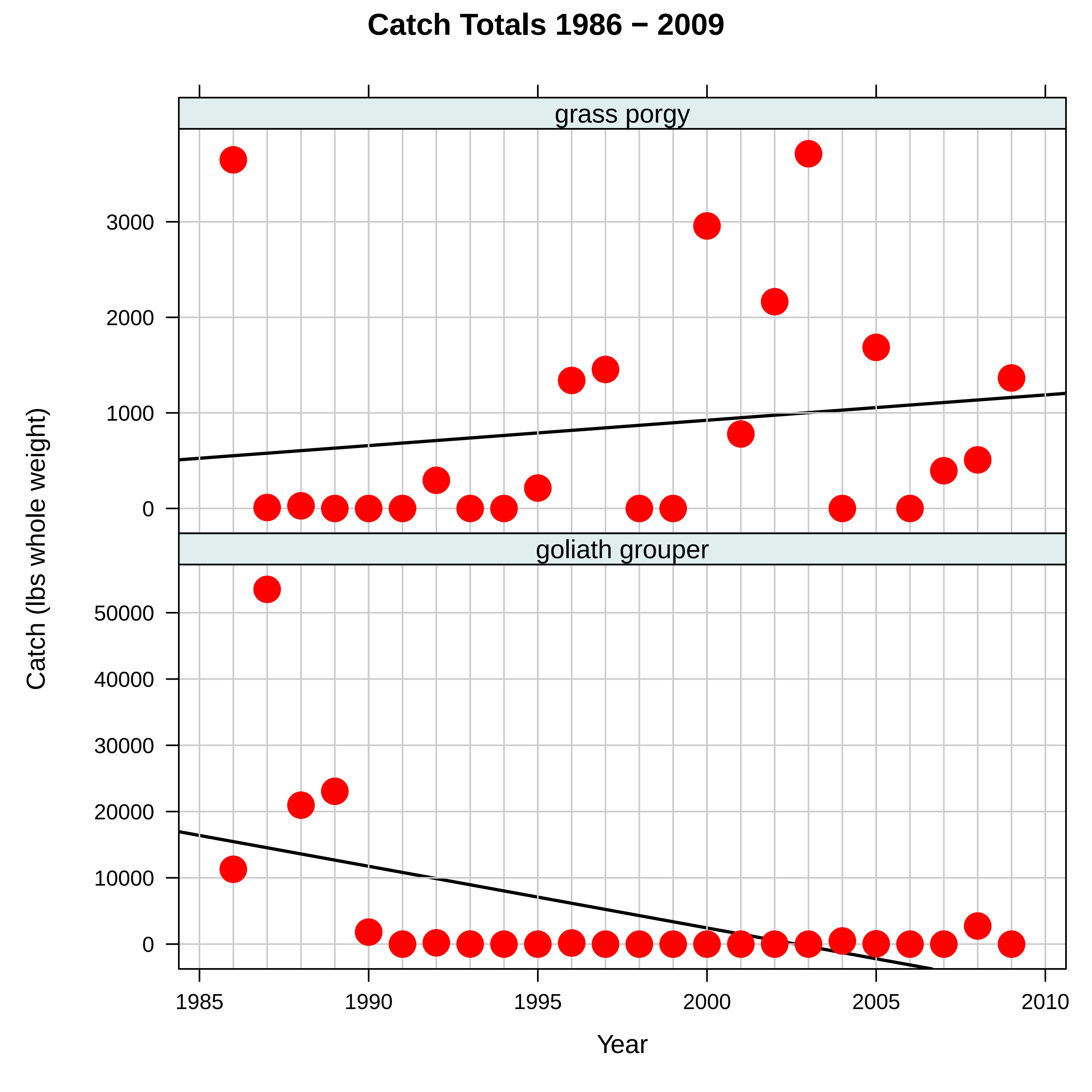

Catch Totals 1986 – 2009
cobia
cero
Catch (lbs whole weight)
Year
200000
150000
100000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010

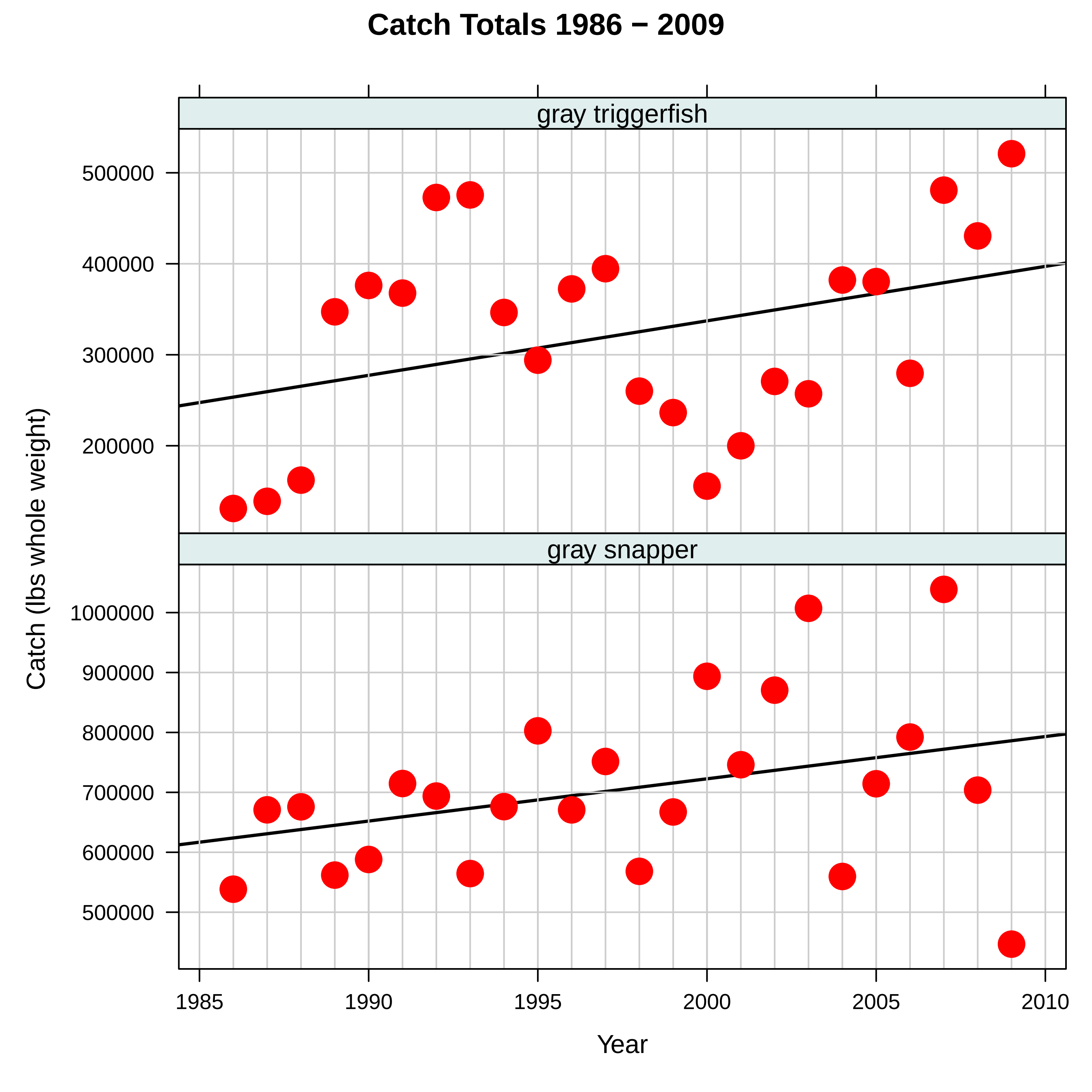

Catch Totals 1986 – 2009
cottonwick
coney
2000
1500
1000
500
0
25000
20000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year


Catch Totals 1986 − 2009
cubera snapper
crevalle jack
150000
100000
50000
0
2000000
1500000
1000000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

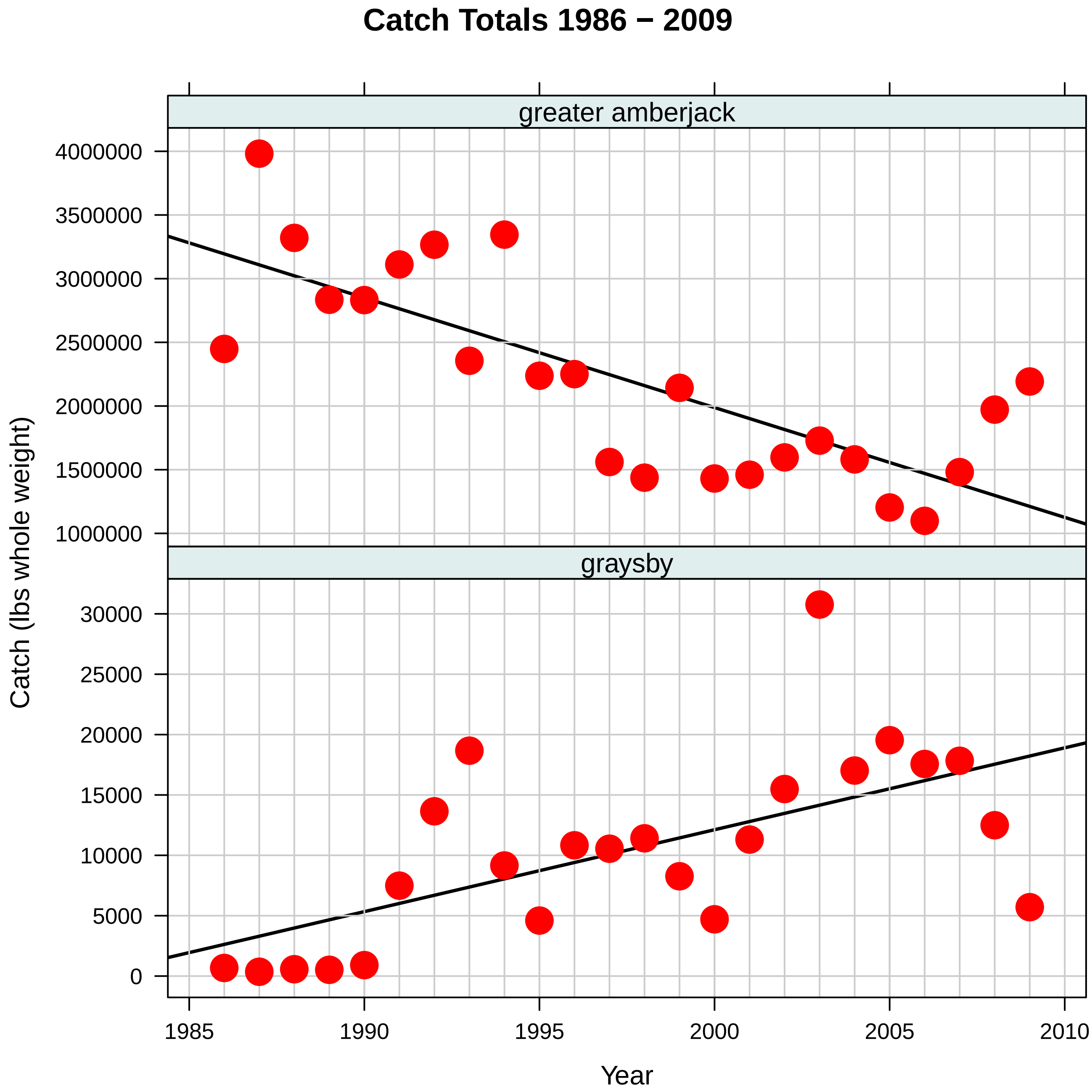

Catch Totals 1986 − 2009
dolphin
dog snapper
2000000
1500000
1000000
500000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year

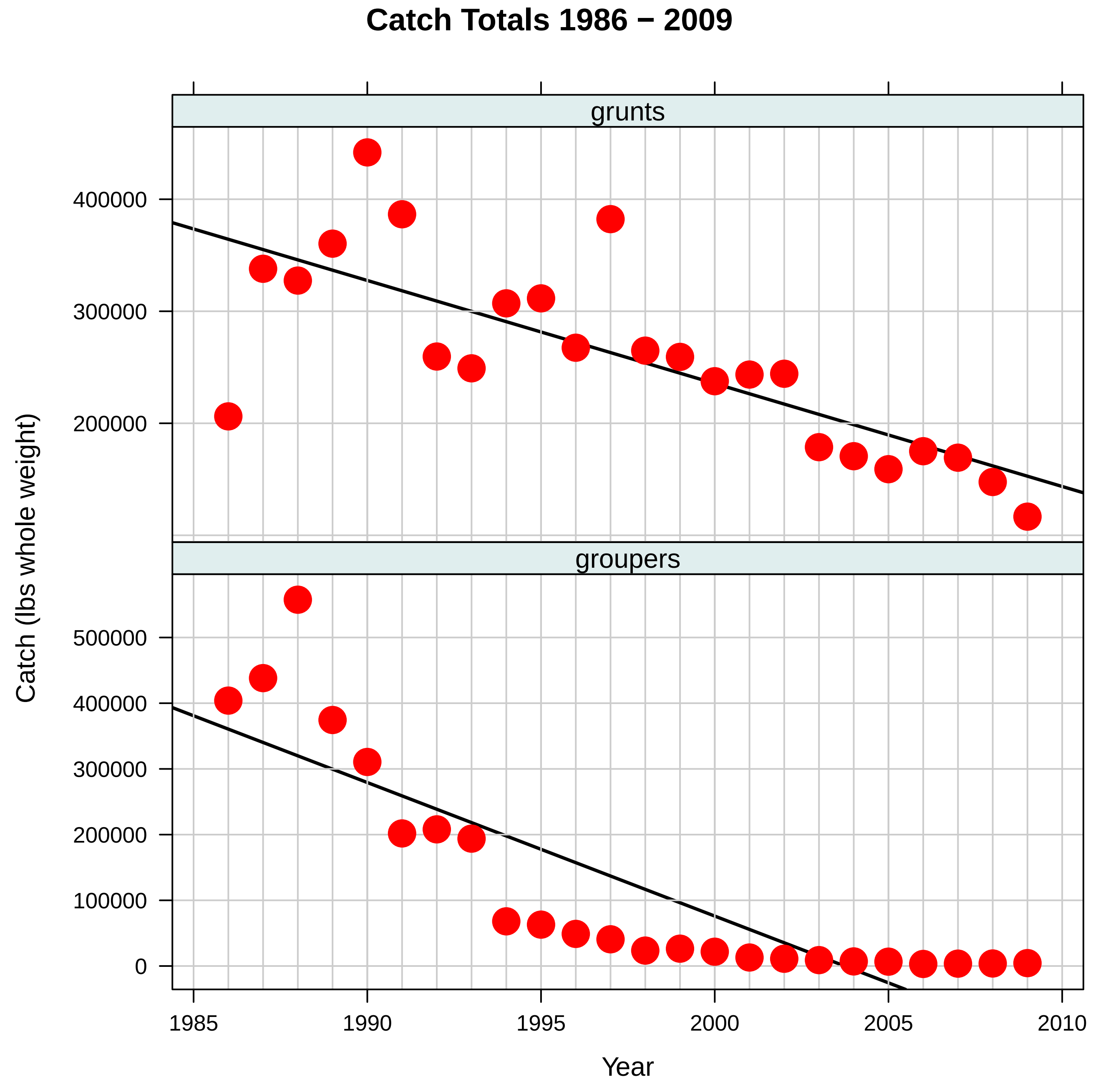

Catch Totals 1986 − 2009
gag
french grunt
1600000
1400000
1200000
1000000
800000
30000
20000
10000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year


Catch Totals 1986 − 2009
grass porgy
goliath grouper
Catch (lbs whole weight)
3000
2000
1000
0
50000
40000
30000
20000
10000
0
1985
1990
1995
2000
2005
2010
Year

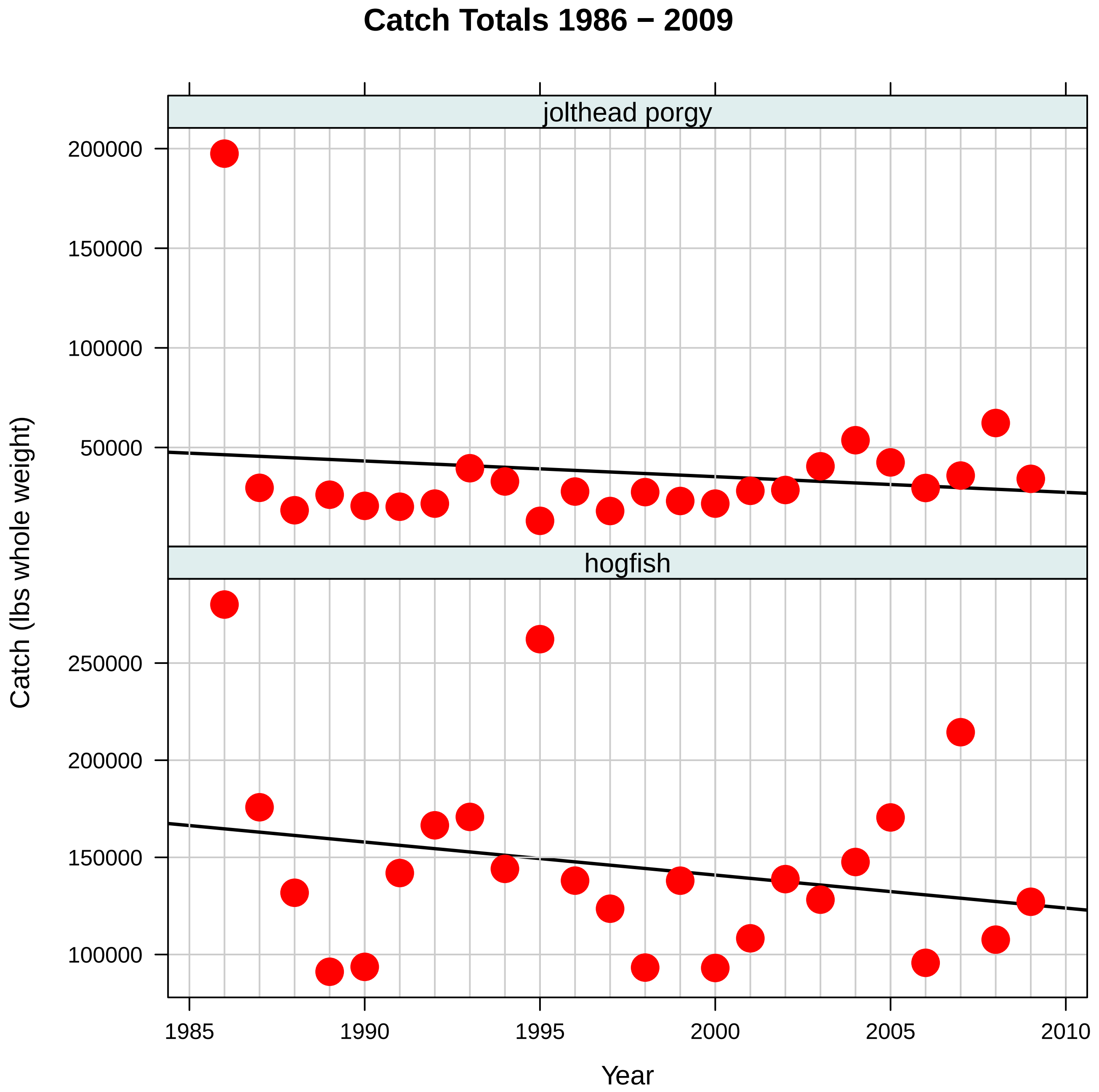


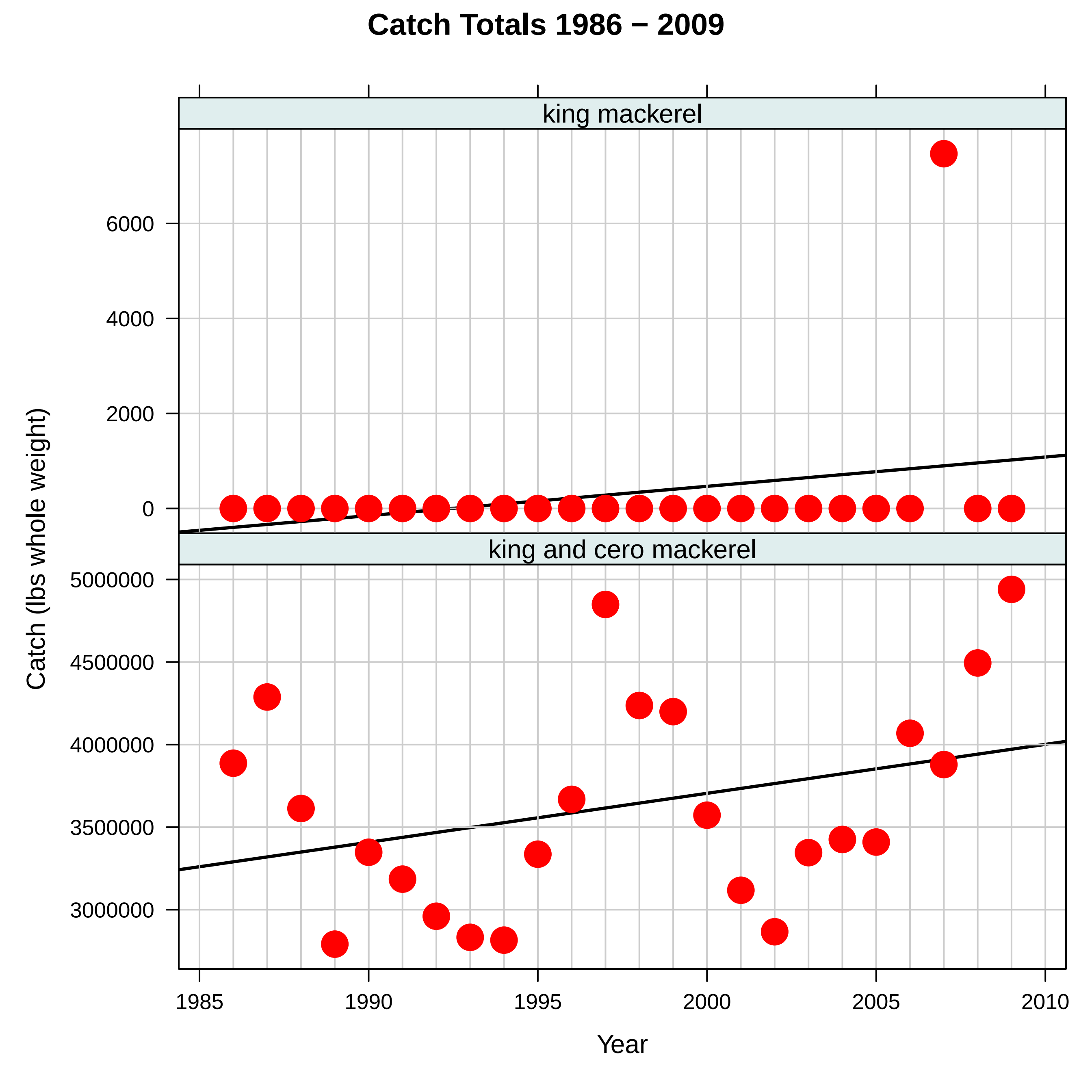
Catch Totals 1986 − 2009
gray triggerfish
gray snapper
500000
400000
300000
200000
1000000
900000
800000
700000
600000
500000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year


Catch Totals 1986 − 2009
greater amberjack
graysby
Catch (lbs whole weight)
4000000
3500000
3000000
2500000
2000000
1500000
1000000
30000
25000
20000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010
Year

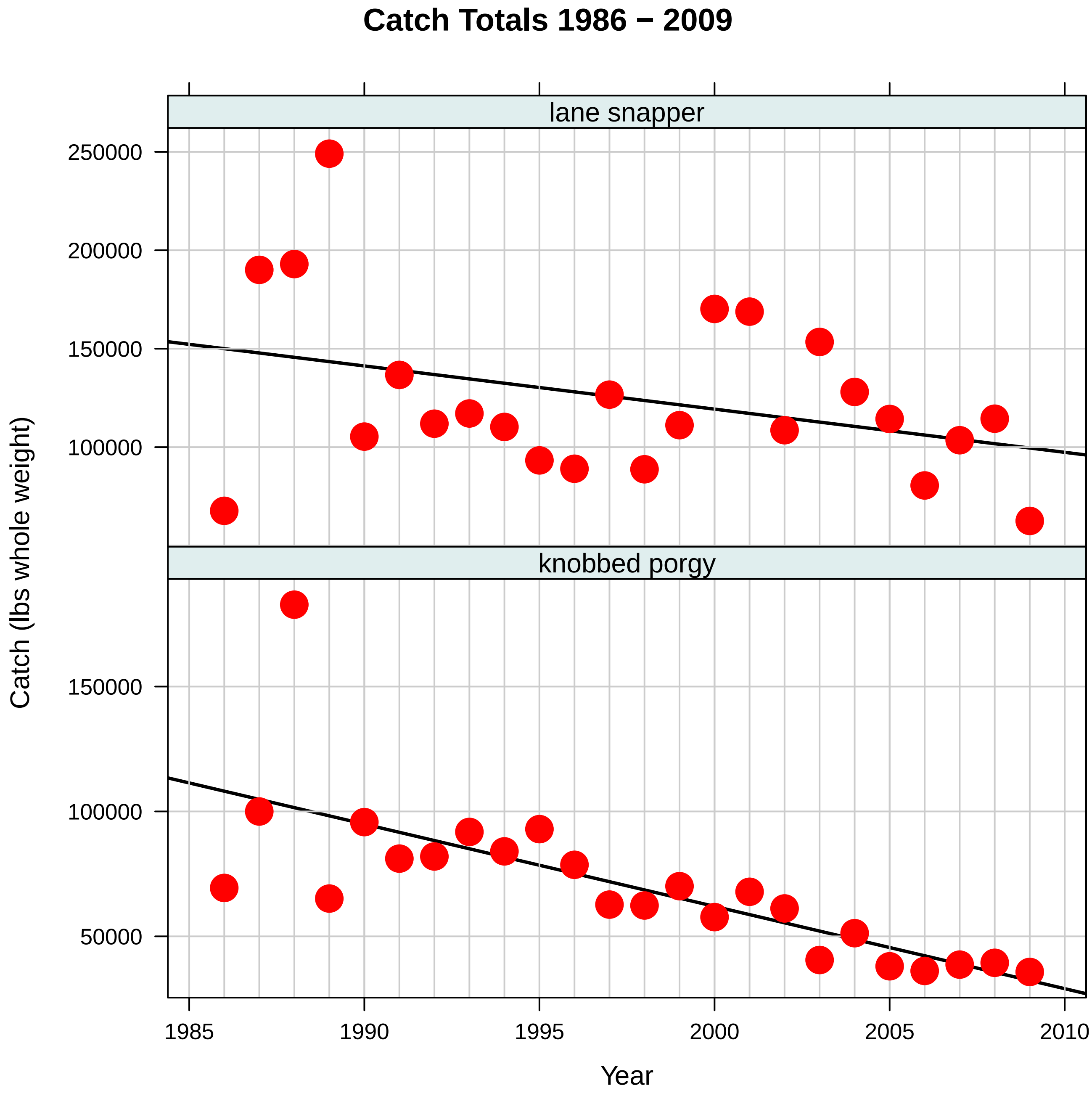


Catch Totals 1986 – 2009
grunts
groupers
400000
300000
200000
500000
400000
300000
200000
100000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

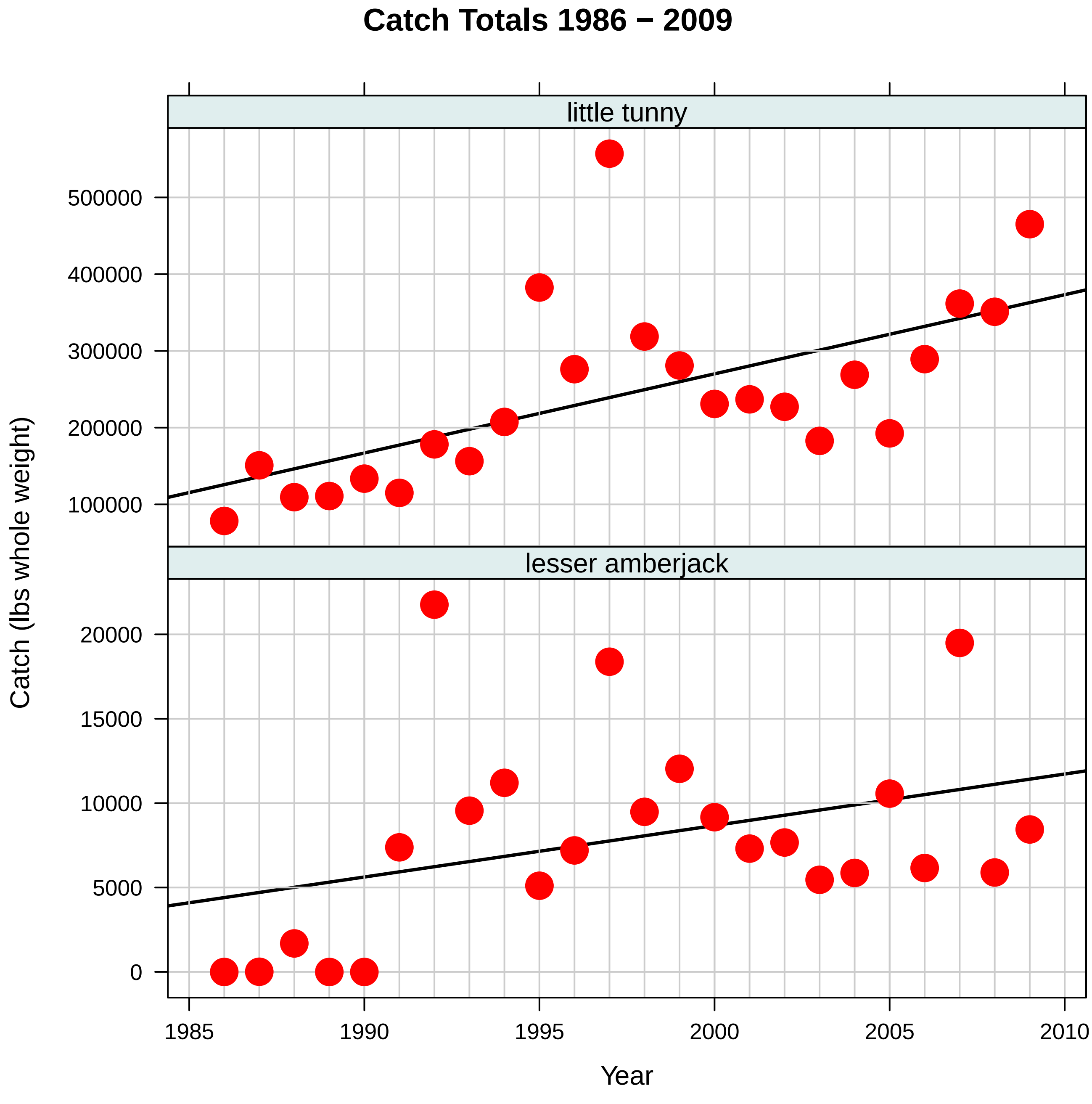

Catch Totals 1986 − 2009
jolthead porgy
hogfish
Catch (lbs whole weight)
Year
200000
150000
100000
50000
250000
200000
150000
100000
1985
1990
1995
2000
2005
2010

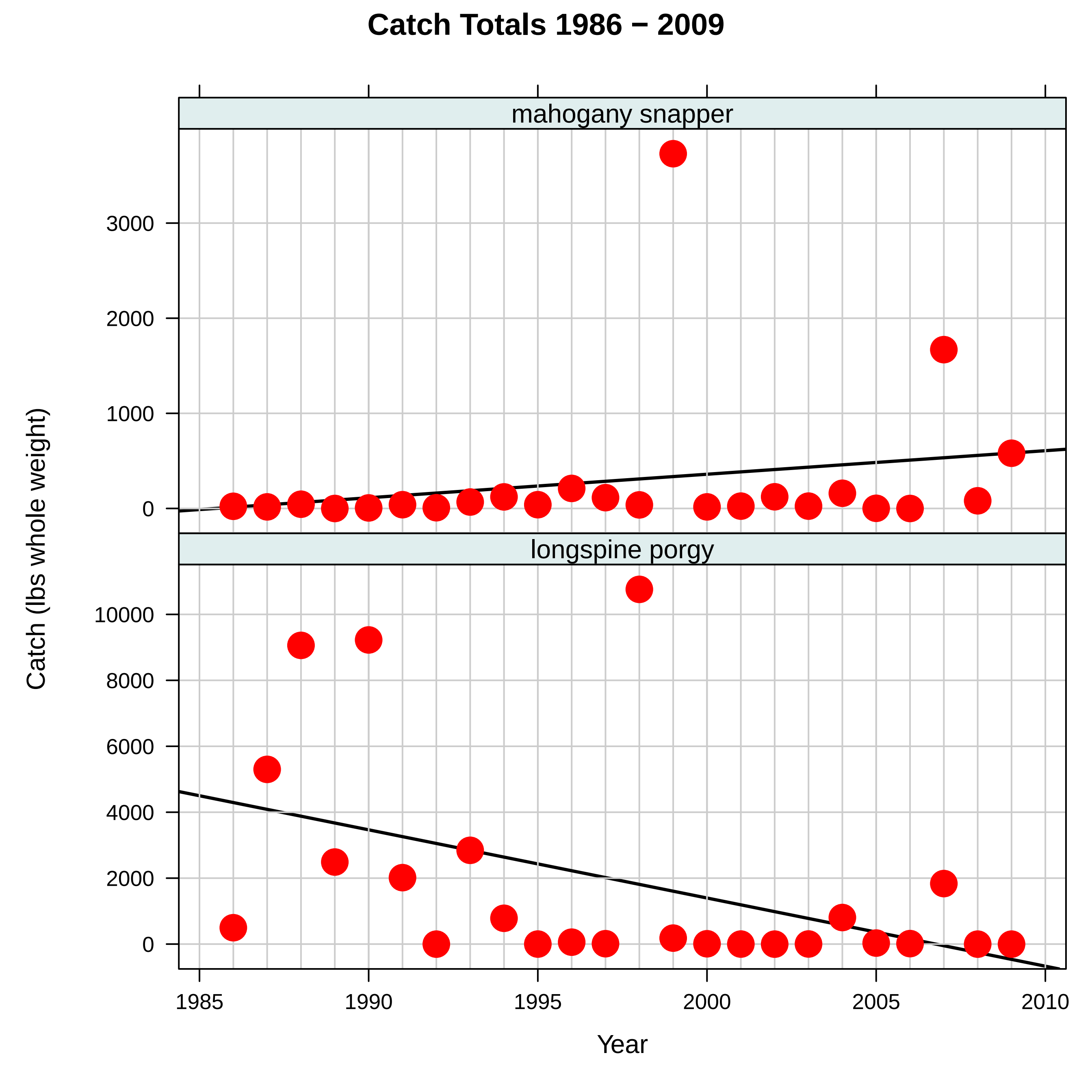


Catch Totals 1986 − 2009
king mackerel
king and cero mackerel
Catch (lbs whole weight)
6000
4000
2000
0
5000000
4500000
4000000
3500000
3000000
1985
1990
1995
2000
2005
2010
Year

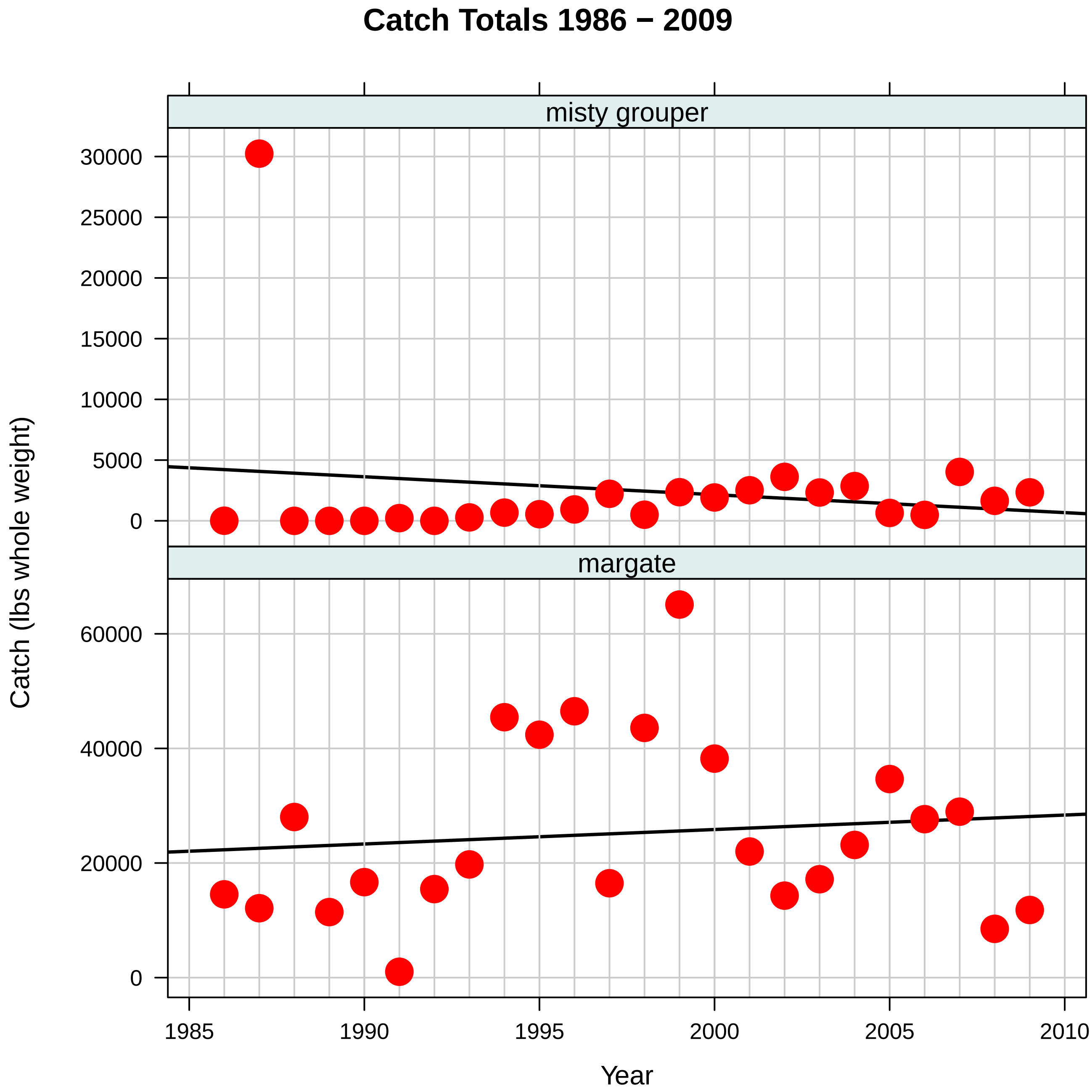


Catch Totals 1986 − 2009
lane snapper
knobbed porgy
250000
200000
150000
100000
50000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

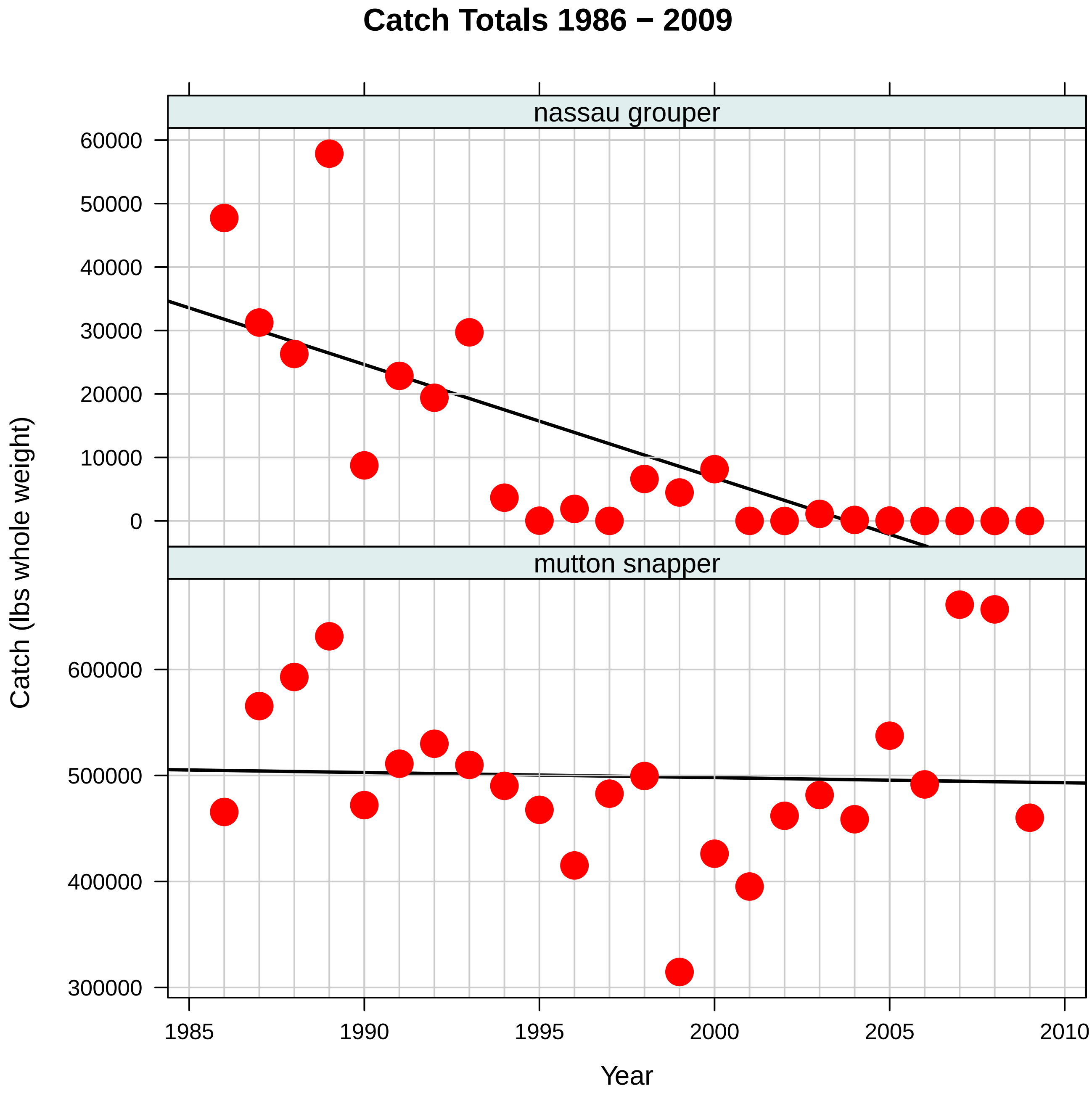

Catch Totals 1986 − 2009
little tunny
lesser amberjack
500000
400000
300000
200000
100000
20000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year

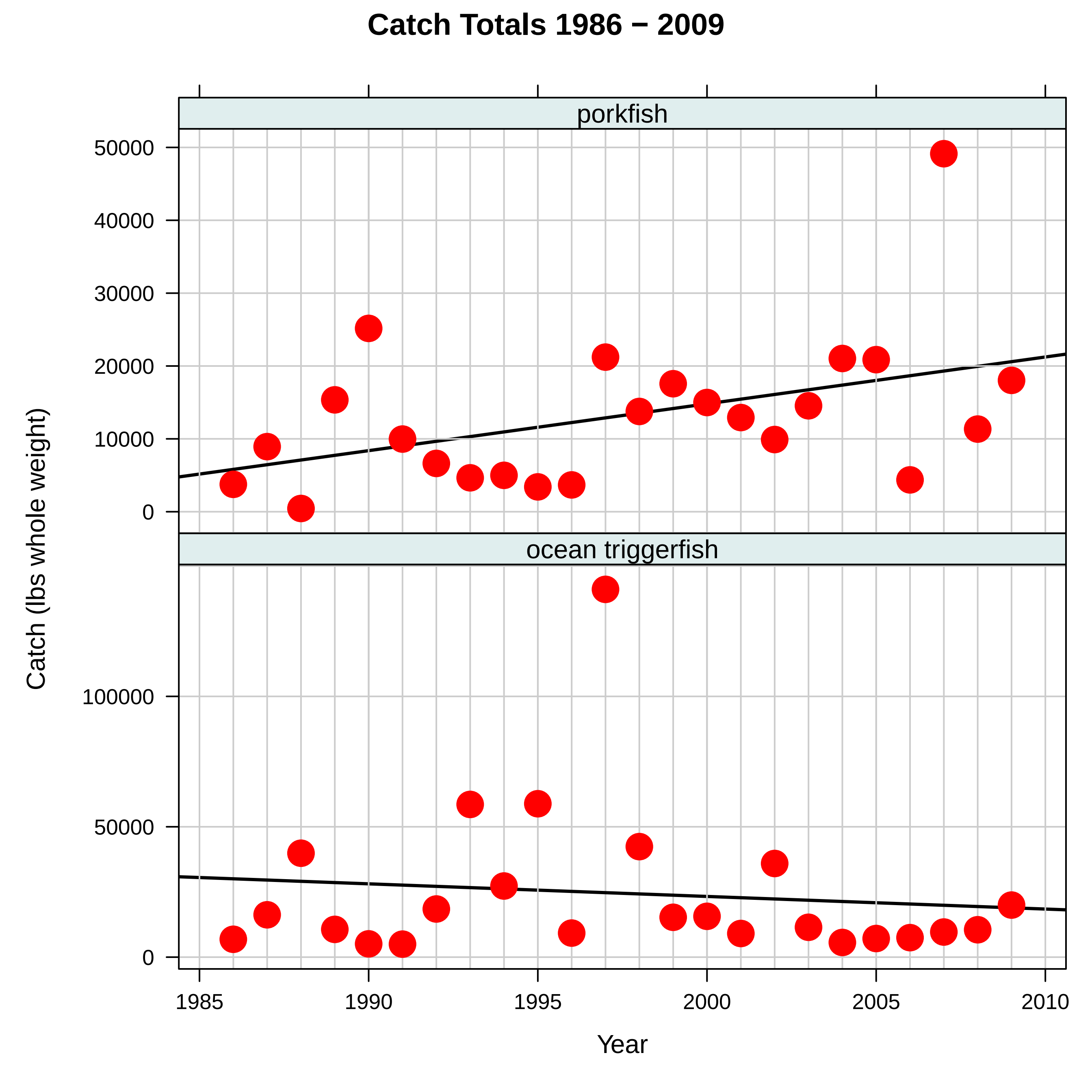


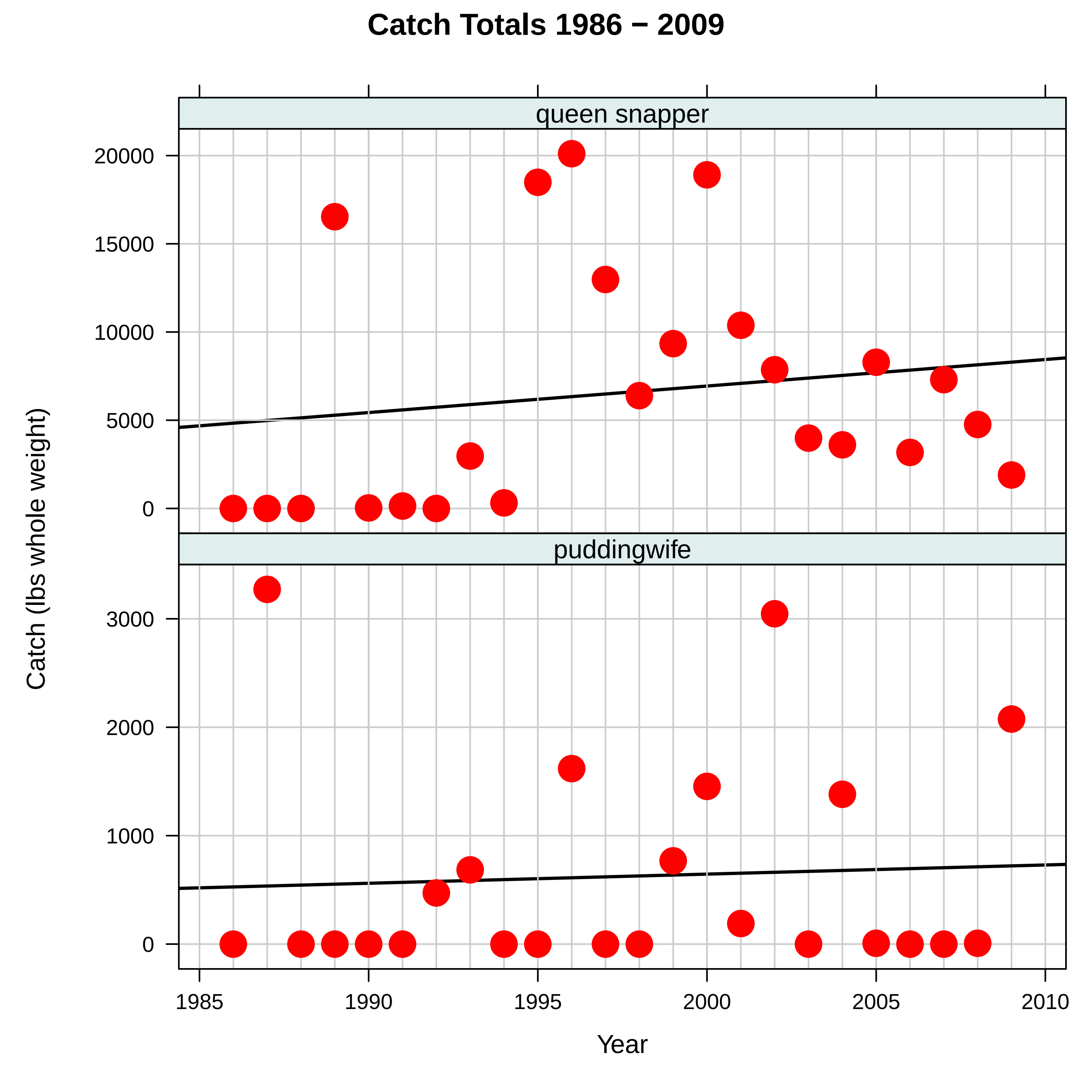
Catch Totals 1986 − 2009
mahogany snapper
longspine porgy
Catch (lbs whole weight)
Year
0
1000
2000
3000
0
2000
4000
6000
8000
10000
1985
1990
1995
2000
2005
2010



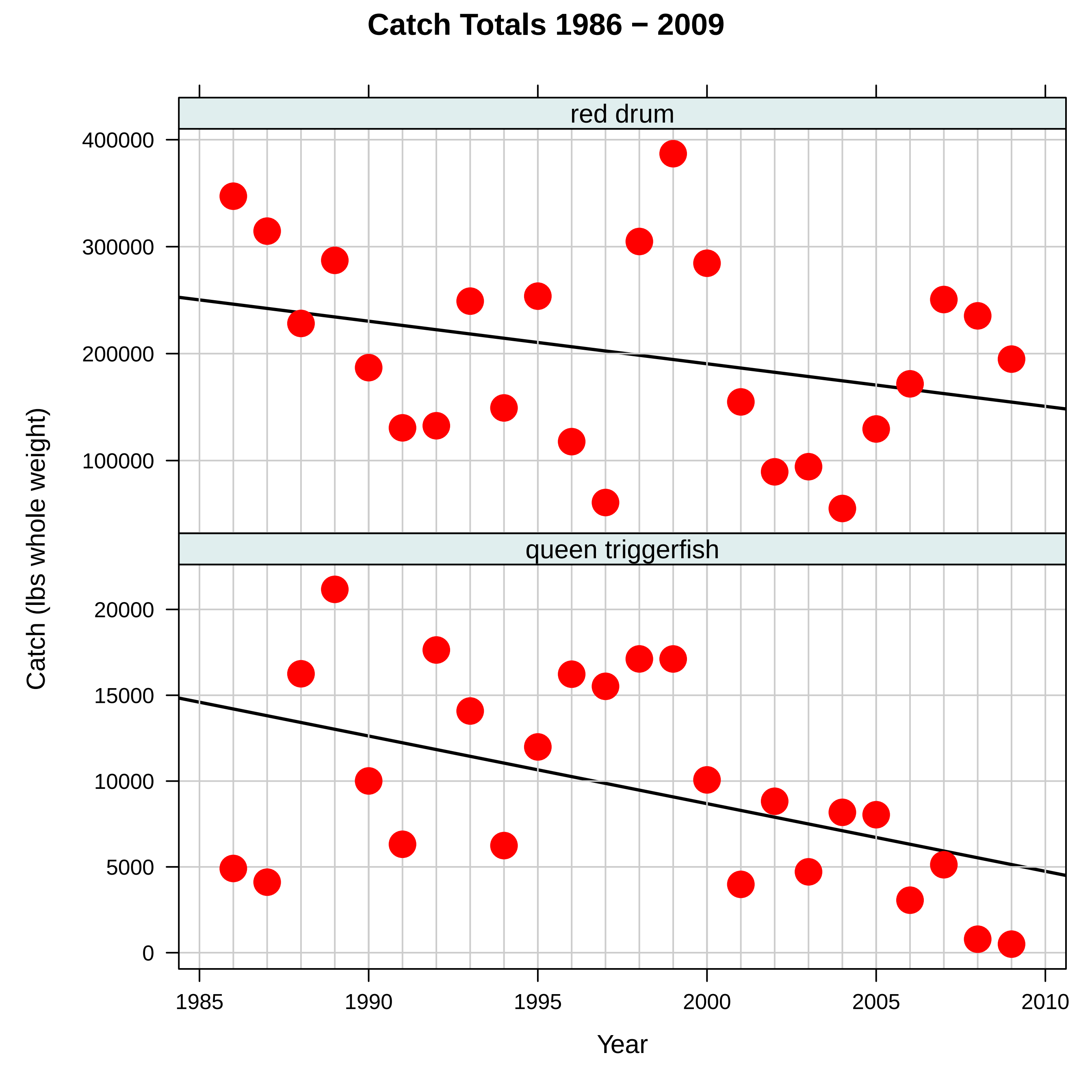
Catch Totals 1986 − 2009
misty grouper
margate
Catch (lbs whole weight)
Year
30000
25000
20000
15000
10000
5000
0
60000
40000
20000
0
1985
1990
1995
2000
2005
2010

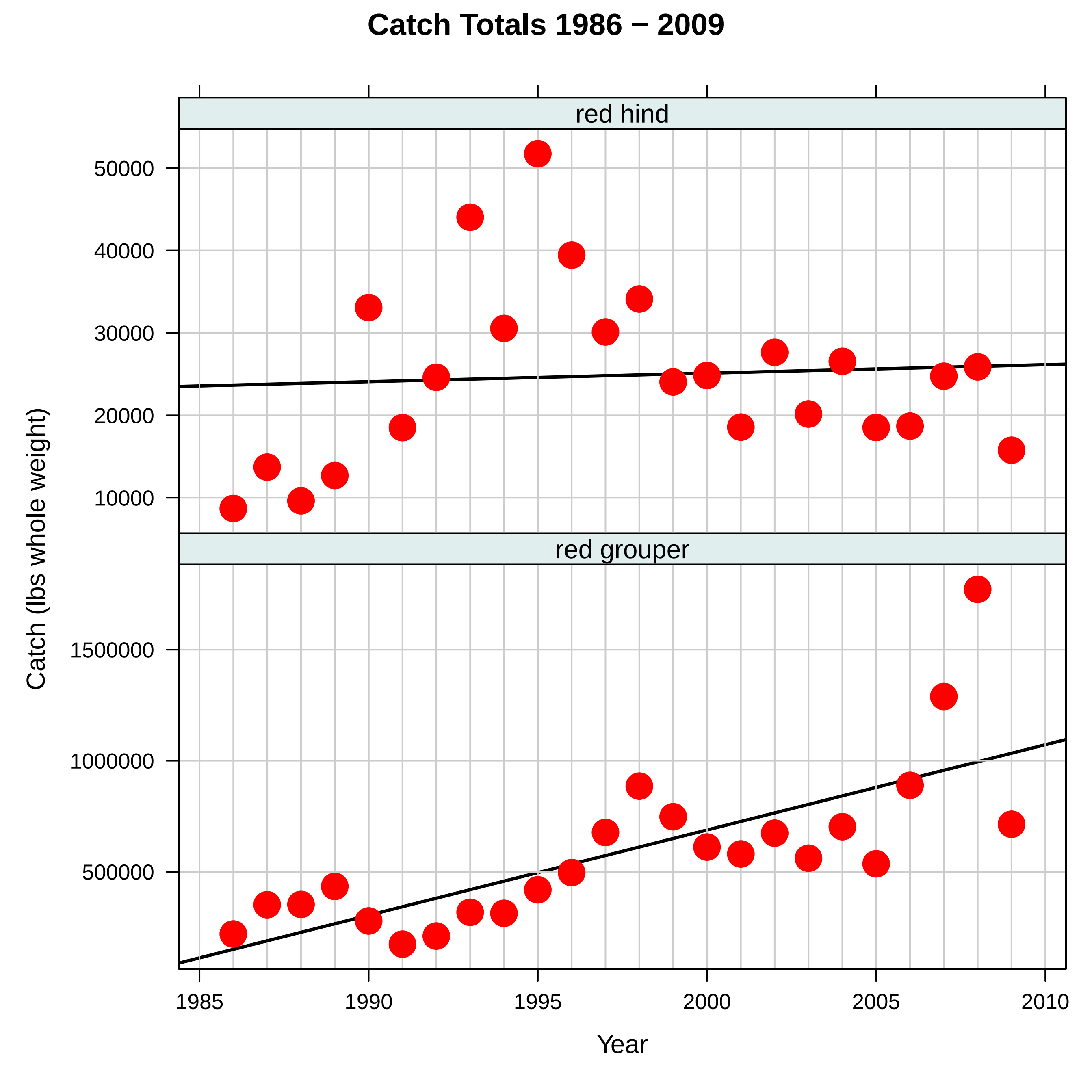

Catch Totals 1986 − 2009
nassau grouper
mutton snapper
60000
50000
40000
30000
20000
10000
0
600000
500000
400000
300000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

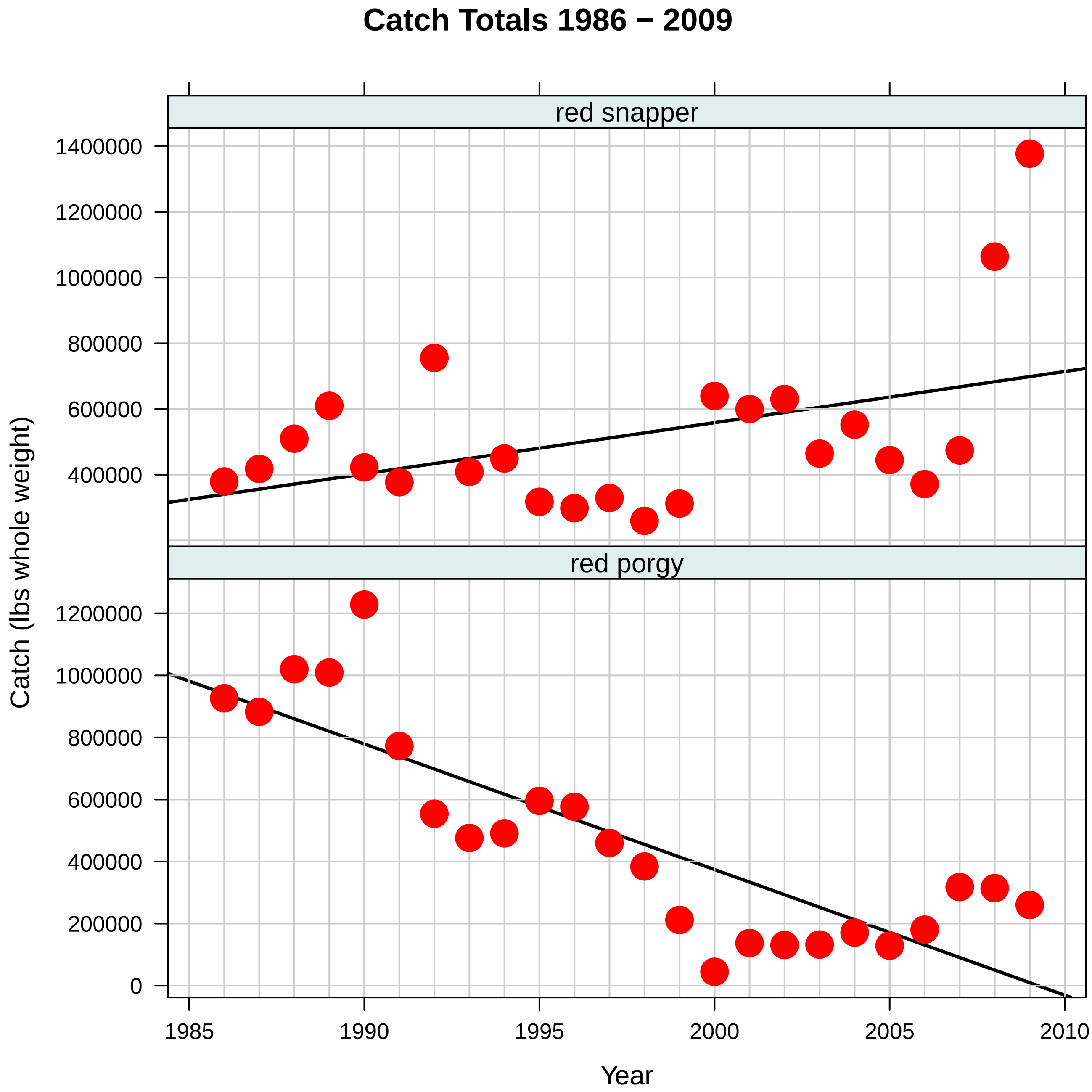

Catch Totals 1986 − 2009
porkfish
ocean triggerfish
Catch (lbs whole weight)
Year
0
10000
20000
30000
40000
50000
0
50000
100000
1985
1990
1995
2000
2005
2010



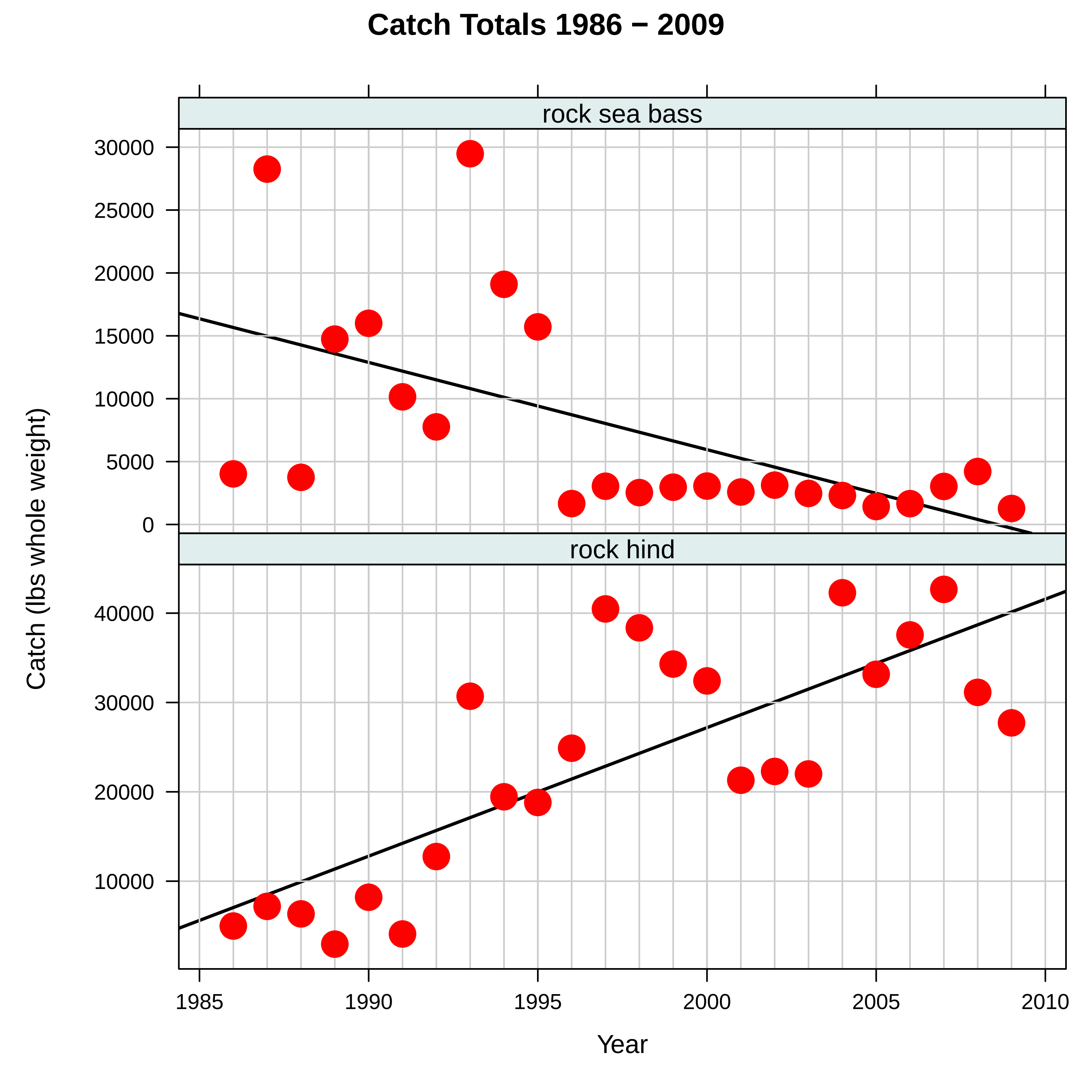
Catch Totals 1986 – 2009
queen snapper
puddingwife
Catch (lbs whole weight)
Year
20000
15000
10000
5000
0
3000
2000
1000
0
1985
1990
1995
2000
2005
2010


Catch Totals 1986 − 2009
red drum
queen triggerfish
400000
300000
200000
100000
20000
15000
10000
5000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

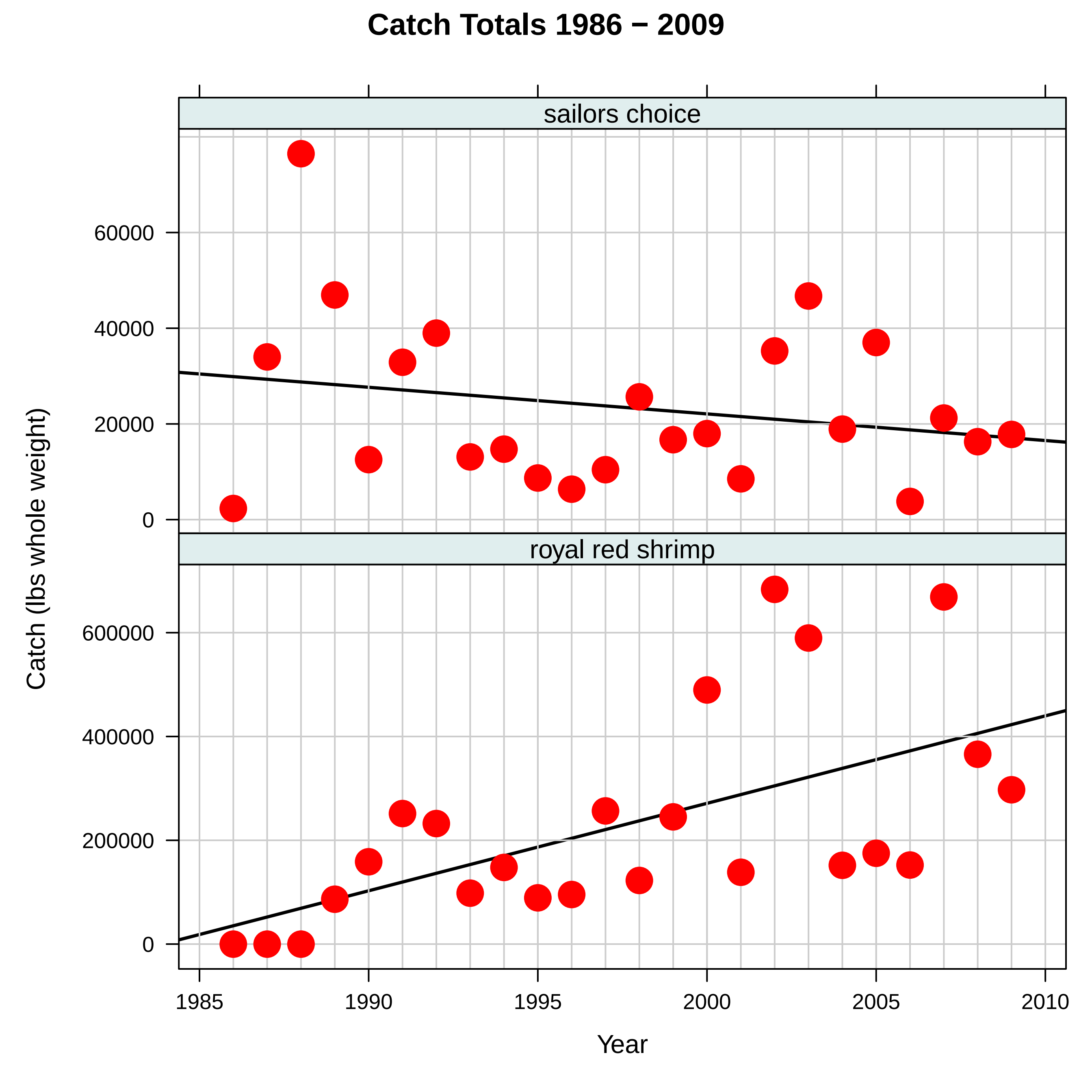

Catch Totals 1986 − 2009
red hind
red grouper
50000
40000
30000
20000
10000
1500000
1000000
500000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

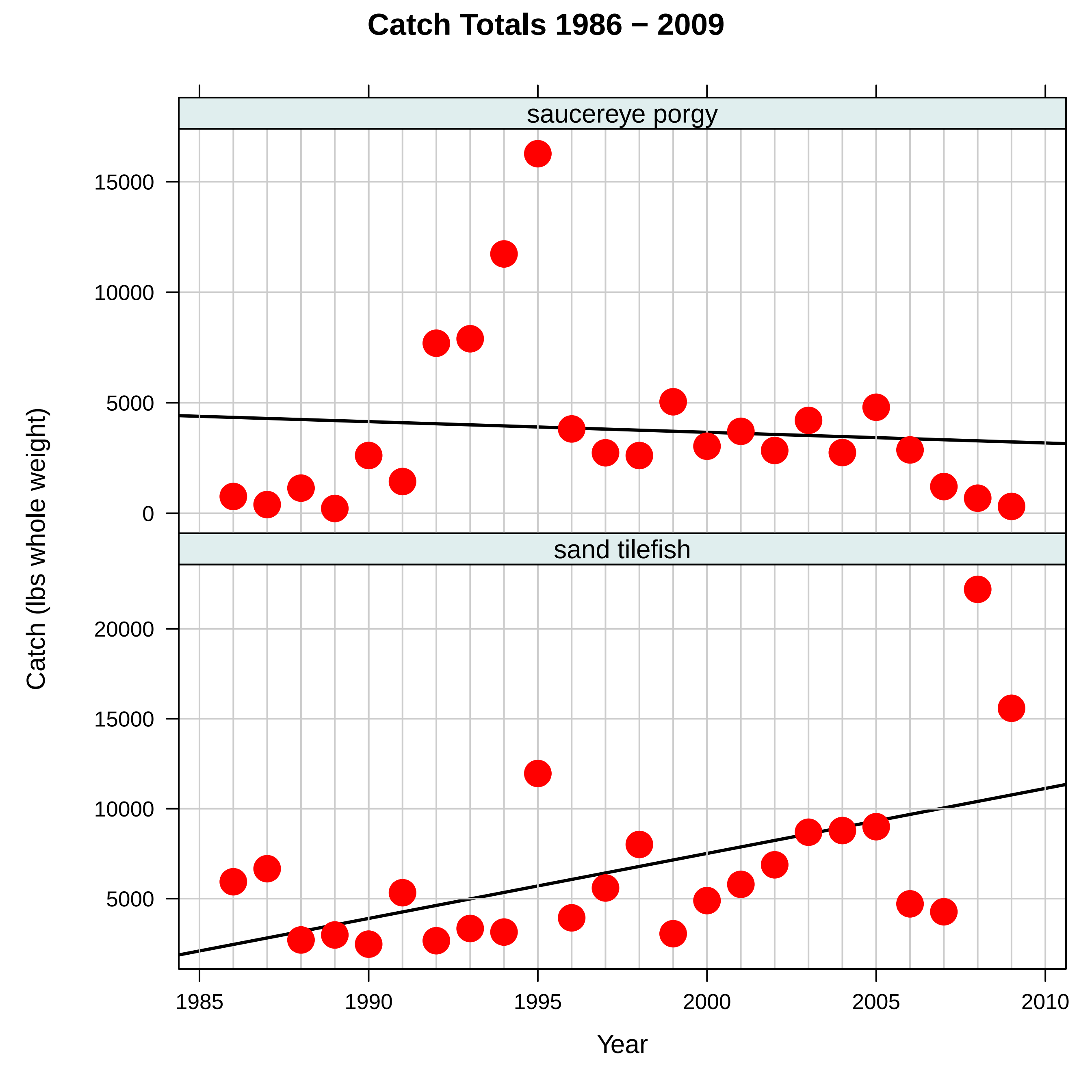


Catch Totals 1986 – 2009
red snapper
red porgy
1400000
1200000
1000000
800000
600000
400000
200000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

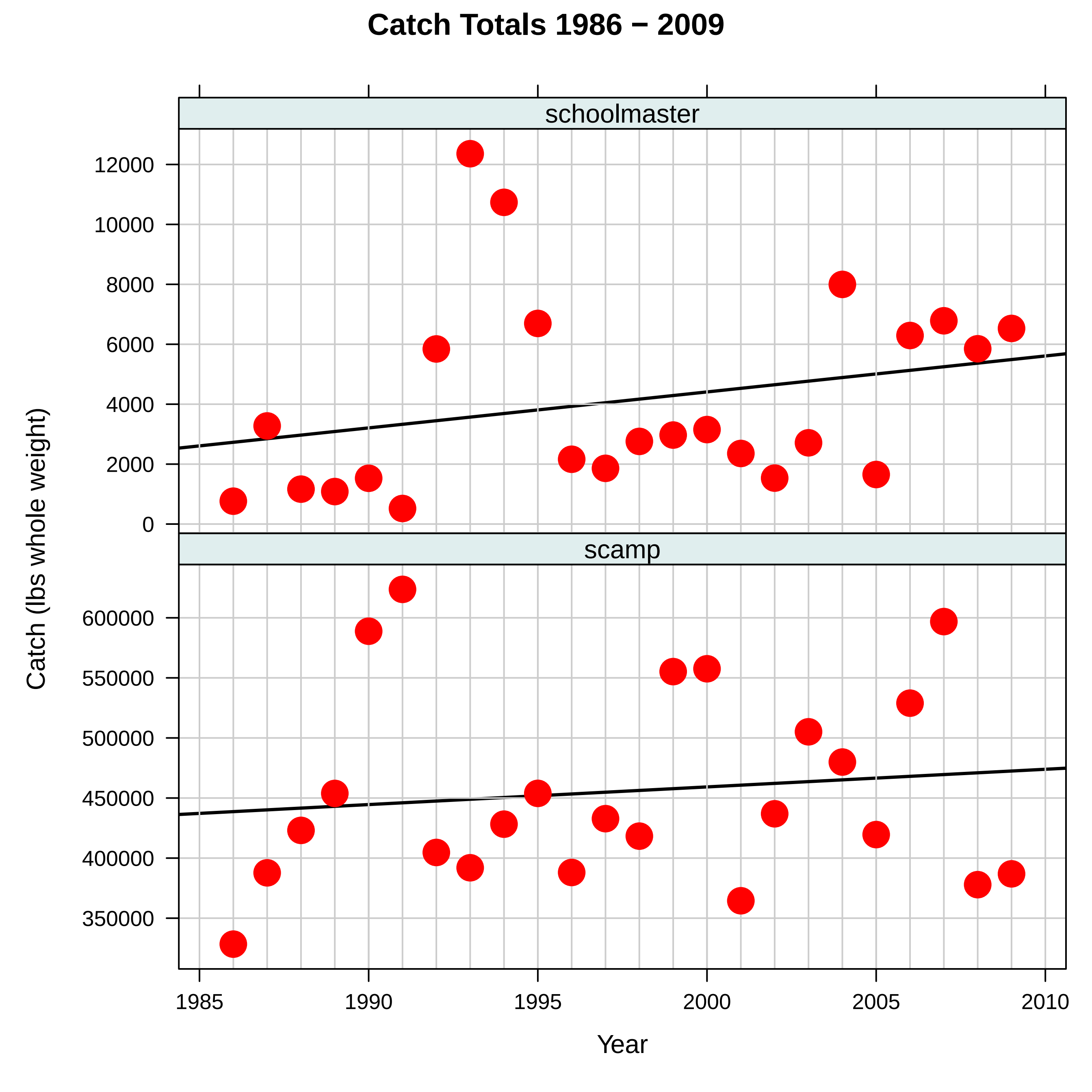


Catch Totals 1986 − 2009
rock sea bass
rock hind
30000
25000
20000
15000
10000
5000
0
40000
30000
20000
10000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

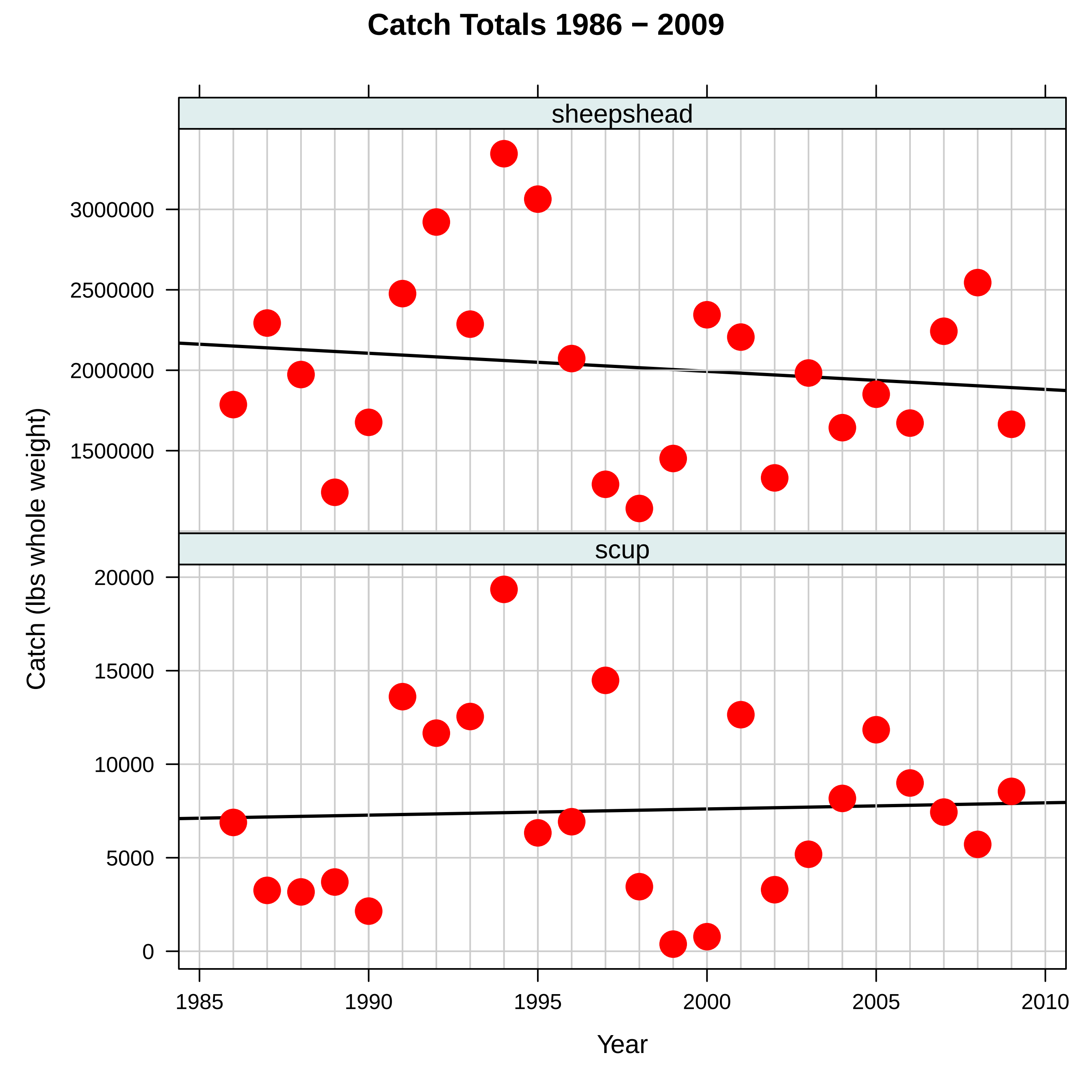

Catch Totals 1986 – 2009
sailors choice
royal red shrimp
Catch (lbs whole weight)
Year
0
20000
40000
60000
0
200000
400000
600000
1985
1990
1995
2000
2005
2010



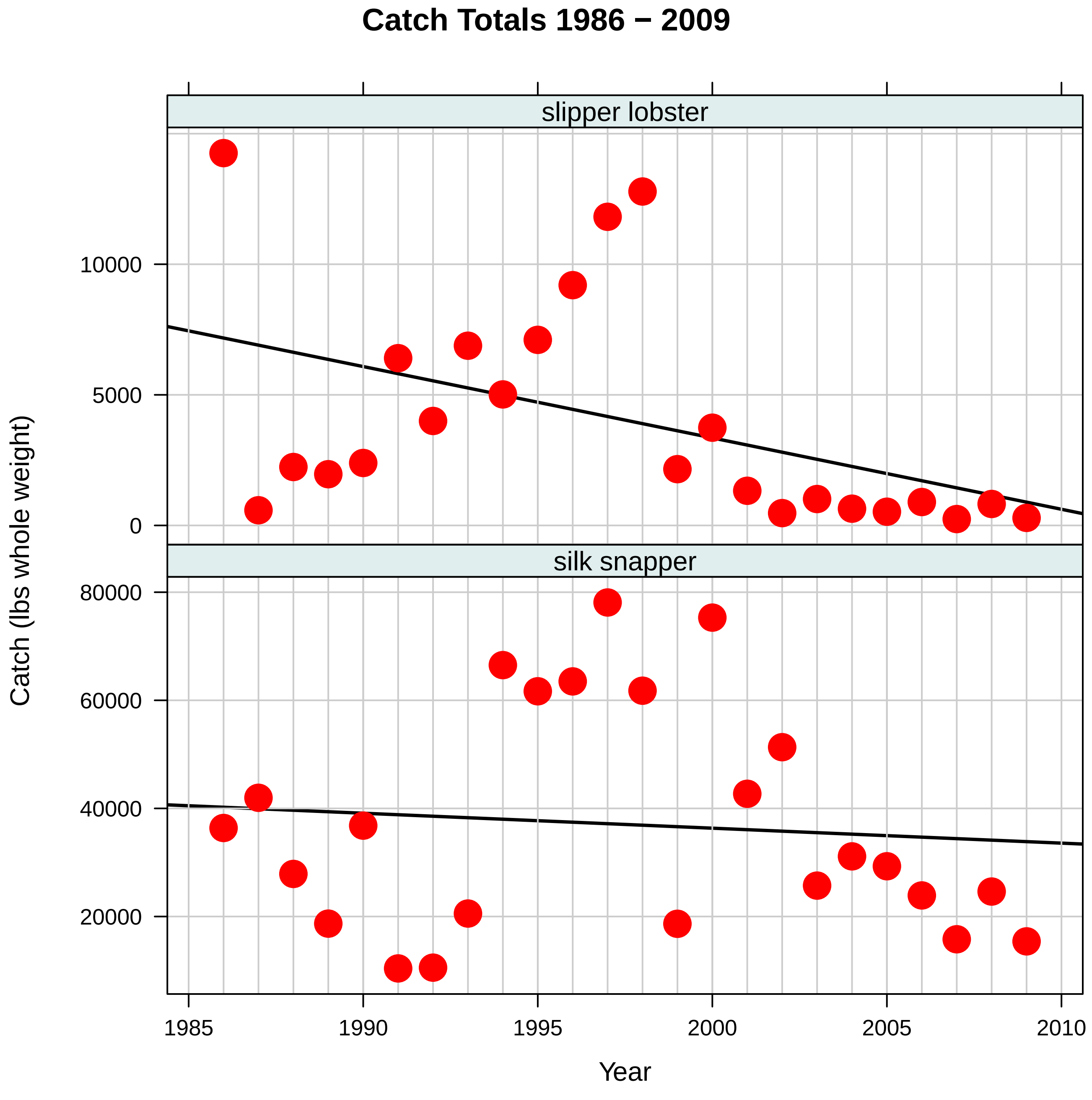
Catch Totals 1986 – 2009
saucereye porgy
sand tilefish
0
5000
10000
15000
20000
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year

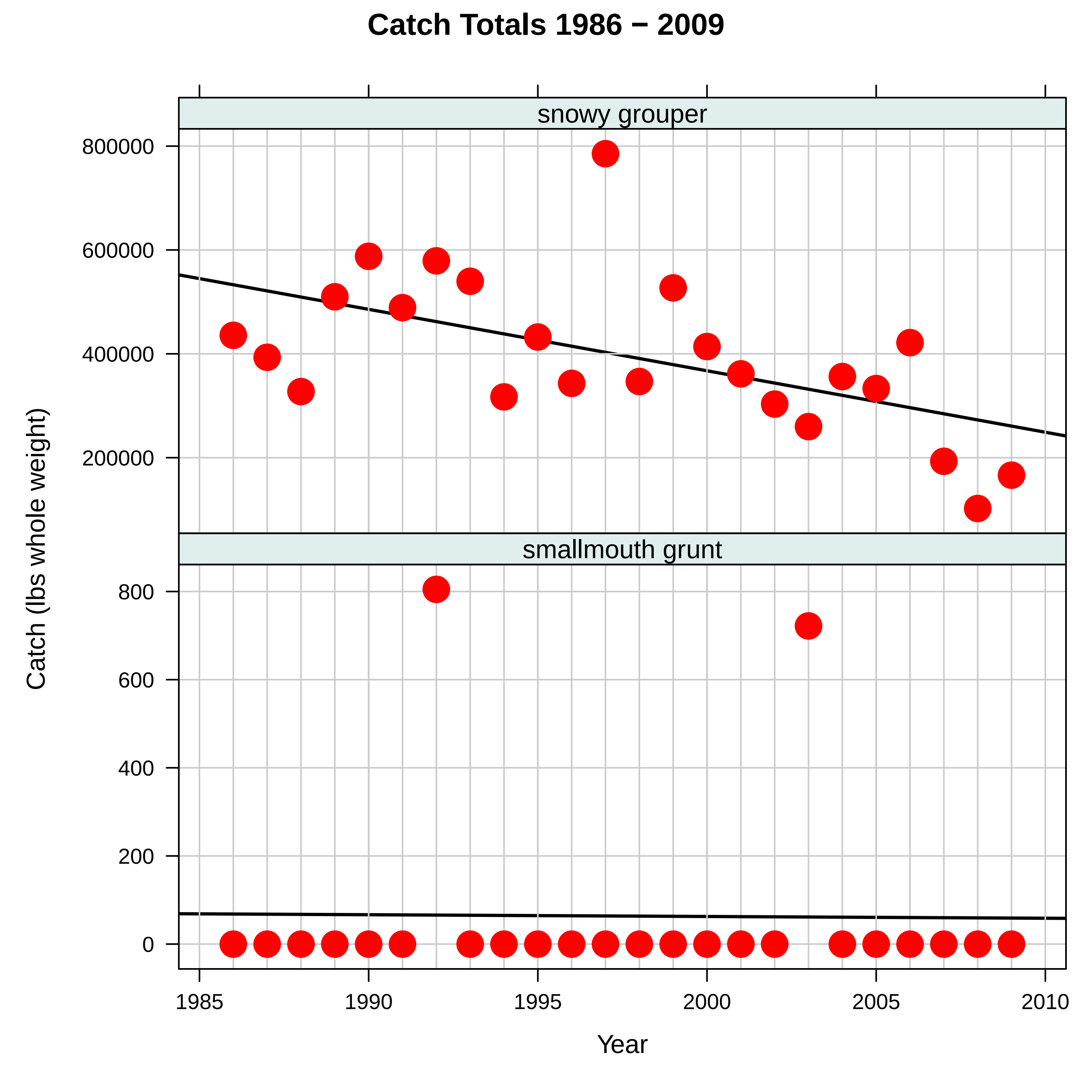


Catch Totals 1986 − 2009
schoolmaster
scamp
Catch (lbs whole weight)
12000
10000
8000
6000
4000
2000
0
600000
550000
500000
450000
400000
350000
1985
1990
1995
2000
2005
2010
Year

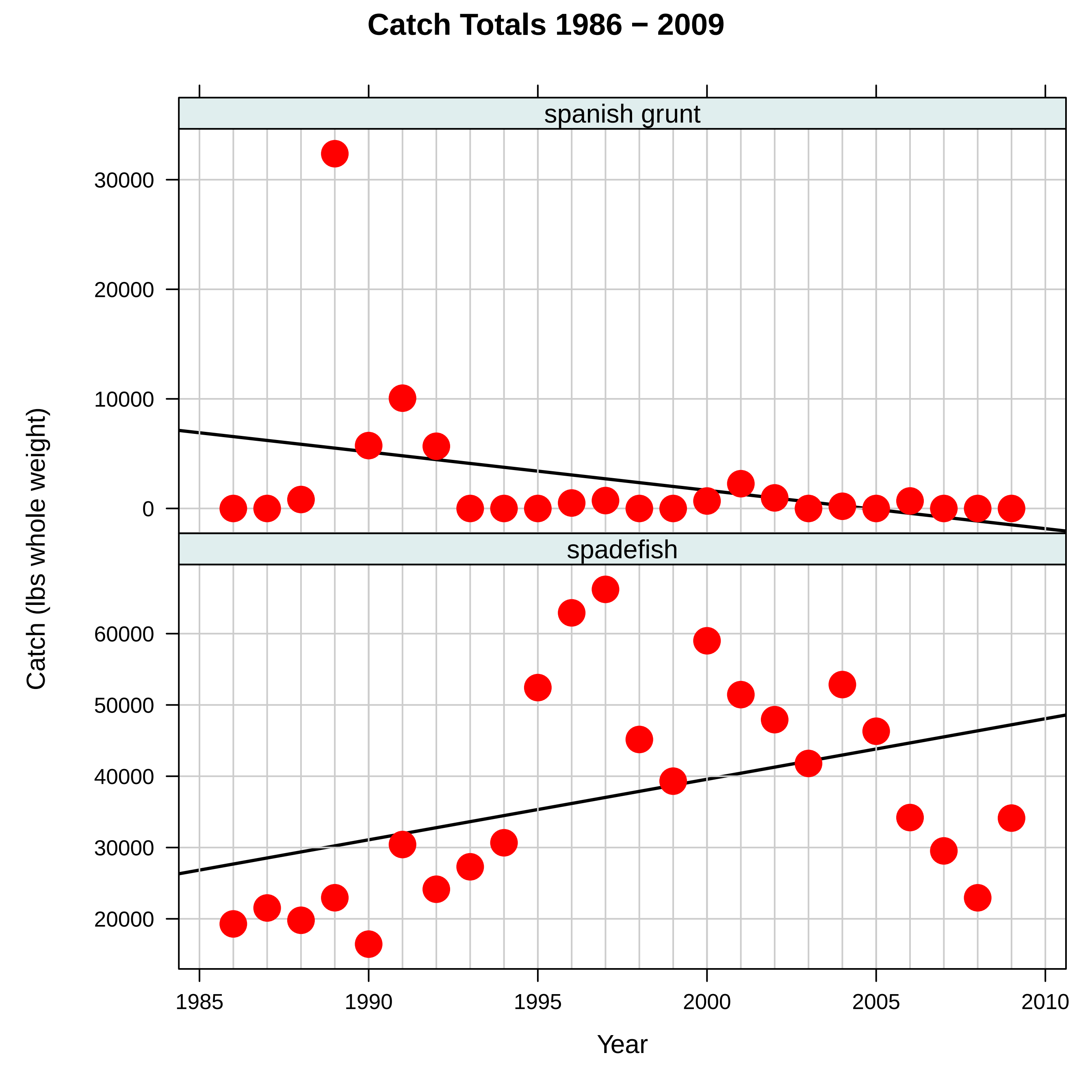


Catch Totals 1986 – 2009
sheepshead
scup
Catch (lbs whole weight)
3000000
2500000
2000000
1500000
20000
15000
10000
5000
0
1985
1990
1995
2000
2005
2010
Year

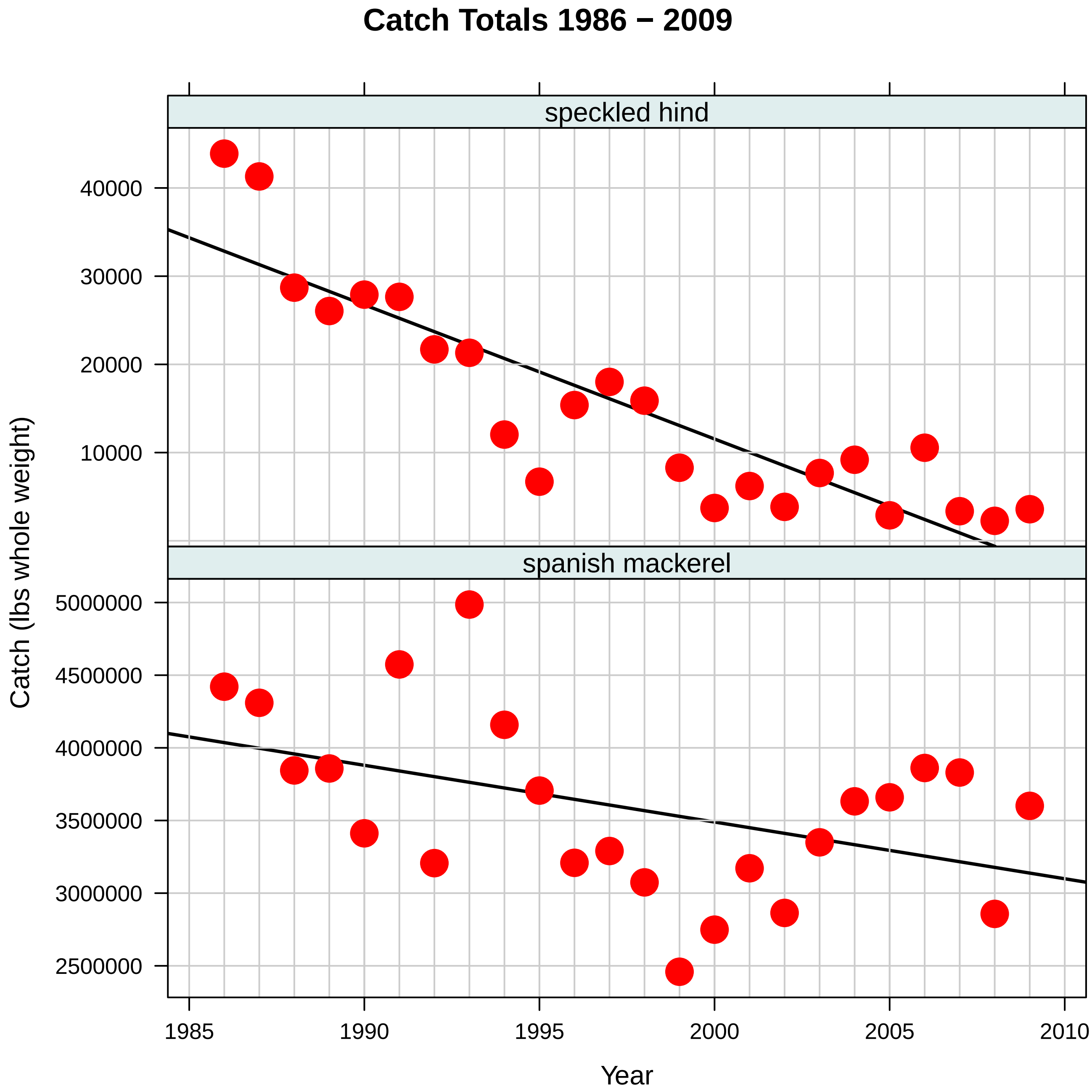

Catch Totals 1986 − 2009
slipper lobster
silk snapper
Catch (lbs whole weight)
0
5000
10000
20000
40000
60000
80000
1985
1990
1995
2000
2005
2010
Year



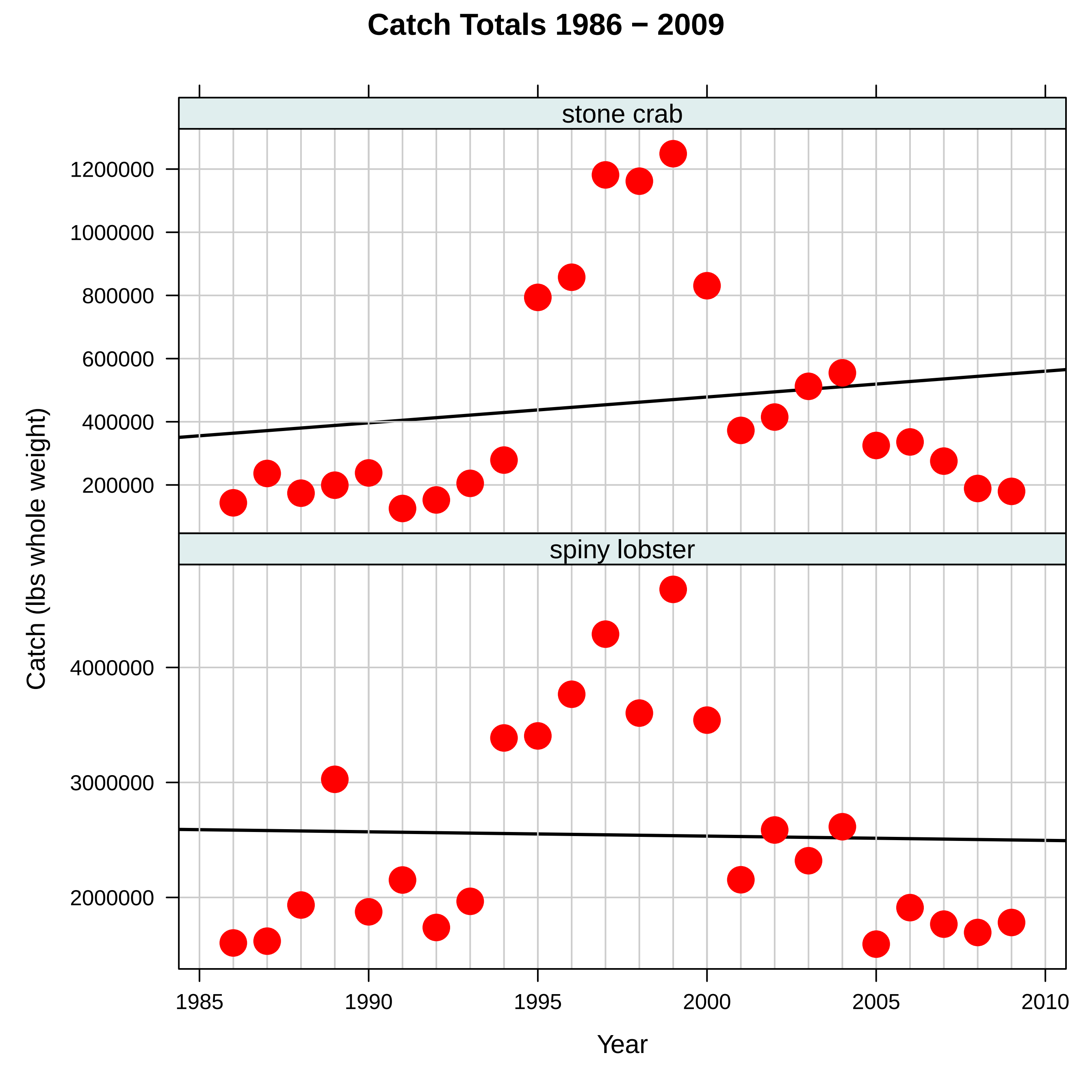
Catch Totals 1986 − 2009
snowy grouper
smallmouth grunt
800000
600000
400000
200000
800
600
400
200
0
1985
1990
1995
2000
2005
2010
Catch (lbs whole weight)
Year



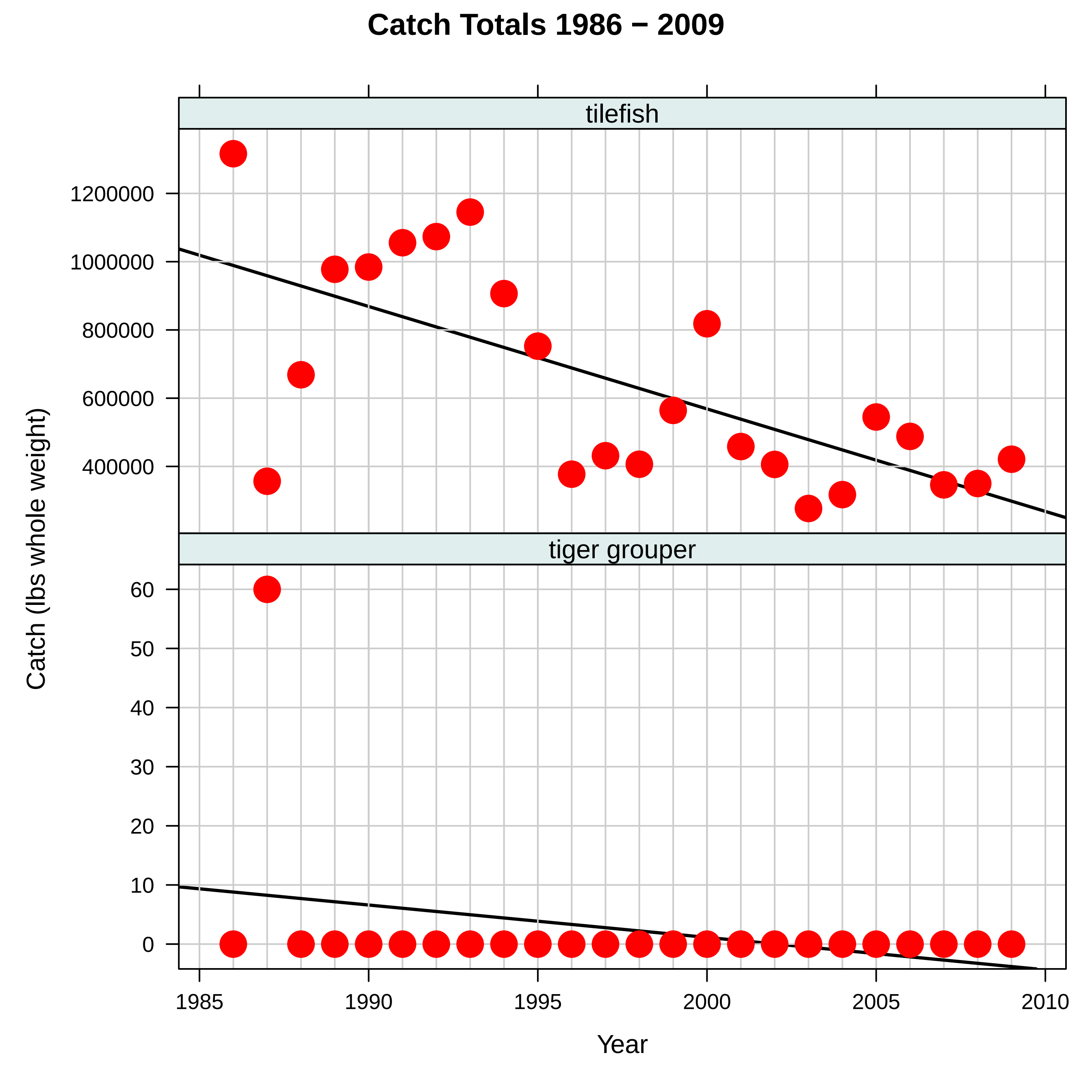
Catch Totals 1986 − 2009
spanish grunt
spadefish
Catch (lbs whole weight)
Year
0
10000
20000
30000
40000
50000
60000
1985
1990
1995
2000
2005
2010



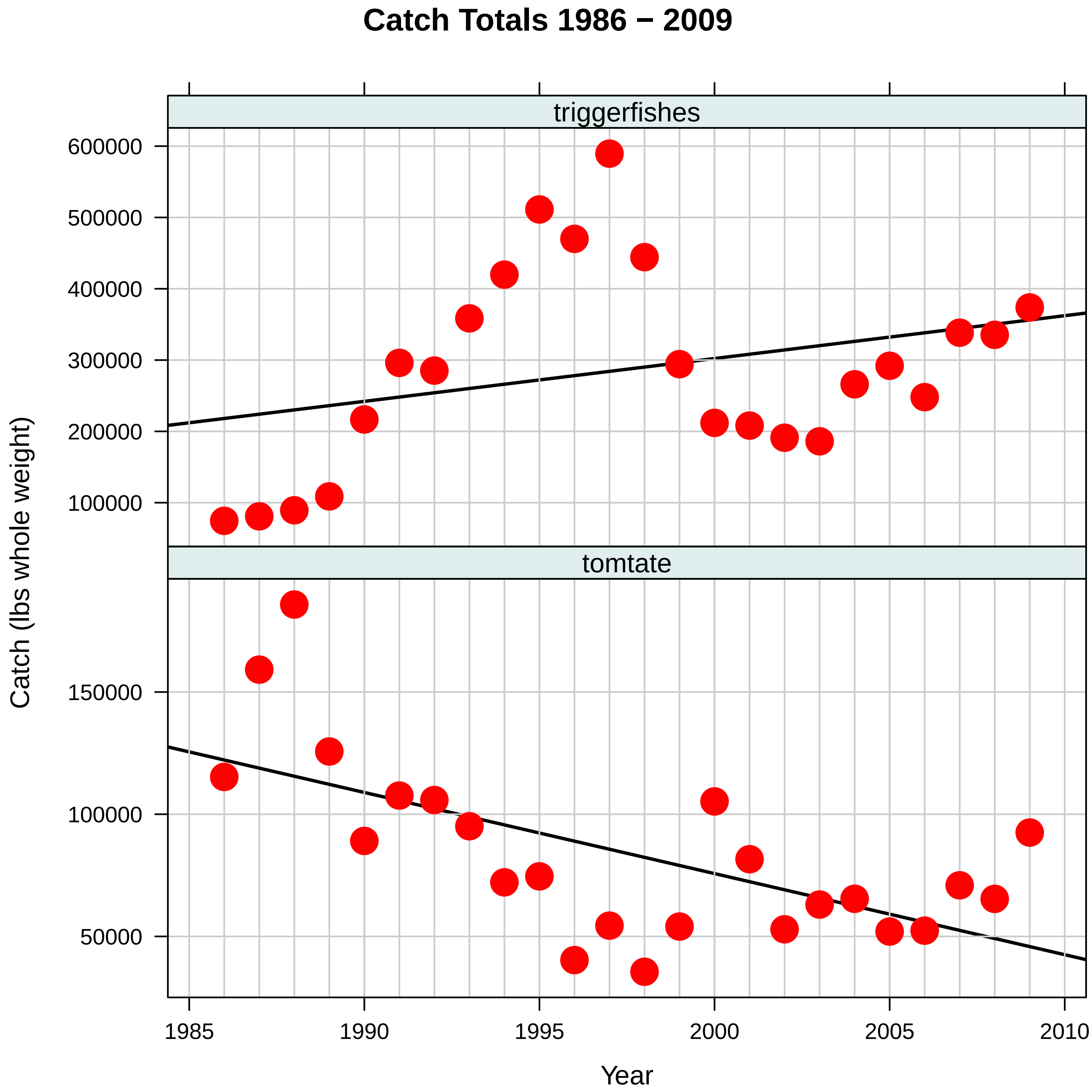
Catch Totals 1986 − 2009
speckled hind
spanish mackerel
40000
30000
20000
10000
5000000
4500000
4000000
3500000
3000000
2500000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

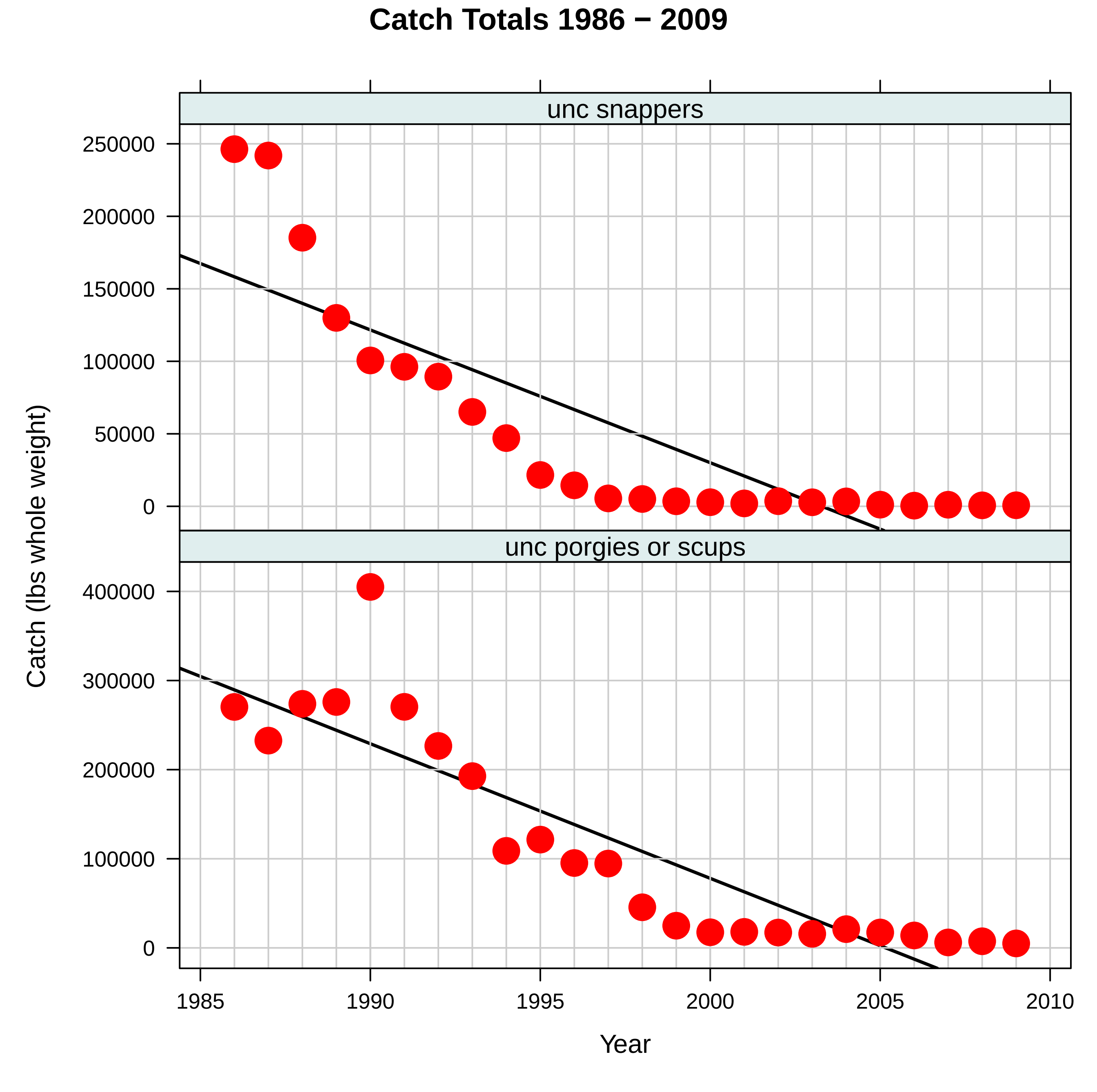


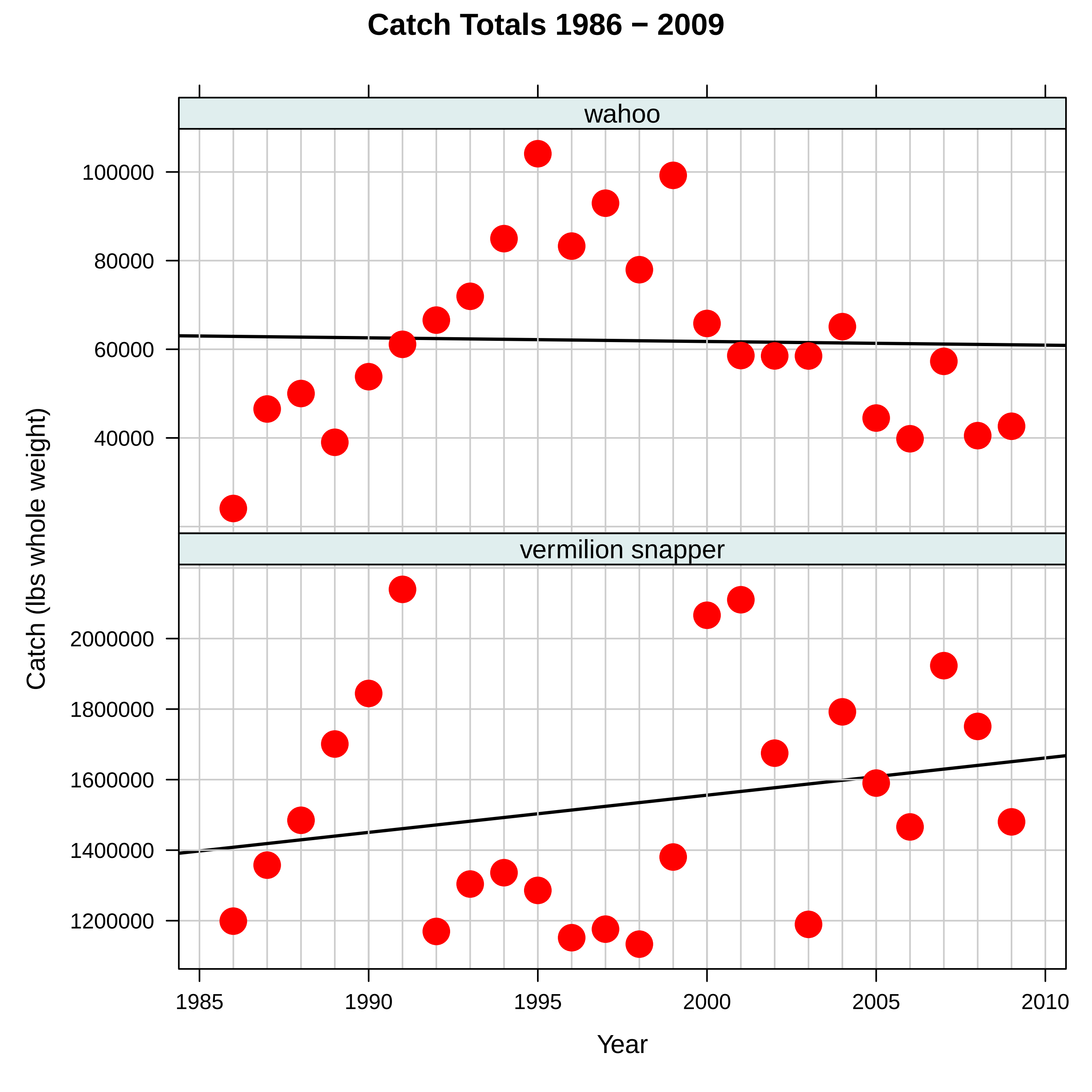
Catch Totals 1986 − 2009
stone crab
spiny lobster
Catch (lbs whole weight)
Year
1200000
1000000
800000
600000
400000
200000
4000000
3000000
2000000
1985
1990
1995
2000
2005
2010

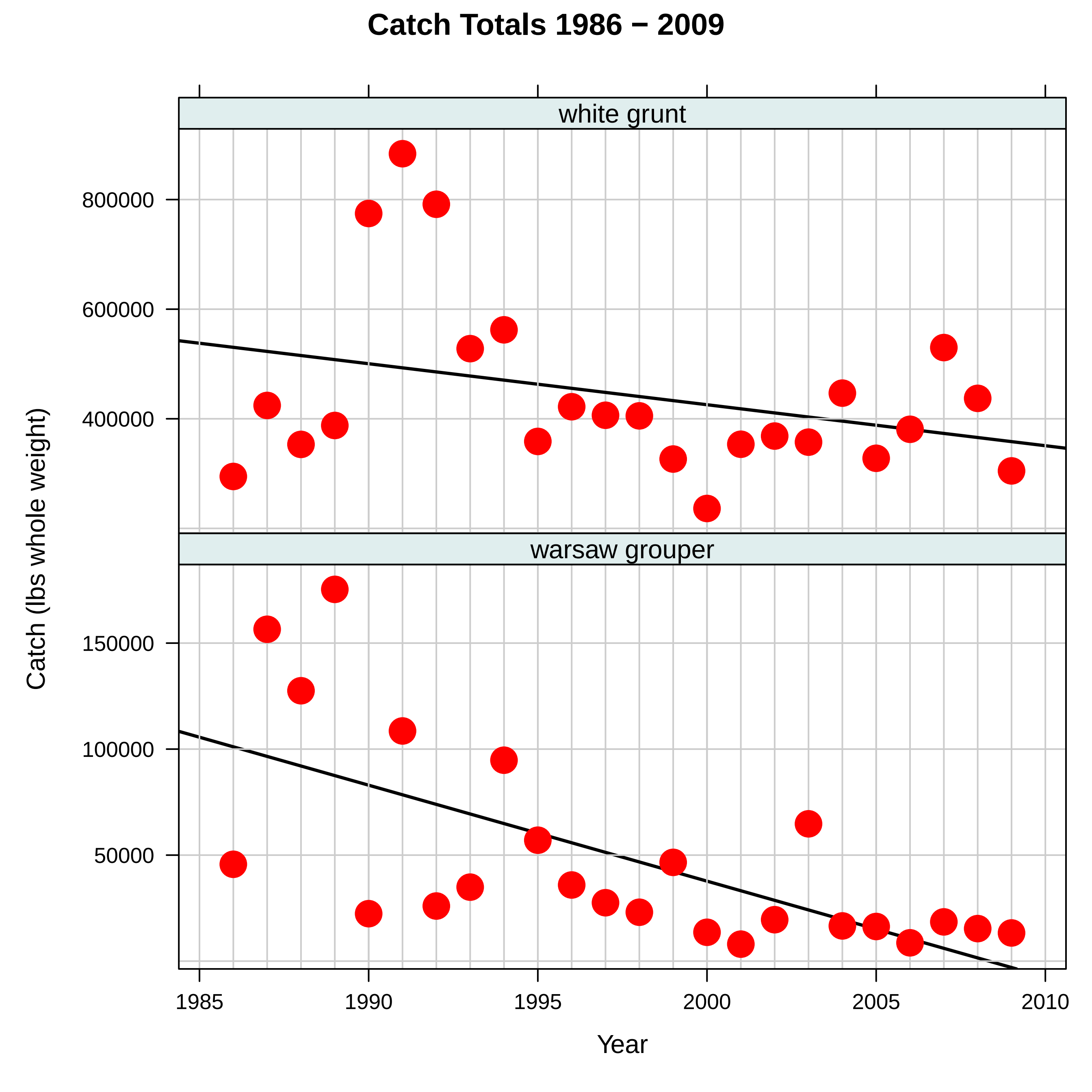


Catch Totals 1986 − 2009
tilefish
tiger grouper
1200000
1000000
800000
600000
400000
60
50
40
30
20
10
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

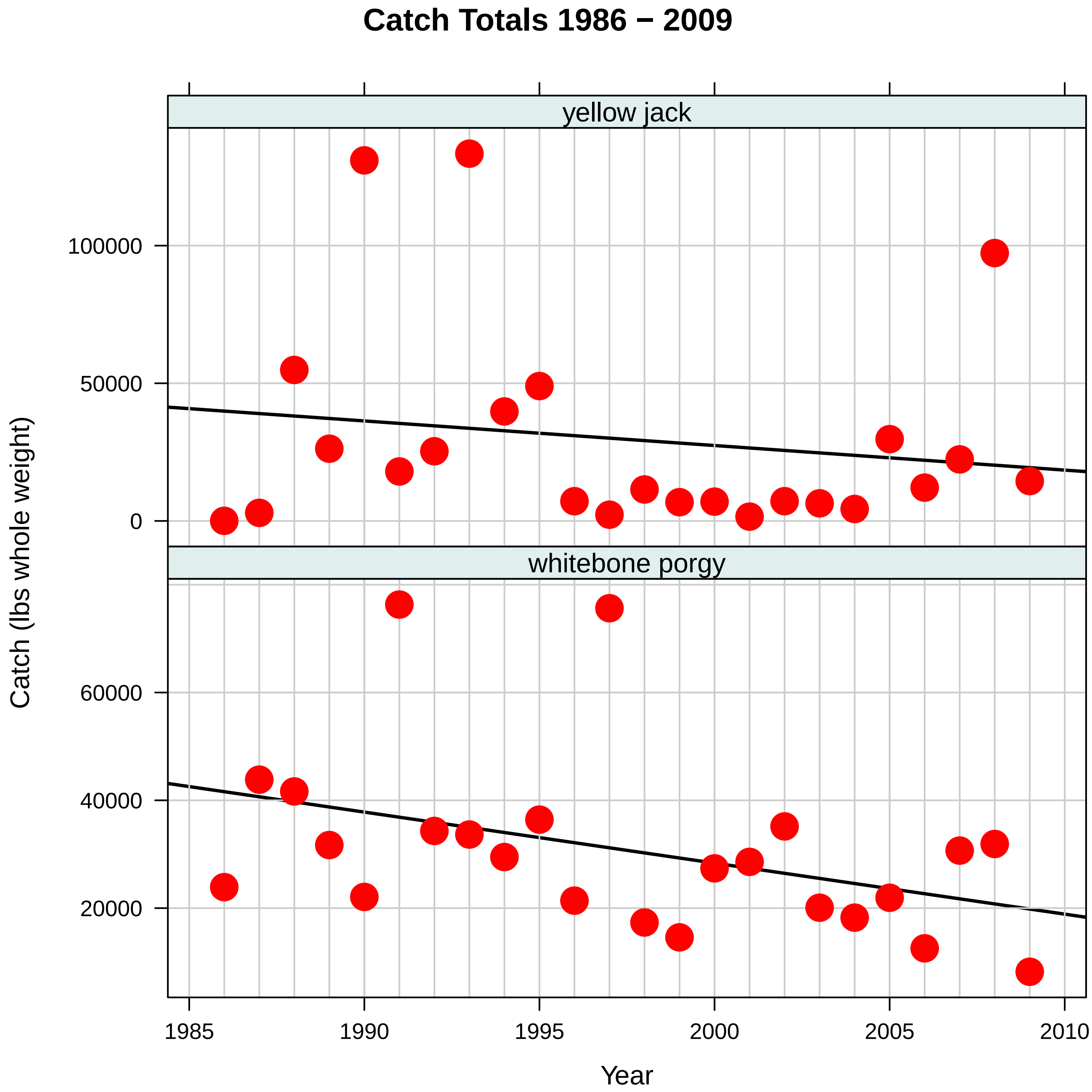

Catch Totals 1986 − 2009
triggerfishes
tomtate
600000
500000
400000
300000
200000
100000
150000
100000
50000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

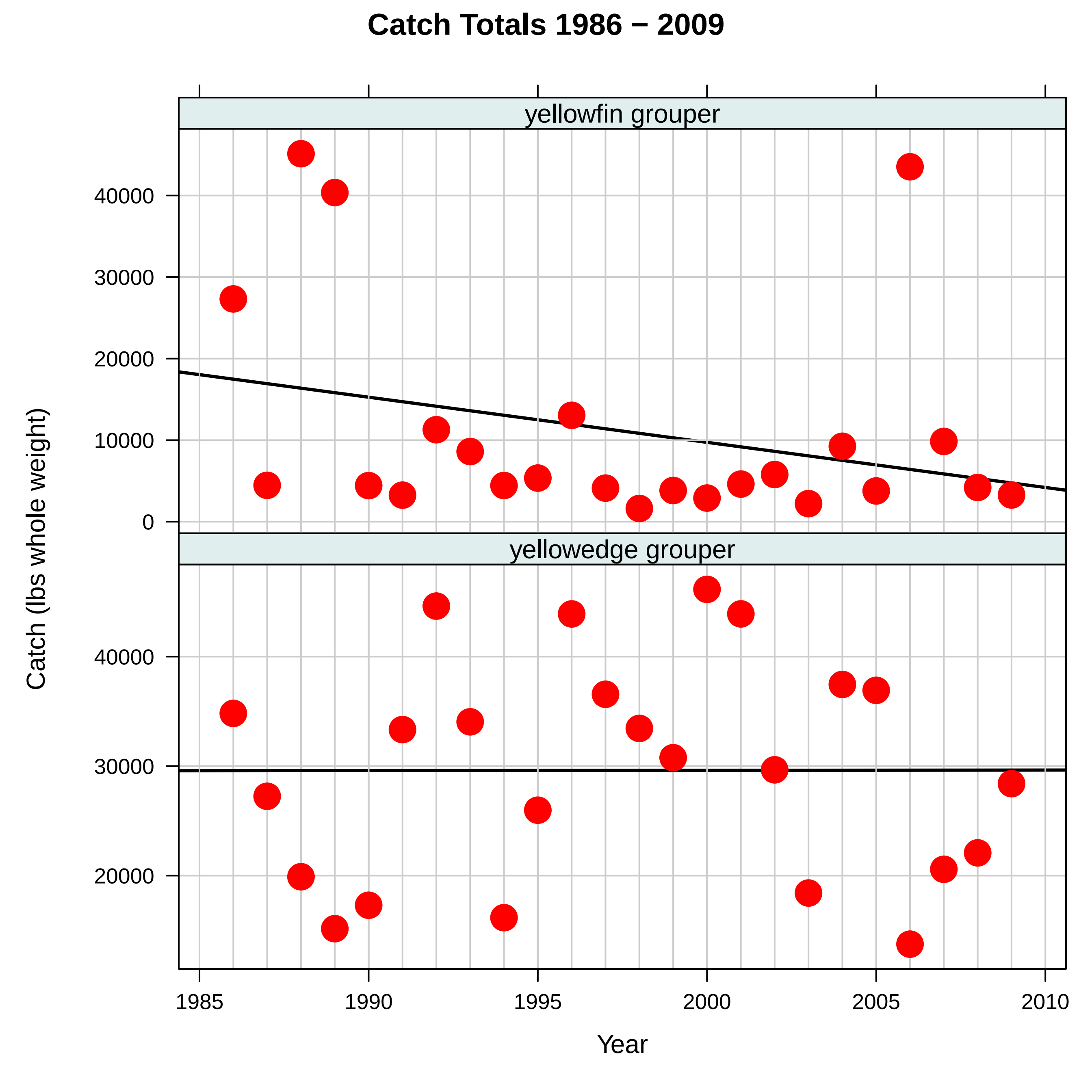

Catch Totals 1986 − 2009
unc snappers
unc porgies or scups
250000
200000
150000
100000
50000
0
400000
300000
200000
100000
0
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year


Catch Totals 1986 − 2009
wahoo
vermilion snapper
100000
80000
60000
40000
2000000
1800000
1600000
1400000
1200000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year

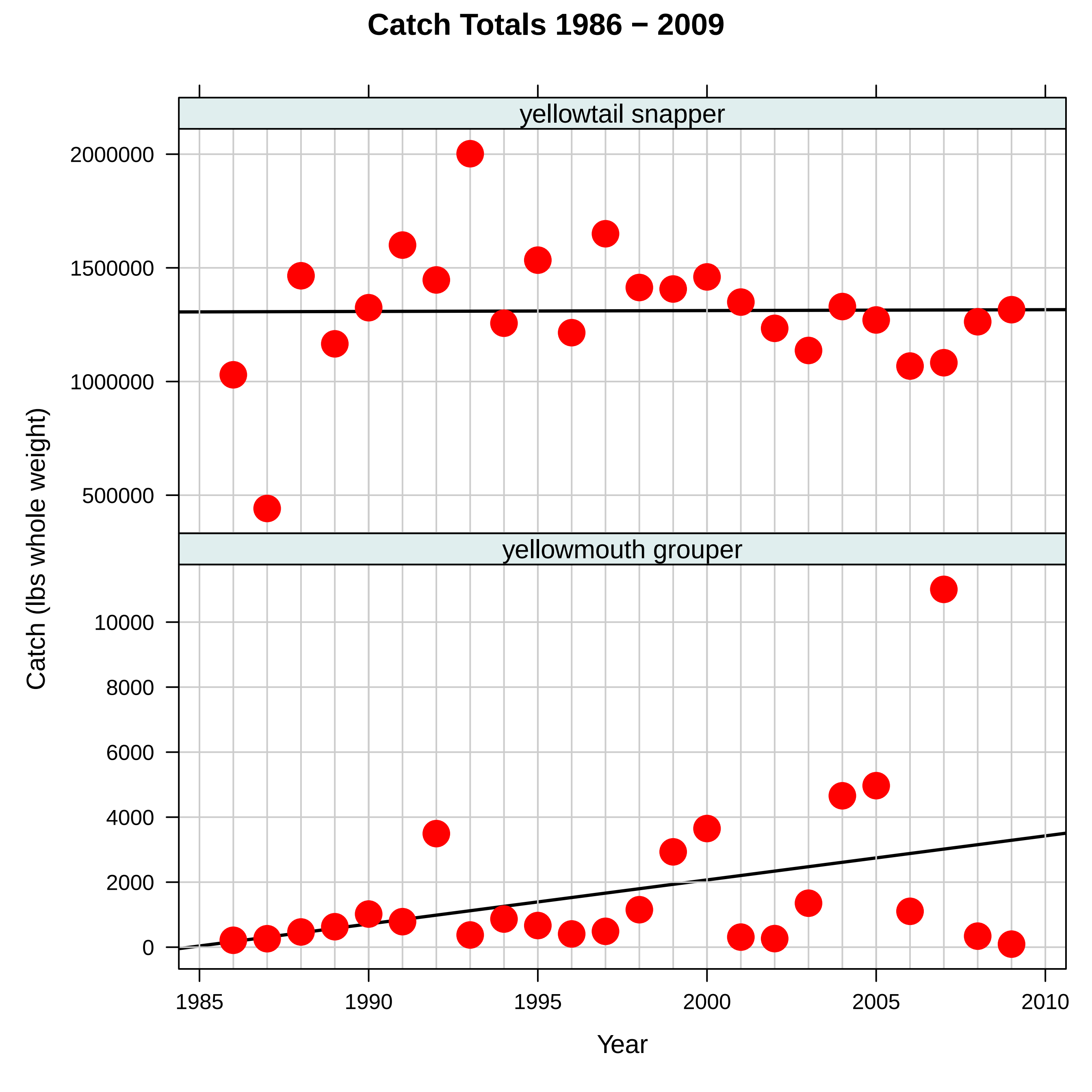


Catch Totals 1986 − 2009
white grunt
warsaw grouper
800000
600000
400000
150000
100000
50000
Catch (lbs whole weight)
1985
1990
1995
2000
2005
2010
Year


Catch Totals 1986 − 2009
yellow jack
whitebone porgy
Catch (lbs whole weight)
Year
0
50000
100000
20000
40000
60000
1985
1990
1995
2000
2005
2010



Catch Totals 1986 – 2009
yellowfin grouper
yellowedge grouper
Catch (lbs whole weight)
Year
40000
30000
20000
10000
0
1985
1990
1995
2000
2005
2010



Catch Totals 1986 − 2009
yellowtail snapper
yellowmouth grouper
Catch (lbs whole weight)
2000000
1500000
1000000
500000
10000
8000
6000
4000
2000
0
1985
1990
1995
2000
2005
2010
Year

Appendix N. Description of commercial fisheries for snapper grouper species under previous amendments.

Gag

Gag landings are broadly distributed from North Carolina to Florida. Gag landings peaked in 2007 at 516,000 pounds gutted weight but declined to about 380,000 pounds in 2008 and 2009. Landings averaged 433,000 annually over the period 2005-2009. Approximately 395 vessels landed gag, and effort averaged 2,270 trips per year. From 2005 to 2009, the ex-vessel price (2009 dollars) per gutted pound of gag landings increased from $3.82 in 2005 to $4.25 in 2009, averaging $4.13 over the period. From 2005 to 2009, the ex-vessel revenues (2009 dollars) received for gag peaked at $2.28 million in 2007 and declined thereafter, averaging $1.79 million per year over the five-year period.

Table P-1. Number of vessels, dealers, and trips landing gag, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	138	108	123	111	119	120
FL(west)	36	18	34	21	13	24
NC	87	90	102	114	118	102
SC	47	48	53	49	47	49
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	57	56	62	51	52	56
FL(west)	18	14	24	16	11	17
NC	39	45	47	51	50	46
SC	17	18	24	20	19	20
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	730	601	865	701	808	741
FL(west)	51	26	59	25	19	36
NC	954	962	1,045	1,001	1,041	1,001
SC	464	492	534	494	493	495
Total All States	2,199	2,081	2,503	2,221	2,361	2,273

Table P-2. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for gag, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	Pounds Gutted Weight	125,743	115,501	185,408	126,514	121,066	134,846
	Deflated Price (2009 $) per Gutted Pound	3.82	4.13	4.22	4.28	4.29	4.15
	Deflated Ex-Vessel Revenue (2009 $)	399,567	400,699	775,527	490,663	478,048	508,901
FL (west coast)	Pounds Gutted Weight	1,068	1,006	3,593	499	320	1,297
	Deflated Price (2009 $) per Gutted Pound	3.41	3.63	3.96	3.91	3.94	3.77
	Deflated Ex-Vessel Revenue (2009 $)	3,646	3,652	14,245	1,951	1,261	4,951
NC	Pounds Gutted Weight	148,033	130,634	122,322	110,926	143,708	131,125
	Deflated Price (2009 $) per Gutted Pound	3.59	3.69	3.97	4.03	3.91	3.84
	Deflated Ex-Vessel Revenue (2009 $)	531,713	481,684	485,119	447,052	562,597	501,633
SC	Pounds Gutted Weight	183,257	173,208	204,511	148,845	116,502	165,265
	Deflated Price (2009 $) per Gutted Pound	4.34	4.57	4.89	4.94	4.89	4.73
	Deflated Ex-Vessel Revenue (2009 $)	795,140	791,156	1,000,489	735,146	569,992	778,385
All States Combined	Pounds Gutted Weight	458,100	420,350	515,834	386,784	381,597	432,533
	Deflated Price (2009 $) per Gutted Pound	3.82	4.02	4.25	4.31	4.25	4.13
	Deflated Ex-Vessel Revenue (2009 $)	1,730,068	1,677,191	2,275,380	1,674,812	1,611,898	1,793,870

Vermilion Snapper

Vermilion snapper landings are broadly distributed from North Carolina to Florida. From 2005 to 2009, vermilion snapper landings varied around the average value of 946,000 gutted pounds per year. Approximately 273 vessels landed Vermilion snapper, and effort averaged 2,355 trips per year. From 2005 to 2009, the ex-vessel price (2009 dollars) per gutted pound of vermilion snapper landings varied around an average value of $3.22. From 2005 to 2009, the ex-vessel revenues (2009 dollars) received for Vermilion snapper varied around an average value of $2.74 million.

Table P-3. Number of vessels, dealers, and trips landing vermilion snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	85	74	78	100	80	83
FL(west)	27	22	18	28	12	21
NC	95	88	120	134	124	112
SC	52	53	65	60	54	57
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	37	34	34	46	36	37
FL(west)	15	16	13	12	9	13
NC	39	42	55	62	50	50
SC	14	16	28	27	22	21
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	519	401	538	684	553	539
FL(west)	43	37	22	43	14	32
NC	979	999	1,255	1,445	1,010	1,138
SC	628	670	754	697	482	646
Total All States	2,169	2,107	2,569	2,869	2,059	2,355

Table P-4. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for vermilion snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Pounds Gutted Weight**	271,454	252,992	289,239	349,225	366,586	305,899
	Deflated Price (2009 $) per Gutted Pound	2.93	3.17	3.07	3.04	2.85	3.01
	Deflated Ex-Vessel Revenue (2009 $)	356,532	464,964	899,580	712,798	726,730	632,121
FL (west coast)	**Pounds Gutted Weight**	4,749	4,142	1,157	7,233	2,060	3,868
	Deflated Price (2009 $) per Gutted Pound	2.49	2.78	2.66	2.64	2.40	2.59
	Deflated Ex-Vessel Revenue (2009 $)	11,821	11,512	3,080	19,098	4,947	10,092
NC	**Pounds Gutted Weight**	379,732	288,384	470,654	511,701	315,164	393,127
	Deflated Price (2009 $) per Gutted Pound	3.14	3.26	3.34	3.27	3.17	3.24
	Deflated Ex-Vessel Revenue (2009 $)	1,191,447	940,005	1,571,930	1,671,595	999,030	1,274,801
SC	**Pounds Gutted Weight**	381,558	233,602	246,202	216,045	136,708	242,823
	Deflated Price (2009 $) per Gutted Pound	3.21	3.62	3.52	3.40	3.10	3.37
	Deflated Ex-Vessel Revenue (2009 $)	1,223,599	846,272	867,570	733,572	423,993	819,001
All States Combined	**Pounds Gutted Weight**	1,037,493	779,119	1,007,251	1,084,204	820,518	945,717
	Deflated Price (2009 $) per Gutted Pound	3.10	3.36	3.33	3.24	3.07	3.22
	Deflated Ex-Vessel Revenue (2009 $)	2,783,400	2,262,754	3,342,159	3,137,063	2,154,700	2,736,015

Black Sea Bass

Black sea bass are landed primarily off the coasts of North Carolina and South Carolina. Landings varied around an average of 417,000 gutted pounds over the period 2005-2009, peaking at 529,000 in 2009. Approximately 289 vessels landed black sea bass, and effort averaged 658 trap trips per year with an additional 1,449 trips per year made with other gear. From 2005 to 2009, the ex-vessel price (2009 dollars) per gutted pound of black sea bass peaked in 2007 at $2.87 ($2.44 per pound whole weight) and declined thereafter, averaging $2.62 ($2.20 per pound whole weight). From 2005 to 2009, the ex-vessel revenues (2009 dollars) received for black sea bass varied around an average value of $1.01 million, with higher prices in some years offset by lower landings.

Table P-5. Number of vessels, dealers, and trips landing black sea bass, by state, 2005-2009.

Vessels							**Average**
	Gear:	**2005**	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL and GA	**Trap and Other**	82	51	60	60	88	68
NC	**Other**	100	99	129	134	136	120
	Trap	30	31	29	27	35	30
SC	**Other**	48	56	58	50	49	52
	Trap	15	16	21	20	21	19
Dealers							**Average**
		2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL and GA		31	27	36	30	38	32
NC		56	70	80	76	68	70
SC		25	32	39	36	35	33
Trips							**Average**
	Gear:	**2005**	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL and GA	**Trap and Other**	290	201	233	297	407	286
NC	**Other**	823	844	787	788	938	836
	Trap	454	632	430	377	488	476
SC	**Other**	383	390	356	335	346	362
	Trap	125	108	156	163	201	151
Total All States	**Other**	1,452	1,412	1,347	1,402	1,630	1,449
	Trap	603	763	615	558	750	658

Note: Florida (west) and Florida (east) were combined for confidentiality reasons.

Table P-6. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for black sea bass, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL and GA	**Pounds Gutted Weight**	14,126	10,106	8,067	6,329	39,016	15,529
	Deflated Price (2009 $) per Gutted Pound	2.08	2.47	2.41	2.18	2.13	2.25
	Deflated Price (2009 $) per Whole Pound	1.76	2.10	2.05	1.85	1.80	1.91
	Deflated Ex-Vessel Revenue (2009 $)	17,781	15,419	11,299	11,497	76,368	26,473
NC	**Pounds Gutted Weight**	274,451	356,339	229,358	232,388	330,887	284,685
	Deflated Price (2009 $) per Gutted Pound	2.50	2.77	3.09	2.80	2.69	2.77
	Deflated Price (2009 $) per Whole Pound	2.12	2.35	2.63	2.38	2.28	2.35
	Deflated Ex-Vessel Revenue (2009 $)	686,510	986,890	707,670	651,457	890,041	784,514
SC	**Pounds Gutted Weight**	101,561	79,505	109,556	132,860	159,218	116,540
	Deflated Price (2009 $) per Gutted Pound	2.15	2.47	2.53	2.28	2.54	2.39
	Deflated Price (2009 $) per Whole Pound	1.83	2.10	2.15	1.93	2.15	2.03
	Deflated Ex-Vessel Revenue (2009 $)	218,137	196,430	277,448	302,871	403,879	279,753
All States Combined	**Pounds Gutted Weight**	390,137	445,951	346,981	371,577	529,120	416,753
	Deflated Price (2009 $) per Gutted Pound	2.37	2.68	2.87	2.59	2.57	2.62
	Deflated Price (2009 $) per Whole Pound	2.01	2.27	2.44	2.19	2.18	2.22
	Deflated Ex-Vessel Revenue (2009 $)	922,441	1,198,738	996,422	965,825	1,370,290	1,090,739

Golden Tilefish

Golden tilefish are landed primarily on the east coast of Florida. Landings of this species varied around an average value of 305,000 pounds gutted weight per year from 2005 to 2009. On average over this period, 63 vessels landed golden tilefish, making 405 trips. Ex-vessel price per gutted pound varied around an average of $2.60 from 2005 to 2009. Ex-vessel revenues peaked in 2007 at $737,000 and declined to around $700,000 in 2009 due to somewhat lower ex-vessel prices.

Table P-7. Number of vessels, dealers, and trips landing golden tilefish, by state, 2005-2009.

Vessels							**Average**
	Gear:	**2005**	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	Longline	8	7	14	11	10	10
	Other	33	29	35	31	28	31
FL(west)	Other	11	13	15	8	4	10
NC & SC	Longline and Other	15	17	8	9	7	12
Dealers							**Average**
	Gear:	**2005**	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	Longline	3	4	7	8	9	6
	Other	19	15	20	18	17	18
FL(west)	Other	9	10	13	4	4	8
NC & SC	Longline and Other	12	14	6	9	7	10
Trips							**Average**
	Gear:	**2005**	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	Longline	79	100	264	189	244	175
	Other	202	131	261	135	104	167
FL(west)	Other	25	26	43	9	6	22
NC & SC	Longline and Other	48	74	27	33	29	42
Total All States	Longline and Other	354	331	595	366	383	405

Note: Gears were combined in some circumstances to prevent confidentiality issues.

Table P-8. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for golden tilefish, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Pounds Gutted Weight**	203,836	253,010	258,395	276,322	279,723	254,257
	Deflated Price (2009 $) per Gutted Pound	2.76	2.70	2.83	2.59	2.49	2.67
	Deflated Ex-Vessel Revenue (2009 $)	563,390	682,662	730,664	716,143	695,499	677,672
FL (west coast)	**Pounds Gutted Weight**	3,426	2,055	1,313	481	212	1,497
	Deflated Price (2009 $) per Gutted Pound	2.05	1.85	1.92	1.85	1.56	1.85
	Deflated Ex-Vessel Revenue (2009 $)	7,011	3,806	2,519	888	331	2,911
NC & SC	**Pounds Gutted Weight**	56,340	111,130	25,678	23,092	24,768	48,202
	Deflated Price (2009 $) per Gutted Pound	1.91	2.30	2.92	1.21	2.72	2.21
	Deflated Ex-Vessel Revenue (2009 $)	1,312	4,224	4,034	6,875	5,373	4,364
All States Combined	**Pounds Gutted Weight**	263,602	366,194	285,385	299,895	304,703	303,956
	Deflated Price (2009 $) per Gutted Pound	2.67	2.59	2.76	2.49	2.48	2.60
	Deflated Ex-Vessel Revenue (2009 $)	571,714	690,692	737,217	723,906	701,203	684,946

Snowy Grouper

Snowy grouper are landed throughout the South Atlantic region. Landings peaked in 2006 at 219,000 gutted pounds but decreased to 65,000 pounds by 2009, averaging 133,000 pounds from 2005 to 2009. On average, 152 vessels made a total of 985 trips per year landing snowy grouper. Ex-vessel price per gutted pound peaked in 2007 at $3.69 but decreased to $3.41 by 2009, averaging $3.42 from 2005 to 2009. Annual ex-vessel revenues peaked in 2006 at $714,000 but averaged $441,000 over the five-year period.

Table P-9. Number of vessels, dealers, and trips landing snowy grouper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	53	36	46	46	39	44
FL(west)	46	35	38	29	28	35
NC	37	32	30	45	54	40
SC	31	32	35	35	32	33
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	21	19	27	30	24	24
FL(west)	22	18	21	16	21	20
NC	21	22	18	26	24	22
SC	10	12	12	11	11	11
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	209	149	219	223	233	207
FL(west)	305	213	344	271	270	281
NC	292	268	340	311	349	312
SC	170	193	189	181	194	185
Total All States	976	823	1,092	986	1,046	985

Table P-10. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for snowy grouper, 2005-2009.

			Year Landed					Average 2005-2009
			2005	2006	2007	2008	2009	
State Landed:								
FL (east coast) and GA	Pounds Gutted Weight		24,091	14,729	14,581	12,121	12,603	15,625
	Deflated Price (2009 $) per Gutted Pound		3.40	3.58	3.61	3.78	3.75	3.62
	Deflated Ex-Vessel Revenue (2009 $)		75,153	46,659	53,092	44,629	45,296	52,966
FL (west coast)	Pounds Gutted Weight		43,818	46,761	39,639	21,026	18,597	33,968
	Deflated Price (2009 $) per Gutted Pound		2.96	3.08	3.49	3.12	2.85	3.10
	Deflated Ex-Vessel Revenue (2009 $)		129,734	143,844	138,354	65,519	53,046	106,099
NC	Pounds Gutted Weight		68,736	77,006	39,712	19,978	23,838	45,854
	Deflated Price (2009 $) per Gutted Pound		2.99	3.13	3.86	3.56	3.37	3.38
	Deflated Ex-Vessel Revenue (2009 $)		205,854	241,384	153,178	71,176	80,287	150,376
SC	Pounds Gutted Weight		72,954	80,739	10,783	11,687	10,006	37,234
	Deflated Price (2009 $) per Gutted Pound		3.38	3.49	3.85	4.08	3.90	3.74
	Deflated Ex-Vessel Revenue (2009 $)		246,388	281,955	41,465	47,675	39,070	131,311
All States Combined	Pounds Gutted Weight		209,599	219,235	104,716	64,813	65,044	132,681
	Deflated Price (2009 $) per Gutted Pound		3.13	3.27	3.69	3.58	3.41	3.42
	Deflated Ex-Vessel Revenue (2009 $)		657,129	713,842	386,089	228,999	217,698	440,751

Red Snapper

Red snapper are landed from North Carolina to Florida, with about 80% of landings occurring in Florida. After reaching a low of 73,000 pounds gutted weight in 2006, red snapper landings steadily increased by more than four-fold reaching 313,000 pounds in 2009. The number of vessels landing red snapper increased by 30% from 2006 to 2009, reaching 276 vessels in 2009, with steady increases in both North Carolina and Florida. The number of trips landing red snapper increased by 73% from 2006 to 2009, reaching 1,994 trips in 2009. Ex-vessel price per gutted pound (2009 dollars) remained relatively stable from 2005 to 2009, averaging $3.94. Ex-vessel revenues increased from a low of $262,000 in 2006 to a high of $1.1 million in 2009 reflecting increasing landings.

Table P-11. Number of vessels, dealers, and trips landing red snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	108	88	96	100	126	104
FL(west)	16	18	14	16	16	16
NC	53	59	64	73	84	67
SC	44	46	57	45	50	48
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	42	40	41	41	43	41
FL(west)	12	13	11	12	11	12
NC	27	28	27	35	39	31
SC	12	15	18	15	22	16
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	611	548	725	897	1,224	801
FL(west)	28	36	26	22	35	29
NC	264	215	204	336	392	282
SC	439	355	371	375	343	377
Total All States	1,342	1,154	1,326	1,630	1,994	1,489

Table P-12. Landings (gutted pounds), average annual ex-vessel prices, and ex-vessel revenues for red snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	Pounds Gutted Weight	62,566	45,821	69,899	185,542	280,267	128,819
	Deflated Price (2009 $) per Gutted Pound	3.65	3.93	4.00	4.04	3.96	3.92
	Deflated Ex-Vessel Revenue (2009 $)	187,838	153,497	278,970	557,847	995,552	434,741
FL (west coast)	Pounds Gutted Weight	1,776	3,380	707	804	3,278	1,989
	Deflated Price (2009 $) per Gutted Pound	3.49	3.62	3.83	3.84	3.84	3.72
	Deflated Ex-Vessel Revenue (2009 $)	6,193	12,242	2,708	3,087	12,574	7,361
NC	Pounds Gutted Weight	6,632	5,363	4,098	7,379	9,259	6,546
	Deflated Price (2009 $) per Gutted Pound	3.59	3.69	3.67	3.85	3.83	3.73
	Deflated Ex-Vessel Revenue (2009 $)	23,784	19,798	15,033	28,405	35,471	24,498
SC	Pounds Gutted Weight	34,512	18,294	23,351	19,704	19,796	23,131
	Deflated Price (2009 $) per Gutted Pound	3.76	4.16	4.23	4.37	4.37	4.18
	Deflated Ex-Vessel Revenue (2009 $)	129,900	76,109	98,821	86,202	86,431	95,493
All States Combined	Pounds Gutted Weight	105,486	72,858	98,054	213,429	312,600	160,485
	Deflated Price (2009 $) per Gutted Pound	3.67	3.95	4.01	4.08	4.00	3.94
	Deflated Ex-Vessel Revenue (2009 $)	347,715	261,647	395,531	675,541	1,130,028	562,092

Appendix O

Species groupings for management of the South Atlantic Fishery Management Council Snapper-Grouper Fishery Management Unit

Nicholas A. Farmer[1], Nikhil K. Mehta[1], Marcel J.M. Reichert[2], Jessica A. Stephen[2]

[1]NOAA Fisheries Service
Southeast Regional Office
263 13th Avenue South
Saint Petersburg, Florida 33701

[2]South Carolina Department of Natural Resources
217 Fort Johnson Rd.
Charleston, SC 29412

Corresponding Author: N.A. Farmer (Nick.Farmer@noaa.gov)

Abstract

The Magnuson-Stevens Reauthorization Act of 2006 requires regional fishery management councils to implement annual catch limits and accountability measures for all stocks under Federal management by 2011, to ensure overfishing does not occur. Many species are data-limited and have no formal stock assessment. One possible approach to managing these unassessed species is to assign them to assemblages that would be managed as units. The utility of this approach was evaluated using fishery-dependent and fishery-independent data from the United States southern Atlantic Ocean. Multivariate statistical analyses revealed several consistent assemblages among the members of the South Atlantic Fishery Management Council's Snapper-Grouper Fishery Management Unit. Identified stock complexes and sub-complexes may be useful for fisheries management, as a management measure implemented for any member of a complex might be expected to result in a similar trajectory of fishing mortality rate (F) for other members of the complex. Productivity-Susceptibility Analysis and life history were also considered, as differences in productivity, vulnerability, life history, and other population dynamic parameters for species within complexes might imply different population responses to a similar change in F. Identified linkages between species also provide guidance for ecosystem-based management considerations such as the impacts of regulations upon multi-species fisheries.

Introduction

The Magnuson-Stevens Reauthorization Act (MSRA 2006) requires regional fishery management councils to implement annual catch limits (ACLs) and accountability measures (AMs) to ensure overfishing does not occur. ACLs and AMs are required for all stocks under federal management, except stocks with annual life cycles and those managed by international agreement in which the United States participates. These ACL/AM provisions must be implemented in 2010 or earlier for stocks subject to overfishing, and in 2011 or earlier for all other federally-managed stocks. The South Atlantic Fisheries Management Council (SAFMC) currently manages 73 finfish species under its Snapper-Grouper Fishery Management Plan (FMP). Formally establishing ACLs for many of these species will be accomplished via the SAFMC's Comprehensive ACL Amendment. In June 2010, the SAFMC selected preferred alternatives whereby species with greater than 80% of landings in state waters and species covered by the State of Florida Marine Life Rule were removed from the Fishery Management Unit (FMU). Species with average annual landings (2005-2008) of less than 10,000 lbs whole weight were designated as "Ecosystem Component Species." In December 2010, the SAFMC selected preferred alternatives whereby species with greater than 80% of landings in state waters, species covered by the Florida Marine Life Rule, and species with average annual landings (2005-2008) of less than 20,000 lbs whole weight were removed from the FMU, with the exception of Nassau grouper, goliath grouper, wreckfish, warsaw grouper, speckled hind, cubera snapper, and lesser amberjack. These actions reduced the number of Snapper-Grouper FMU species requiring an ACL to 38. Management measures are traditionally implemented based upon species-specific stock assessment results. However, only 12 of these 38 species will have been assessed through a formal Southeast Data Assessment and Review (SEDAR) stock assessment by 2011 (e.g., black sea bass, gag, red porgy, red snapper, vermilion snapper, tilefish, snowy grouper, greater amberjack, black grouper, red grouper, goliath grouper, and yellowtail snapper).

One possible approach for developing ACLs for unassessed species would be to assign them to assemblages that would be managed as units. The NOAA Fisheries Service ACL Final Rule states that "…the vulnerability of stocks to the fishery should be evaluated when determining if a particular stock complex should be established or reorganized, or if a particular stock should be included in a complex" (50 CFR 600.310(b)(8) in 74 FR 3205). National Standard 3 for fishery conservation and management (MSRA §301) states that "to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." A stock complex, as defined by the recently amended National Standard 1 guidance, is "a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar" (74 FR 3178). Stocks may be grouped into complexes if: 1) they cannot be targeted independently of one another in a multispecies fishery; 2) there is not sufficient data to measure their status relative to established status determination criteria; or 3) when it is not feasible for fishermen to distinguish individual stocks among their catch (50 CFR 600.310(b)(8) in 74 FR 3178). A management unit is defined as "a fishery or that portion of a fishery identified in a FMP as relevant to the FMP's management objectives" (50 CFR 600.320(d)). Management units may be organized based on biological, geographic, economic, technical, social, or ecological considerations (50 CFR 600.320(d)(1)).

The objectives of this paper are twofold: (1) To determine whether species assemblages can be identified in the U.S. southern Atlantic Ocean among Snapper-Grouper FMP species, and (2) To determine if these assemblages are consistent between commercial and recreational fisheries.

The results of these analyses should provide guidance for the SAFMC in setting ACLs for reef fish species in the Comprehensive ACL Amendment. Analyses were conducted on the 35 species requiring an ACL under the SAFMC June 2010 preferred alternatives, but suggested groupings for additional species from the December 2010 preferred alternatives are discussed.

Methods

Commercial logbook, commercial observer, headboat logbook, recreational survey, and fishery-independent Marine Resources Monitoring, Assessment and Prediction (MARMAP) data were used to evaluate similarities in spatial and temporal patterns of fisheries exploitation in the southeastern U.S. Atlantic Ocean for species in the SAFMC Snapper-Grouper FMP requiring an ACL under the Council's June 2010 Preferred Alternative. Following Lee and Sampson (2000), multiple analytical approaches were used to identify species assemblages: (1) species life history and depth of occurrence, (2) percent records by dataset, (3) dimension reduction and hierarchical cluster analyses based on life history; abundance; and presence-absence, (4) weighted mean cluster association indices, and (5) maps of species distributions. The results of the dimension reduction and hierarchical cluster analyses were synthesized across analyses using a weighted mean cluster association index to develop potential species complexes for ACL management sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks would be similar.

Life History

Life history parameters were assembled from peer-reviewed literature (see Appendices), SEDAR reports, NOAA Fisheries Service Panama City Laboratory, Stock Assessment and Fishery Evaluation (SAFE) reports, and FishBase (Froese & Pauly 2009). Data from the U.S. south Atlantic was used whenever possible. Depth of occurrence records were assimilated from FishBase (Froese & Pauly 2009), with minimum and maximum depths of occurrence recorded. Pearson correlation was used to examine correlations amongst parameters.

Hierarchical cluster analyses were conducted using PASW V17.0.3 (SPSS Inc., Chicago, Illinois). Hierarchical cluster analysis identifies relatively homogeneous groups of cases (or variables) based on selected characteristics. It is an agglomerative method which optimizes a route between individual entities to the entire set of entities through progressive fusion (Boesch 1977).

Life history parameters in Tables 1 and 2, plus a categorical variable denoting Genus, were clustered using Ward's minimum-variance linkage method (Sneath & Sokal 1973) with a Euclidean distance measure and a Z-score transformation by variable. Ward's minimum-variance linkage method minimizes within-group dispersion. This method agglomerates clusters when the increase in variance is less than it would be if either of the two clusters were joined with any other cluster (Sneath & Sokal 1973). Minimum-variance fusion is similar to average-linkage fusion, except that it minimizes a squared distance weighted by cluster size.

Minimum-variance linkage is a space-dilating strategy because penalty by squared-distance results in tighter clusters than average-linkage. An additional cluster was performed following this methodology but dropping the 'Genus' dummy variable from the analysis.

The Euclidean distance (*ED*) measure is the square root of the sum of the squared differences between two entities (*j* and *k*) based on *P* variables:

$$ED_{jk} = \sqrt{\sum_{i=1}^{P}(x_{ij} - x_{ik})^2} \tag{1}$$

The Z-score transformation normalized the data by parameter, facilitating comparisons between species.

Fishery Data

Through the SEFSC Logbook program (SEFSC Logbook, accessed 6 May 2010), commercial fishermen self-report landings on a trip level, providing species-specific landings (in lbs), primary gear used, and primary area and depth of capture. Analyses of commercial logbook data were restricted to 2005-2009, because depth of capture, reported from 2005 onward, is an important consideration when evaluating similarities in fisheries vulnerability. A single depth of fishing is reported in the commercial logbooks for each species per trip, although they may be encountered at numerous depths during multiple sets, and even within a single drifting longline set.

For the purposes of these analyses, commercial logbook landings were binned by species, year, month, geartype, statistical area, and depth of capture. Year and month were defined by the date the fish were landed. Vertical line (e.g., handline and electric rig) and longline geartypes were evaluated separately. Landings were aggregated by month to maximize the variety of species landed while still capturing temporal trends in abundance. Fishermen will typically make multiple sets on a trip, sometimes in geographically distant areas, targeting different species. Aggregating landings by area and depth reduced the probability of grouping species caught during the same time period that would likely not co-occur during any given set due to disparate geographic distributions. Area fished was based on reported 1° longitude by 1° latitude commercial logbook statistical areas. Depth of capture was aggregated into atmospheric pressure bins (e.g., 33 ft = 2 atm, 66 ft = 3 atm, etc.). Reporting of depth of capture has improved through time. Records with no reported depth or area of capture were removed from consideration; these represented approximately 6% of the total available records for both the longline and vertical line clusters. Overall, 2,047 commercial longline (CLL) and 136,005 commercial vertical line (CVL) logbook records from 2005-2009 were evaluated.

The CLL dataset suffers from potential bias because possession is limited to the recreational bag limit for species other than snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish (50 CFR 622.41(6)). Both the CVL and CLL datasets also suffer from bias as the landings are expressed in weight rather than numbers;

thus cluster-weighting would be biased towards heavier species. As such, presence-absence clusters for the CVL and CLL datasets are probably more representative of stock assemblages than clusters weighted by catch.

In July 2006, NOAA Fisheries Service implemented a mandatory reef fish observer program (RFOP) to characterize the reef fish fishery operating in the U.S. Gulf of Mexico. The mandatory RFOP provides general fishery landing and bycatch characterization, estimates managed finfish discard levels; dispositions; and size distributions, and provides observations of protected species takes. In the southern U.S. Atlantic Ocean, the RFOP has been voluntary and primarily associated with special projects. As such, it suffers from spatial and sampling biases; however, it does provide accurate species identification at the gear set-level for species encountered using bottom longline, electric (bandit) reel, and handlines. Overall, 18,268 records representing encounters (e.g., landings plus discards) in numbers by species for 2,084 observed sets in the U.S. southern Atlantic Ocean from 2006-2009 were evaluated.

The recreational headboat sector of the reef fish fishery was evaluated using headboat survey (HBS) logbook data (Southeast Region Headboat Survey data, accessed 19 April 2010) reported by headboat operators. Headboats are large, for-hire vessels that typically accommodate 20 or more anglers on half- or full-day trips. HBS records are arranged similar to commercial logbook records, and contain trip-level information on number of anglers, trip duration, date, area fished, landings (number of fish), and releases (number of fish) of each species. Headboat landings and encounters (landings plus releases) were summarized by species, year, month, trip duration, and area fished. Trip duration was considered the best proxy for depth fished, as trips of longer duration are more likely to go farther offshore. Area fished was aggregated at the most common reporting level (1° latitude by 1° longitude). As with the commercial fishery data, area fished is self-reported and this introduces error into the analysis. Additionally, vessels fishing in multiple areas during a trip would be constrained by the current data form to select one area fished for the trip, which limits the spatial precision of the analysis. Records with no geographic area reported (~9%) were removed from consideration. Overall, 170,475 headboat records from 2004-2009 were evaluated.

The private, rental, and for-hire charter sectors were evaluated using data from the Marine Recreational Fisheries Statistics Survey (MRFSS) dockside intercept records. MRFSS intercepts collect data on port agent observed landings (‘A’ catch), angler reported landings (‘B1’ catch) and discards (‘B2’ catch). Data are reported in numbers by species, two-month wave (e.g., Wave 1 = Jan/Feb, … Wave 6 = Nov/Dec), area fished (inland, state, and federal waters), mode of fishing (charter, private/rental, shore), and state (east Florida, Georgia, South Carolina, and North Carolina). As designated ACLs will apply to catch from both state and federal waters, no areas fished were excluded from the analyses. MRFSS intercepts from the U.S. southern Atlantic Ocean from 2000-2009 were aggregated by state, year, wave, mode, and area fished; computing a catch-per-angler-per-trip (CPAT) by species for the whole catch (e.g., ‘A’+’B1’+’B2’ catch). Overall, 93,911 dockside intercept records from 2000-2009 were evaluated.

For over thirty years, the Marine Resources Research Institute at the South Carolina Department of Natural Resources, through the Marine Resources Monitoring, Assessment and Prediction (MARMAP) program, has conducted fisheries-independent research on groundfish, reef fish, ichthyoplankton, and coastal pelagic fishes within the region between Cape Lookout, North Carolina, and Ft. Pierce, Florida. The overall mission of the program has been to determine distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the southeastern U.S., and to relate these features to environmental factors and exploitation activities. MARMAP survey work has provided a monitoring program that has allowed the standardized sampling of fish populations over time and development of an historical base for future comparisons of long-term trends. The gears (e.g., chevron trap, bottom longlines) and methodologies used have been consistent over the years to allow for long term analysis and comparisons. Historically, sampling effort for reef fish has been concentrated off South Carolina using various trap gears. MARMAP samples accurately identify fish to species and also collect valuable information on undersized fish. MARMAP data was aggregated by individual gear (i.e., a single trap, or a single line), at the set level. Overall, 25,304 records of managed reef fish landings from 1978-2009 were evaluated, comprised of 70% Chevron trap, 16% blackfish trap, 11% Florida Antillean trap, 2% short bottom long line, and 1% long bottom longline samples.

Each data set was formatted as a matrix, with columns representing species (i) and rows representing aggregation bins (j). Aggregation bins represented the highest resolution of data available for the dataset. For commercial fisheries, aggregation bins were *year-month-area-depth* combinations, resulting in 636 CLL bins (0 empty) and 9036 CVL (4 empty) bins. For the RFOP, aggregation bins were *set-level*, resulting in 2084 bins (0 empty). For headboat fisheries, aggregation bins were *year-month-area-trip duration* combinations, resulting in 2217 bins (2 empty). For MRFSS, aggregation bins were *year-wave-state-mode-area* combinations, resulting in 1384 bins (20 empty). For MARMAP, aggregation bins were *set-level*, resulting in 10,780 bins (2154 empty). Each element of the matrix (c_{ij}) quantified the amount (in units of pounds of fish for commercial and number of fish for all other sources) of a species (i) landed in a specific bin (j). Whenever possible (i.e., RFOP, HBS, and MRFSS), discards were included in the aggregated catch, as they provide valuable information when determining species associations.

Dimension reduction and hierarchical cluster analyses were performed upon the fishery datasets (i.e., CVL, CLL, RFOP, HBS, MRFSS, and MARMAP). Initially, species were excluded from analyses if they appeared in <1% of bins, following Shertzer and Williams (2008). This filtering criterion removed the following percentages of species from subsequent clustering: 13% CVL, 44% CLL, 25% RFOP, 6% HBS, 6% MRFSS, 42% MARMAP, 0% Life History. Rare species may distort inferred patterns (Koch 1987, Mueter and Norcross 2000). Qualitative examination suggested the inclusion of rare species did not impact inferred patterns in most cluster analyses; thus all species were included in the final analyses.

Dimension reduction was conducted using PROC VARCLUS in SAS V9.2 (SAS Institute Inc., Cary, NC). PROC VARCLUS is a dimension reduction tool that clusters variables with the greatest correlation and minimized correlations with other clusters. The algorithm used by PROC

VARCLUS is binary and divisive - all variables start in one cluster. A cluster is chosen for splitting and split into two clusters by performing an orthoblique rotation on the first two principal components. Each variable is assigned to the rotated component with which it has the higher squared correlation. The procedure is nonhierarchical; variables are iteratively reassigned to clusters to maximize the variance accounted for by the cluster components. Clusters are split until all variance is explained (i.e., 'proportion=1').

Prior to dimension reduction or hierarchical clustering, data were transformed with a root-root transformation to moderate the influence of abundant species upon the resultant clusters:

$$c_{ij}^{*} = \sqrt[4]{c_{ij}} \tag{2}$$

This transformation is recommended for density and biomass data (Field et al. 1982) and was applied in a similar clustering approach described by Shertzer and Williams (2008).

Hierarchical cluster analysis of root-root transformed fishery data proceeded as follows. After root-root transformation of landings in numbers or pounds, a matrix of dissimilarities between two species (*a*, *b*) was computed using a Chi-square (χ^2) measure of distance:

$$\chi^2 = \sqrt{\frac{\sum_{i=1}^{A}\left(a_i - E(a_i)\right)^2}{E(a_i)} + \frac{\sum_{i=1}^{B}\left(b_i - E(b_i)\right)^2}{E(b_i)}} \tag{3}$$

The Chi-square measure is based on the chi-square test of equality for two sets of frequencies, and is the default measure in PASW for count (e.g., abundance or landings) data. The magnitude of this dissimilarity measure depends on the total frequencies of the two cases or variables whose dissimilarity is computed. Expected values (E) are from the model of independence of species *a* and *b*. The resultant dissimilarity matrix was clustered using Ward's minimum-variance linkage method.

Because the fishing effort that generates the landings data does not represent a consistent sampling program, reported landings data might not be quantitatively comparable between collections. Additionally, many species are heavily targeted, whereas the catch of others is incidental. Boesch (1977) suggested a binary index (e.g., 'presence-absence') may be a more appropriate measure of similarity with fisheries-dependent data. A binary index also reduces distortions caused by super-abundant (headboat and commercial) and heavier (commercial) species. For analyses of presence-absence data, landings data matrices were converted to binary, where a '1' was assigned to positive data elements (c_{ij}) and data elements with no landings was assigned a '0'.

Dimension reduction of presence-absence matrices proceeded identically to dimension reduction of root-root transformed data. Presence-absence of species in the commercial longline, commercial vertical line, and headboat fisheries were hierarchically clustered using average linkage between groups with a Sørenson measure of dissimilarity:

$$D_{ih} = \sum_{j=1}^{J} \frac{\left|c'_{ij} - c'_{hj}\right|}{\left|c'_{ij} - c'_{hj}\right|} \tag{4}$$

where D_{ih} is the distance between species *i* and *h*, and *j* is the number of rows (bins). The Sørenson (e.g. 'Dice', 'Bray-Curtis', 'Czekanowski') measure is an index in which joint absences are excluded from consideration, and matches are weighted double. The Sørenson measure has been found more robust in ecological studies (Beals 1973, Field et al. 1982, Faith et al. 1987). It is commonly used in studies of fish assemblages (e.g., Mueter & Norcross 2000, Gomes et al. 2001, Williams and Ralston 2002, Shertzer & Williams 2008, Shertzer et al. 2009).

The average linkage clustering function specifies the distance between two clusters as the average distance between objects from the first cluster and objects from the second cluster. Averaging is performed over all pairs (x, y) of objects, where x is an object from the first cluster and y is an object from the second cluster. The average linkage function is expressed as follows:

$$D(X,Y) = \frac{1}{N_{X} * N_{Y}} \sum_{i=1}^{N_X} \sum_{j=1}^{N_Y} d(x_i, y_i); \quad x_i \in X, y_i \in Y \tag{5}$$

where *d(x, y)* is the distance between objects $x \in X$ and $y \in Y$; *X* and *Y* are two sets of objects (clusters), and N_X and N_Y are the numbers of objects in clusters *X* and *Y*, respectively. Average-link clustering is less sensitive to outliers than complete-link clustering, and less likely to form long chains than single-link clustering. This method is also known as the 'unweighted pair-group method using arithmetic averages' (UPGMA), and is widely used in ecology (see Boesch 1977, McGarigal et al. 2000). This method is a space-conserving strategy that introduces little distortion to the relationships expressed in the similarity matrix (Boesch 1977).

In total, two life history and 24 fishery-data clusters were generated. For the life history data, a Ward's cluster was performed with and without a dummy variable for genus (two clusters). For each of the five fishery-dependent datasets (e.g., CLL, CVL, RFOP, HBS, MRFSS) and the fishery-independent dataset (i.e., MARMAP), a dimension reduction and a Ward's cluster were generated on root-root transformed landings, and a dimension reduction and a UPGMA cluster were generated on presence-absence (5x4 + 1x4 = 24 clusters). Dendrograms were generated for each cluster, based upon the agglomeration schedule. The dendrogram is read from left to right, with vertical lines indicating joined clusters. The position of the line on the scale indicates the distance at which clusters are joined. In SPSS, observed distances are rescaled to fall into the range of 1 to 25; the ratio of the rescaled distances within the dendrogram is the same as the ratio of the original distances. In SAS, Proc TREE was used to plot the dimension reductions with the proportion of variability explained as the height variable. Species joined closer to the left of the dendrogram would be considered more associated.

Maps of Stock Distributions

The RFOP and MARMAP surveys provide spatially-explicit information regarding encounters with managed species in the U.S. southern Atlantic Ocean. These datasets were imported into ArcGIS (ESRI Inc., Redlands, CA) and displayed for presence-absence on bathymetric maps. Trends in species distributions were used to explain inconsistencies between cluster analyses and to evaluate the MSRA '[similar] geographic distribution' requirement for stock complexes.

Weighted Mean Cluster Association Index

A weighted mean cluster association (WMCA) index was developed to synthesize results across the two life history and 24 fishery-data clusters (see Appendices: Figures A1-A26). The goal of the method was to provide a quantitative measure of cluster association across multiple dendrograms. Figure 1 illustrates a hypothetical cluster and cluster association table. The cluster association matrix for each dendrogram was completed on a species by species basis. For a given species on row *r*, the association level (α) with species in column *c* was computed as:

$$\alpha_{r\to c} = \frac{1}{\sum \eta_r} \;, \qquad (6)$$

where η is the number of species lower than the species on row *r* on the branches of the dendrogram. For example, species D and E are both clustered to the left of species F on the same branch; thus $\alpha_{F\to D} = 0.5$ and $\alpha_{F\to E} = 0.5$ in the association matrix.

Unique cluster association matrices were assembled for each of the 24 fishery-data and 2 life history dendrograms (see Appendices and Figures 2-12). A weighted mean cluster association index matrix was computed from these cluster association matrices. For a given species on row *r*, the weighted mean association level ($\overline{\alpha_{r\to c}}$) with species in column *c* was computed as:

$$\overline{\alpha_{r\to c}} = \frac{\sum_{D=1}^{6}\left(\omega_D \sum_{m=1}^{4} \alpha_{Dm(r\to c)}\right)}{\sum_{D=1}^{6}\sum_{m=1}^{4} \omega_D} \,, \qquad (7)$$

where D is the dataset under examination, m is the clustering method, and w_D is the weighting term for the dataset. Weighting terms were computed by dataset, and were based upon the proportional representation of species within bins, and were scaled to 1 as a proportion of the maximum representation of that species across the 7 datasets, with life history given the maximal default value of 1 (Table 5). For example, if a species appeared in 80% of bins in the CLL and 40% of bins in the other datasets, its weighting term would be 1.0 for life history, 0.8 for CLL (e.g., ω_{CLL}=1.0) and 0.4 for the other datasets. This weighted mean approach was employed for two reasons: (1) clusters are generally considered more reliable for species that frequently appear in the bins (Koch 1987, Mueter and Norcross 2000), and (2) management measures implemented in the future upon a species complex would be expected to have a higher proportional impact upon the sector that encounters the species most frequently. For example, the CLL encounters golden tilefish with a much higher frequency than the HBS; therefore, the placement of golden tilefish relative to the CLL dataset is functionally more important to management than its placement relative to the HBS. Sensitivity runs were conducted on weighting factors where life history was removed, and where the highest bin value for fishery data was re-scaled to 1.0 (equal to life history). For example, if a species appeared in 80% of bins in the CLL and 40% of bins for the other datasets, its weighting terms would be 1.0 for CLL and 0.5 for the other datasets (see Appendices).

Finally, a table was generated to synthesize the results of all the analyses for ACL management of the SAFMC Snapper-Grouper FMU. All species requiring ACL management were listed down the rows, with the top 5 most associated species per the WMCA index listed in the columns. The species in the rows were then sorted to get each species as close to its most associated species. Next, the table was color-coded to denote groups with several associated species. Dashed lines were used to denote substantial life history differences between associated species. Vulnerabilities were expressed as 'Overall Risk Scores' from the MRAG Americas Productivity-Susceptibility Analyses (PSA) for the SAFMC Snapper-Grouper FMU (MRAG Americas 2009a,b). The PSA approach is based on the assumption that the overall risk of overfishing for a stock depends on: (1) the productivity of the unit, which will determine the rate at which the unit can sustain fishing pressure or recover from depletion or other impacts due to the fishery; and (2) the susceptibility of the unit to fishing activities. The PSA analysis essentially measures the relative risk or the vulnerability of the resource to the potential for fishery impacts (MRAG Americas 2009a,b).

Results

Life History Data

Table 1 provides life history parameters for managed SAFMC reef fish species. It should be noted that life history may be influenced by time (Shertzer et al. 2009), geography, habitat (Hoss & Engel 1996), exploitation (Hughes 1994), and climate (Holbrook et al. 1997); therefore these point estimates for species may not accurately express the life history dynamics of the unexploited population or of all stock subpopulations. Additionally, life history data may be less reliable for data-poor species, lending uncertainty to the resultant clusters.

Table 2 provides ranges for depth of occurrence (in ft) for managed species. For visualization purposes, species were placed into 'shallow', 'shallow/mid', 'mid', and 'deep' groups, based upon median depth of occurrence. Red grouper and gag grouper have a broader depth range of occurrence than most other groupers (Table 2). Banded rudderfish and almaco jack have a more constricted depth range than greater amberjack (Table 2). Red snapper, silk snapper, vermilion snapper, lane snapper, and gray triggerfish all occur in mid-to-deep water (Table 2). Blueline tilefish have a shallower range than golden tilefish (Table 2). The data in Tables 1 and 2 are clustered in Figure 2.

Not surprisingly, a hierarchical cluster analysis of the life history and depth of occurrence parameters in Tables 1 and 2 showed clustering by genus, depth of occurrence, and maximum size (Figure 2). All of these variables are highly inter-correlated ($p < 0.05$). Additionally, von Bertalanffy growth parameters (l_{∞}, W_{∞}, a_{λ}, l_m, a_m) were significantly correlated ($p < 0.05$).

A cursory examination of Tables 1 and 2 and Figure 2 supports many general trends observed in fisheries. Species of the same genus often exhibit similar growth patterns. Larger organisms tend to live longer and grow more slowly (e.g., 'K-selected' species), as do organisms that live in deeper water. Many species live up to 25-30 years, and some live to be older than 50.

Fishery Data

In general, dimension reduction and hierarchical cluster analysis outputs should be considered more reliable for species that are more prevalent in the input data matrices (Table 3). For example, deep-water grouper, and tilefish were well-represented in the CLL matrix. The CVL, HBS, and MRFSS datasets contained records for many species in relatively high abundance (Table 4). The CLL most commonly encountered deep-water grouper and tilefish (Table 3). The CVL most commonly encountered shallow-water grouper, greater amberjack, and mid-depth snapper and triggerfish (Table 3). The RFOP most commonly encountered red porgy, vermilion snapper, and scamp (Table 3). The HBS and MRFSS most commonly encountered gray triggerfish, gag, black sea bass, vermilion snapper, and white grunt (Table 3). MARMAP survey most commonly encountered black sea bass, red porgy, and tomtate (Table 3). The broad representation of species in the CVL, HBS, and MRFSS are probably attributable to the high levels of effort and broad geographic coverage of their associated fisheries.

The MARMAP survey was the only fishery-independent dataset examined. Unfortunately, the biased spatial distribution of the sampling and the selectivity of the predominant gears led to proportionally low encounter rates with most managed Snapper-Grouper species (Tables 4-5). Only black sea bass, red porgy, tomtate, vermilion snapper, gray triggerfish, white grunt, knobbed porgy, and scamp were encountered in >5% of sets. However, MARMAP's set-level data also led to substantially more aggregated bins than any other dataset.

Commercial longline landings in excess of the bag limit for anything other than deep-water species (snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish) are prohibited; therefore landings of other species are extremely rare. Due to this prohibition, the binary-transformed CLL data matrix cluster is presented in Figures 3-4; as presence-absence would be more meaningful than landings totals given this management restriction. Tight clusters appeared between three deep-water species (blueline tilefish, yellowedge grouper, and snowy grouper), three shallow-water snapper species (lane snapper, yellowtail snapper, and gray snapper), and two shallow-water grouper species (red grouper and black grouper).

As commercial data are logged in weight units rather than numbers, the CVL dataset clusters are presented in terms of presence-absence to reduce the skewing of the data towards heavier species. The CVL landings data matrices produced clusters (Figures 5-6) of two shallow-water grouper (red grouper and scamp), two mid-depth species (vermilion snapper and gray triggerfish), two porgies and hinds (rock hind and jolthead porgy), two shallow-water snapper (gray snapper and yellowtail snapper), and two deep-water species (snowy grouper and blueline tilefish).

As a voluntary program, the U.S. southern Atlantic RFOP represents a spatially-biased, but high-resolution sub-sample of the CLL and CVL datasets (Figure 7). Clusters were apparent between white grunt and red grouper, between vermilion snapper and tomtate, and between red hind, yellowfin grouper, and rock hind. Additional clusters were apparent between red porgy and gray triggerfish, between scamp and speckled hind, and between snowy grouper, blueline tilefish, and sand tilefish.

Cluster analyses of landed catch (in numbers) reported to the SEFSC HBS (Figures 8-9) provided similar results to the CLL and CVL. Lane snapper and gray snapper again clustered together, along with black grouper and yellowtail snapper. White grunt, and jolthead porgy formed a cluster. Red hind and rock hind clustered together, as did almaco jack and greater amberjack. Vermilion snapper and gray triggerfish formed a distinct cluster, as did scamp and red porgy. Two deep-water species (blueline tilefish and snowy grouper) also formed a cluster.

Cluster analysis of species presence-absence in MRFSS-reported landings (Figures 10-11) identified several apparent groups. Apparent clusters were identified between five deep-water species (snowy grouper, blueline tilefish, golden tilefish, silk snapper, and yellowedge grouper), three jacks and one porgy (almaco jack, greater amberjack, banded rudderfish, and whitebone porgy), and three shallow-water snapper (yellowtail snapper, lane snapper, and gray snapper).

Cluster analysis of species presence-absence in the MARMAP survey identified a few apparent groups (Figure 12). Two jacks formed a cluster (greater amberjack and almaco jack), as did three deep-water species (blueline tilefish, snowy grouper, and yellowedge grouper). Finally, vermilion snapper and gray triggerfish again appeared in the same cluster.

Maps of Stock Distributions

Maps of the distribution of observed MARMAP and RFOP interactions with managed South Atlantic Snapper-Grouper species provided some insights into the outcomes of the cluster analyses described above, although these sources do not cover the entire range of all the species plotted. To reduce the complexity of these figures, they were broken out roughly according to life history (Table 1) and depth distributions (Table 2). As the images only show presence-absence, there is substantial overlap in distributions.

Figure 13A depicts the distribution of 'deep-water' stocks. Blueline tilefish and snowy grouper appear to have somewhat overlapping distributions, which periodically overlap with yellowedge grouper. Golden tilefish appears in somewhat deeper water in a relatively spatially restricted area, possibly due to availability of softer sediments. Silk snapper and warsaw grouper appear rare, but seem to overlap with snowy grouper where they occur. There is some hint of a latitudinal gradient in tilefish stocks, with golden tilefish off the GA/SC border, blueline tilefish off northern SC, and sand tilefish off NC. Blueline tilefish are often landed off North Carolina and in the Florida Keys and golden tilefish are often landed off central Florida; however, these trends are not captured by the spatially-biased sampling the MARMAP or the RFOP (J. McGovern, pers. comm.).

Figure 13B depicts the distribution of many grunt, hind, and porgy stocks. Tomtate and white grunt, especially, appear ubiquitously distributed across depths out to the shelf break. Red hind and rock hind appear rare, but seem to have overlapping distributions. Knobbed porgy appears more commonly encountered along the shelf break. Tomtate were the most commonly observed species off Florida.

Figure 14A depicts the distribution of jack stocks (greater amberjack, almaco jack, and banded rudderfish), which were encountered somewhat ubiquitously, but were most common near the shelf break. The distributions of the jacks were overlapping, although greater amberjack appears to have a broader depth distribution than almaco jack or banded rudderfish.

Figure 14B depicts the distribution of 'mid-depth' stocks (gray triggerfish, red snapper, red porgy, and vermilion snapper). Of these, red porgy are more common northward; whereas red snapper are more common off northeast Florida and Georgia. Vermilion snapper appear to have distinct areas of high concentration, and these zones appear to overlap heavily with the other species. The distribution of gray triggerfish appears to extend somewhat further north than the other stocks.

Figure 15A depicts the distribution of 'shallow-water' grouper, sea bass, and hind stocks. Black sea bass is distinctly separated from the rest, with a distribution much further inshore. Red grouper is common off of Florida and North Carolina, but rare off Georgia and South Carolina. Yellowfin grouper is common along the shelf edge off North Carolina. Gag, scamp and speckled hind are common from Georgia northward, and their distributions overlap (Matheson and Huntsman 1984; Collins et al. 1987; Harris et al. 2002), although gag also occurs inshore, perhaps due to the well-documented ontogenetic migration of this species (Collins et al. 1987; Van Sant et al. 1994; McGovern et al. 1998; McGovern et al. 2005). An outlier for scamp appears well offshore and is probably misreported.

Figure 15B depicts the distribution of 'shallow-water' snapper stocks. These primarily southeastern Florida stocks are clearly not well-captured by the sampling of the RFOP and MARMAP.

Weighted Mean Cluster Association Index

The WCMA index (Table 6) provided a quantitative approach to synthesizing information contained in the 26 unique cluster analyses performed (see Appendix). The matrix is not symmetric; Table 6 is interpreted as the association of the species on the row with the species in the column. This matrix was used to determine the top five most associated species with each species requiring ACL management (Table 7). Stocks were then arranged by association and vulnerability to provide ACL stock complex guidance. Among the 35 species analyzed, 13 major 'catch/life history' groups were identified, with some potential sub-groups due to differences in life history. Average association values between species placed into major 'catch/life history' groups ranged from 0.12-0.46 (mean = 0.24). The strongest overall association was observed between gray, lane, and yellowtail snapper. The weakest associations within a 'catch/life history' group were between greater amberjack, banded rudderfish, and almaco jack. The results presented in Table 7 are explored further in the Discussion.

Discussion

The MSRA requires fishery management plans to "…establish a mechanism for specifying annual catch limits…at a level such that overfishing does not occur in the fishery" (MSRA §303(a)(15)). Traditionally, a formal stock assessment, such as those conducted by the SEDAR process, will specify an overfishing limit (OFL) corresponding with yield at the maximum fishing mortality threshold (MFMT) or the fishing mortality rate that will allow the stock to rebuild by a target year ($F_{rebuild}$). Next, the Council's Scientific and Statistical Committee (SSC) sets an acceptable biological catch level (ABC) that cannot be set higher than OFL, as it accounts for scientific uncertainty in the estimate of OFL. Finally, an ACL is set by the Council. The ACL is the level of annual catch of the stock or stock complex that serves as the basis for invoking AMs. The ACL cannot be set higher than ABC, as it accounts for management uncertainty in ABC.

Under their preferred alternative from December 2010, the SAFMC will need to establish ACLs for 38 Snapper-Grouper stocks by 2011, 24 of which are unassessed. Setting stock-specific ACLs for many of these stocks may be unrealistic due to inadequate data to determine stock status relative to established status determination criteria (SDC). Many of these stocks are 'data-poor' and suffer from issues with species identification and/or extreme fluctuations in relative landings through time due to large year classes, rarity, inadequate data collection procedures, or lack of targeted fishing effort. Thus, specifying a single-species ACL based on average catch for these stocks might result in periodic overages that would require AM implementation, creating additional burdens on science and enforcement. Grouping unassessed stocks into complexes may help avoid implementing AMs for species whose landings fluctuate due to rarity or species identification issues. It is important here to distinguish rarity from depleted status due to historical overharvesting; an overharvested stock would require more focused management.

The primary goal of a stock complex in the context of the SAFMC Comprehensive ACL Amendment is to determine how to best aggregate stocks in order to establish an ACL. Unfortunately, many stocks are rarely caught due to rarity or lack of targeting. Their rarity presents statistical challenges for clustering approaches; however, an approach towards grouping them seems necessary, as these stocks will likely never have sufficient data to determine stock status. National Standard 1 recommends species complexes that are "…sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar." Although this paper fully evaluated and demonstrated the feasibility of grouping species into complexes based on catch, life history, geographic distribution, vulnerability, and fishery-independent data, it did not fully evaluate the trajectories of stocks and stock complexes in response to management actions. Traditionally, this approach would be accomplished by evaluating indices of abundance for similar trends in catch-per-unit effort (CPUE) in response to management actions. A simple approach to ACL management incorporating these CPUE trends would designate assessed stocks as indicators for unassessed stocks.

Indicator species have been used in management of both terrestrial and marine systems (Simberloff 1998, Zacharias & Roff 2001). The National Standard Guidelines of U.S. Federal fishery management state that “MSY may be specified on the basis of one or more species as an indicator for the mixed stock as a whole or for the fishery as a whole” (50 CFR 600.310(c)(1)(iii). An implicit assumption of the use of an indicator species for management is that population trends of the indicator species reflect those of others in the assemblage. As such, assemblages should account for interspecies similarities in the context of biological characteristics, fisheries exploitation patterns, and stock dynamics. Biological assemblages may be defined by similarities in life history, trophic behavior, and geographic distribution. For fisheries management purposes, species that are caught together should be grouped, so that regulations similarly influence all assemblage members.

For an assessed stock to be an appropriate indicator stock for a stock complex, assessed stocks and unassessed stocks in the complex should show similar trends in population abundance in response to environmental forcing, fishing pressure, and fisheries management regulations. Unfortunately, it is extremely difficult to separate out these signals, and would require a formal process analogous to SEDAR. Fishery-independent data is preferable for inferring patterns of biodiversity and trends in population abundance (e.g., Jay 1996, Collie et al. 2008), but is extremely limited for the majority of the stocks managed by the SAFMC. The MARMAP program is well-designed to sample certain stocks but is not intended to provide representative sampling for all members of the Snapper-Grouper FMU. Indeed, gear selectivities and other sampling design attributes make it a poor representative for many species. Using fishery-dependent data as a proxy for trends in population abundance introduces several layers of bias (e.g. gear, spatial, temporal, depth) into any evaluation of indices of abundance. These biases might generate spurious correlations that would be difficult to separate out from actual population trends.

In a resource-limited environment, niche theory (May & MacArthur 1972, Landres et al. 1988, Leibold 1995) predicts that coexisting species would differ in their life history (e.g., reproductive dynamics, foraging behavior, habitat requirements) and population dynamics (e.g., responses to competition, predation, disease, and environmental variation). If these differences are substantial enough, population trends for one stock may not coincide with others in the complex (e.g, Niemi et al. 1997, Shaul et al. 2007, Shertzer & Williams 2008). The use of indicator species is not recommended unless supported by strong evidence that it represents the assemblage as a whole (Landres et al. 1988, Niemi et al. 1997). Even closely related species may have dissimilarities in their population structures and dispersal patterns that lead to different responses to exploitation (Bird et al. 2007). The use of indicator species in the SAFMC

Snapper-Grouper FMU is not supported by this paper, as concerns remain that using an assessed stock as an indicator may not facilitate detection of changes in the status of less abundant or less studied species, and may not prevent overfishing of more vulnerable stocks in the complex (Brown & Parrack 1985, Fahrig 1993, Shertzer & Williams 2008).
In the absence of a fully-resolved analysis of indices of abundance that adequately controls for confounding variability introduced by environmental forcing, fishing pressure, and fisheries management regulations, a comprehensive understanding of co-occurrence in the catch across sectors is critical to simplify ACL/AM management. This paper heavily emphasizes the use of fishery-dependent data, which may be preferable, as fishery-dependent data best captures the actual trends of concurrent exploitation of various stocks. A myriad of statistical approaches were used in this study to evaluate exploitation patterns across many sectors of the Snapper-Grouper fishery. Overall, a relatively consistent story emerged regarding what stocks might be impacted by similar management measures. By considering some fishery and ecosystem variables such as life history, vulnerability, sector, gear, area, and depth fished, these analyses provide insights that may facilitate multispecies or ecosystem-based management.

Stock complexes for ACL/AM management “may be comprised of: (1) one or more indicator stocks, each of which has SDC and ACLs, and several other stocks; (2) several stocks without an indicator stock, with SDC and an ACL for the complex as a whole; or (3) one of more indicator stocks, each of which has SDC and management objectives, with an ACL for the complex as a whole…” (50 CFR 600.310(b)(8) in 74 FR 3205). In the absence of sufficient analyses to support the use of indicator species, it is important to note that setting an ACL for a stock complex containing a highly productive, targeted species might expose more vulnerable species to overfishing. A multi-faceted approach to ACL management might mitigate this risk. In this multi-faceted approach, managers would: (1) set species-specific ACLs for productive stocks; (2) set sub-complex ACLs for sub-complexes of related, less productive stocks; and (3) set complex ACLs that aggregate the single-species and sub-complex ACLs. This approach provides multiple handles of control in the AMs, reducing the risk of overfishing of all species in the complex. If the single-species ACLs (e.g., ‘1’) were slightly exceeded, AMs would be implemented for that stock without necessarily impacting the stocks in the sub-complex (e.g., ‘2’), allowing the fishery to obtain optimum yield (OY) for the productive stock. Most productive stocks in the SAFMC Snapper-Grouper FMU have OY recommendations from a stock assessment. If the sub-complex ACLs (e.g., ‘2’) were exceeded, AMs would be implemented for the sub-complex without necessarily impacting the most productive stock (e.g., ‘1’). Finally, if the ACL for the targeted stock (e.g., ‘1’) were grossly exceeded, the complex ACL (e.g., ‘3’) might also be exceeded, resulting in implementation of AMs for the whole complex.

The proposed multi-faceted ACL management approach promotes attaining OY for the productive stocks while providing two mechanisms to prevent overfishing of the less productive—often more vulnerable—stocks. The use of an ACL for an overall complex containing one or more productive stocks plus other less productive stocks from the sub-complex helps protect the sub-complex stocks from overfishing because even if their sub-complex ACL is not exceeded according to the existent data collection program, undetected overfishing of these stocks may be taking place during overharvesting of a productive stock that is often incidentally or directly harvested.

A simpler approach would be to manage targeted stocks with separate ACLs (e.g., '1') and manage indirectly-harvested stocks with complex ACLs (e.g., similar to '2'). This approach promotes achievement of OY for productive stocks while still setting a relatively lower ACL threshold for less targeted stocks to reduce risk of overfishing. Aggregation of unassessed stocks that are caught together does not expose these stocks to an increased risk of overfishing provided fishermen do not increasingly target any one stock in the complex. If this emerges as a concern, it could be addressed through an assessment and subsequent designation of a species-specific ACL for the stock. Grouping less productive, more vulnerable, and/or data-poor stocks into sub-complexes provides numerous benefits: (1) helps mitigate uncertainty in individual landings histories, (2) mitigates issues with species identification, (3) provides buffers against the unnecessary implementation of AMs, and (4) simplifies ACL management through reduced burdens on quota monitoring and enforcement. In this study, vulnerabilities were expressed using MRAG Americas (2010) PSA 'Overall Risk' scores. As a general suggestion, species with very different 'Overall Risk' scores should not be placed into a complex together, as the more vulnerable species may be far more susceptible to overfishing under the same management regime.

Of the cluster analysis input variables, depth appeared the most important, with apparent shallow-water, mid-depth, and deep-water assemblages frequently appearing in most analyses. A similar approach by Bortone et al. (1979) also found community association was influenced predominantly by depth, and to a lesser extent by substrate, latitude, and season. Species composition varied by dataset. Headboats are less likely to catch deep-water stocks because deep-water stocks are farther offshore and not often targeted by limited duration headboat trips. Commercial bottom longliners are less likely to catch non-deep-water stocks because reef fish longline fishing is prohibited within 50 fathoms and possession is limited to recreational bag limit for species other than snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish (50 CFR 622.41(6)). Genus and life history were also important factors in the clustering; for example, snappers and groupers were often separated. This is possibly due to differences in vulnerability to gears and fishing methods as well as differences in geographic and depth distributions.

A latitudinal gradient in stock distribution was an underlying factor in the cluster analyses as well, with biogeographic boundaries near Cape Canaveral, Florida and Cape Hatteras, North Carolina (Wells and Gray 1959, Shertzer and Williams 2008, Shertzer et al. 2009). The influence of this gradient was profound when examining the 73 members of the Snapper-Grouper FMU, but was less influential when the analyses were restricted to 35 species requiring an ACL (SAFMC June 2010 Preferred Alternatives). Of these, 31 were likely to be reported in the commercial vertical line dataset (e.g., excluding black seabass, goliath grouper, Nassau grouper, and wreckfish). All of these 31 species were encountered south of Hatteras and south of Canaveral; however, only 22 were encountered north of Hatteras. No landings were reported for banded rudderfish, bar jack, gray snapper, lane snapper, sand tilefish, tomtate, warsaw grouper, and whitebone porgy north of Hatteras. Higher resolution in the cluster analyses might have been obtained by separating out this biogeographic region, but it is unclear how this biogeographic stratification would then be applied for ACL/AM management. Although many of the cluster analyses were based upon susceptibilities to selective fishing gear, the major controlling factors included season, area, and depth; thus, some aspects of life history were *de facto* included in the analyses. The weighted mean cluster association matrix provided a unique way to quantitatively combine the results from disparate cluster analyses from different datasets. Weighting terms for fishery-dependent data were based upon percent occurrence in data matrix bins. A variety of relative weighting terms for the life history clusters were explored, effectively placing more or less emphasis upon life history similarities in the resultant association matrices. In general, the outcomes were robust to these sensitivity analyses. Of the 38 Snapper-Grouper species requiring an ACL per the SAFMC December 2010 Preferred Alternative, 32 were analyzed by this study. Groupings for the remaining species (i.e., lesser amberjack, blue runner, Atlantic spadefish, hogfish, mutton snapper, and cubera snapper) are suggested based upon life history.

The variety of statistical analyses explored mostly supported a ‘deep-water grouper’ assemblage of yellowedge grouper, snowy grouper, and warsaw grouper (Table 7). Due to their distance from shore and the specialized gears required to capture these ‘deep-water’ stocks, there was a low relative percentage of encounters of these species in all datasets save commercial longline (Table 3). There was substantial clustering and geographic overlap between these stocks and managed tilefish species (Table 7, Figure 13A). It should be noted that yellowedge grouper is extremely long-lived and highly productive relative to the other members of this complex (Table 3), although its life history is similar (Figure 2). Warsaw grouper is the most vulnerable member of this complex, and was most highly associated with snowy grouper (Table 7).

The high levels of association between tilefish and ‘deep-water’ groupers suggested management regulations upon stocks in either assemblage might impact stocks in the other (Table 7). The weighted mean cluster association index matrix suggested moderate levels of association between all the tilefish species (Table 7). Golden tilefish occurs at similar depths as yellowedge grouper and is occasionally caught on the same set, but is less structure-affiliated than the grouper, preferring soft bottom habitats on the upper continental slope (Harris et al. 2001, Sedberry et al. 2006). Blueline tilefish frequently clustered with snowy grouper, along with other ‘deep-water’ stocks (Table 7). Blueline tilefish are distributed further inshore along the shelf than the other ‘deep-water’ tilefish (Figure 13A). Blueline tilefish prefers irregular, rocky bottom from the outer shelf edge to the upper slope (Struhsaker 1969, Ross 1978, Ross and Huntsman 1982, Parker and Mays 1998). Silk snapper and wreckfish also associated with deep-water grouper and tilefish. Life history and vulnerability differences between these associated species may necessitate the management of several complexes or subcomplexes. Overall, identified deep-water grouper and tilefish complexes were consistent with results presented by Shertzer and Williams (2008).

The three managed jack species (e.g., greater amberjack, banded rudderfish, and almaco jack), were most frequently encountered by the HBS and CVL sectors (Table 3). In the HBS, almaco jack and greater amberjack clustered tightly with each other (Figures 8-9). In the CVL, no strong associations between jacks were observed (Figures 5-6). Data from trained observers in the RFOP suggested some association between banded rudderfish and almaco jack (Figure 7). A cluster of the MRFSS data suggested associations between all the jack species (Figure 10-11). Table 6 suggests moderate levels of cluster association between the jack species. SEDAR 15 (2009) concluded that almaco jack were correctly identified in most instances, but smaller greater amberjack and banded rudderfish were often misidentified. Issues with misidentification might lead to issues computing single-species ACLs for these species unless the rate of misidentification is quantifiable or has been (and remains) constant through time. The use of a 'Jacks' complex would mitigate issues with species identification by regulating misidentified species together. These findings are reasonably consistent with Shertzer and Williams (2008); using hierarchical cluster analysis, they identified a complex including banded rudderfish and almaco jack in the HBS, and greater amberjack and almaco jack in the commercial sector. Lesser amberjack, which was added to the list of species requiring an ACL in December 2010, would fit well into the banded rudderfish and almaco jack complex. Atlantic spadefish and blue runner are probably best-suited to individual management, given the unique angling techniques to pursue these stocks.

Although there was some overlap with some of the more broadly distributed 'shallow-water' grouper species such as gag and scamp, several species occurring at moderate depths (e.g., 'mid-depth') were highly associated, including gray triggerfish, red porgy, vermilion and red snapper (Table 7). These species were most consistently encountered in the HBS data (Table 3). Nearly all clusters indicated a strong association between gray triggerfish and vermilion snapper. Although gray triggerfish clustered with 'mid-depth' snapper species, it may be desirable to manage it separately due to differences in life history (Table 1). As all of these species except gray triggerfish have been assessed, it may be desirable to manage them individually. Shertzer and Williams (2008) identified clusters in both sectors using both *k*-medioids and hierarchical clustering methods that included black sea bass, gag, gray triggerfish, red porgy, red snapper, scamp, vermilion snapper, and white grunt. Anecdotal evidence suggests that gray triggerfish and red snapper tend to occur on reef habitats, vermilion snapper tend to occur higher in the water column above reef habitats, and red porgy tend to occur slightly off the reef and are highly aggressive (J. McGovern, pers. comm.).

Our analyses partially supported two 'shallow-water grouper' complexes; one comprised of red grouper, gag, and scamp, and a second comprised of yellowfin grouper and speckled hind (Table 7). All of these species were most commonly encountered by the HBS. Scamp clustered most strongly with red porgy in the HBS and MRFSS (Figure 8, 10-11). Given that red grouper and gag both have recent assessments, it may be desirable to manage them individually. Given the relatively poor association between these 'shallow-water grouper' complexes, it may be desirable to manage all these species individually, if possible. Shertzer and Williams (2008) found high similarity between gag and red snapper in the HBS, and between red grouper and white grunt in the commercial sector.

The weighted mean cluster association index method showed a fair level of association between several grunt, hind, and porgy species (Table 7). The majority of these species were most common in either the HBS or MRFSS data matrices. Within the HBS, red hind and rock hind clustered tightly, as did jolthead porgy and white grunt, and tomtate and white porgy (Figure 8). These species are most likely incidentally caught by recreational fishermen in pursuit of larger species, particularly red grouper. These results were relatively inconsistent with the results of Shertzer and Williams (2008), probably due to both differences in the data sets used and the relative weakness of the associations between these non-targeted stocks.

The clustering for ‘shallow-water’ snappers (e.g., gray, lane, and yellowtail snapper) was very tight (Table 7). In the U.S. southern Atlantic Ocean, these stocks are primarily distributed in Southeast Florida. All were most common in the HBS and MRFSS data matrices, but clustered tight for nearly all datasets. The gray snapper has a substantial fishery in Florida state waters, especially in the Florida Keys. Yellowtail snapper are more likely than gray and lane snapper to take bait at the surface; they may be a good candidate for a species-specific ACL. Shertzer and Williams (2008) also identified clusters in both sectors that included gray snapper, lane snapper, and yellowtail snapper. Based on their life history and fishery patterns (SERO-LAPP-2009-03), mutton snapper and cubera snapper would fit well within the ‘shallow-water snapper’ complex. Hogfish are predominantly targeted by spearfishers, and as such would be most effectively managed under an individual ACL.

ACL management using stock complexes may be the best management option when formal stock assessments are unavailable, and the data requirements (e.g., stable catch for several years, reliable estimate of natural mortality) of other methods such as Depletion-Adjusted Average Catch (MacCall 2007) are not met. Using stock complexes for ACL/AM management reduces management burden for quota monitoring, and may help mitigate the impacts of uncertainty in landings data or species identification by pooling data-poor species. Additionally, the unnecessary implementation of AMs may be avoided by setting ACLs for complexes rather than rarely-encountered single species.

Although ecosystem-based or single-species ACLs may be desirable for many species, stock complexes may provide a temporary solution for setting ACLs for species lacking stock assessments. In establishing stock complexes, managers should consider the geographic and depth distribution of species, life history characteristics, exploitation patterns, and vulnerabilities. Managers could then adapt their management strategies as new information and understanding of species linkages and complexes arises. This will allow for proactive management that accounts for ecosystem-based management considerations such as temporal fluctuations in stock abundance due to environmental forcing or multispecies interactions, as well as comprehensive assessments of the impacts of regulations on associated species. For this approach to succeed, data collection will need to be targeted at gaining a high-resolution map of the biogeographic distribution of fish stocks and the spatial distribution of fishing effort, as well as improved estimation of life history parameters and trophic linkages between species. This approach is especially relevant given that community structure may change through time

(Shertzer et al. 2009) due to heavy exploitation (Hughes 1994, McClenachan 2009), invasive species (Albins & Hixon 2008), habitat degradation (Hoss & Engel 1996, Anderson et al. 2008), and climate change (Holbrook et al. 1997, Attrill & Power 2002, Genner et al. 2004, Perry et al. 2005, Collie et al. 2008). Similarly, the structure of stock complexes may change through time if the fishery begins operating more heavily in different areas, using different gears, or targeting different species.

Acknowledgements

The authors are grateful for comments from A. Strelcheck, J. Walter III, J. Quinlan, C. Porch, S. Calay, R. Malinowski, J. McGovern, S. Branstetter, J. Kimmel, C. Simmons, L. Barbieri, and S. Atran. We are also grateful to K. Shertzer and E. Williams, who provided input and suggestions on clustering methods. These analyses would not have been possible without the greatly appreciated efforts of the commercial fishermen and headboat operators who submitted logbook data, and the recreational anglers and charterboat captains participating in MRFSS. MARMAP and SC-DNR staff is thanked for their efforts in collecting and processing fishery independent information. We also thank the Southeast Fisheries Science Center's K. Brennan, K. McCarthy, S. Turner, V. Matter, J. Bennett, W. Ingram, and L. Scott-Denton for providing data used in this work.

Citations

Able, K.W., Twichell, D.C., Grimes, C.B., and R.S. Jones. 1987. Tilefishes of the genus *Caulolatilus* construct burrows on the seafloor. Bulletin of Marine Science, 40(1): 1-10.

Albins, M.A. and M.A. Hixon. 2008. Invasive Indo-Pacific lionfish *Pterois volitans* reduce recruitment of Atlantic coral-reef fishes. Marine Ecology Progress Series, 367: 233-238.

Anderson, D.M., Burkholder, J.M., Cochlan, W.P., Glibert, P.M., Gobler, C.J., Heil, C.A., Kudela, R.M., Parsons, M.L., Jack Rensel, J.E., Townsend, D.W., Trainer, V.L., and G.A. Vargo. 2008. Harmful algal blooms and eutrophication: Examining linkages from selected coastal regions of the United States. Harmful Algae, 8: 39–53.

Attrill, M.J. and M. Power. 2002. Climatic influence on a marine fish assemblage. Nature, 417: 275–278.

Beals, E. W. 1973. Mathematical elegance and ecological naiveté. Journal of Ecology, 61: 23–35.

Bjørnstad, O. N., R. A. Ims, and X. Lambin. 1999. Spatial population dynamics: analyzing patterns and processes of population synchrony. Trends in Ecology and Evolution, 14: 427–432.

Boesch, D.F. 1977. Application of numerical classification in ecological investigations of water pollution. Special Scientific Report No. 77, Virginia Institute of Marine Science, EPA-600/3-77-033.

Bortone, S.A., Shipp, R.L., Mayer, G.F., and J. L. Oglesby. 1979. Taxometric analysis of a demersal fish fauna. Ambio Special Report, No. 6, The Deep Sea: Ecology and Exploitation, pp. 83-85.

Brown, B. E. and M. Parrack. 1985. Status of the Atlantic bluefin tuna resource. *In*: Stroud, R.H. (Ed.), World angling resources and challenges, proceedings of the first world angling conference. International Game Fish Association, Fort Lauderdale, Florida, pp. 279-289.

Collie, J.S., Wood, A.D., and H.P. Jeffries. 2008. Long-term shifts in the species composition of a coastal fish community. Canadian Journal of Fisheries and Aquatic Sciences, 65: 1352–1365.

Collins, M.R., C.A. Waltz, W.A. Roumillat, and D.L. Stubbs. 1987. Contribution to the life history and reproductive biology of gag, *Mycteroperca phenax*, (Serranidae), in the South Atlantic Bight. Fisheries Bulletin. 85: 648-653.

Fahrig, L. 1993. Effect of fish movement and fleet spatial behaviour on management of fish substocks. Natural Resource Modeling 7: 37-56.

Faith, D. P., P. R. Minchin, and L. Belbin. 1987. Compositional dissimilarity as a robust measure of ecological distance. Plant Ecology, 69: 57–68.

Field, J. G., K. R. Clarke, and R. M. Warwick. 1982. A practical strategy for analysing multispecies distribution patterns. Marine Ecology Progress Series, 8: 37–52.

Froese, R. and D. Pauly. Editors. 2009. FishBase. World Wide Web electronic publication. www.fishbase.org, version (10/2009).

Genner, M.J., Sims, D.W., Wearmouth, V.J., Southall, E.J., Southward, A.J., Henderson, P.A., and S.J. Hawkins. 2004.Regional climatic warming drives long-term community changes of British marine fish. Proceedings of the Royal Society of London B, 271: 655–661.

Gomes, M. C., E. Serrão, and M. F. Borges. 2001. Spatial patterns of groundfish assemblages on the continental shelf of Portugal. ICES Journal of Marine Science, 58: 633–647.

Harris, P.J., D.M. Wyanski, D. B. White, and J.L. Moore. 2002. Age, growth and reproduction of scamp, *Mycteroperca phenax*, in the southwestern North Atlantic 1979-1997. Bulletin of Marine Science. 70:113-132.

Harris, P.J., Wyanski, D.M., and P.T. Powers Mikell. 2004. Age, growth, and reproductive biology of blueline tilefish along the southeastern coast of the United States. Transactions of the American Fisheries Society, 133: 1190-1204.

Holbrook, S.J., Schmitt, R.J., Stephens Jr., J.S., 1997. Changes in an assemblage of temperate reef fishes associated with a climate shift. Ecological Applications, 74: 1299–1310.

Hoss, D.E. and D.W. Engel. 1996. Sustainable development in the southeastern coastal zone: environmental impacts on fisheries. In: Vernberg, F.J., Vernberg, W.B., Siewicki, T. (Eds.), Sustainable Development in the Southeastern Coastal Zone. University of South Carolina Press, Columbia, South Carolina, pp. 171–186.

Hughes, T.P., 1994. Catastrophes, phase shifts, and large-scale degradation of a Caribbean Coral reef. Science 265, 1547–1551.

Matheson, R.H. III. and G.R. Huntsman. 1984. Growth, mortality, and yield-per-recruit models fo speckled hind and snowy grouper from the United States South Atlantic Bight. Transactions of the American Fisheries Society. 113: 607-616.

Jay, C.V., 1996. Distribution of bottom-trawl fish assemblages over the continental shelf and upper slope of the U.S. west coast, 1977–1992. Canadian Journal of Fisheries and Aquatic Sciences, 53: 1203–1225.

Koch, C. F. 1987. Prediction of sample size effects on the measured temporal and geographic distribution patterns of species. Paleobiology, 13: 100–107.

Lambert, J.M. and Williams, W.T. 1962. Multivariate methods in plant ecology. IV. Nodal analysis. Journal of Ecology, 50: 775-802.

Lampert, D. 1992. Zero-inflated poisson regression, with an application to defects in manufacturing. Technometrics, 34: 1-14.

Landres, P. B., J. Verner, and J. W. Thomas. 1988. Ecological uses of vertebrate indicator species: A critique. Conservation Biology, 2: 316–328.

Lee, Y., and B. Sampson. 2000. Spatial and temporal stability of commercial groundfish assemblages off Oregon and Washington as inferred from Oregon trawl logbooks. Canadian Journal of Fisheries and Aquatic Sciences, 57: 2443–2454.

Leibold, M. A. 1995. The niche concept revisited: mechanistic models and community context. Ecology 76: 1371–1382.

MacCall, A. 2007. Depletion-adjusted average catch. pp. 27-31 *In*: Rosenberg, A., Agnew, D., Babcock, E., Mogensen, C., O'Boyle, R., Powers, J., Stefansson, G., Swasey, J. 2007. Setting annual catch limits for U.S. fisheries: An expert working group report. Lenfest Ocean Program, 1025 F Street NW, Suite 900, Washington, D.C.

Manooch III, C.S., Potts, J.C., Burton, M.L., and P.J. Harris. 1998. Population Assessment of the Scamp, Mycteroperca phenax, from the Southeastern United States. NOAA tech Memo, NMFS-SEFSC-410, 61 pp.

May, R. M., and R. H. MacArthur. 1972. Niche overlap as a function of environmental variability. Proceedings of the National Academy of Sciences, 1109–1113.

McClenachan, L. 2009. Documenting loss of large trophy fish from the Florida Keys with historical photographs. Conservation Biology, 23(3): 636-643.

McCune, B., Grace, J.B., 2002. Analysis of ecological communities. MjM Software Design, Gleneden Beach, Oregon.

McGarigal, K., Cushman, S., and S.G. Stafford. 2000. Multivariate statistics for wildlife and ecology research. University of Chicago Press, Chicago, IL. 283 pp.

McGovern, J.C., Wyanski, D.M., Pashuk, O., Manooch III, C.S., and Sedberry. 1998. Changes in the sex ratio and size at maturity of gag, *Myceterperca microlepis*, from the Atlantic coast of the southeastern United States during 1976-1995. Fishery Bulletin, 96: 797-807.

McGovern, J.C., Sedberry, G.R., Meister, H.S., Westendorff, T.M., Wyanski, D.M., and Harris, P.J. 2005. A tag and recapture study of gag, *Myceterperca microlepis*, off the southeastern U.S. Bulletin of Marine Science, 76(1): 47-59.

MRAG Americas. 2009a. Productivity-Susceptibility Analyses: Gulf of Mexico. Available at www.mragamericas.com. 6 p.

MRAG Americas. 2009b. Productivity-Susceptibility Analyses: South Atlantic. Available at www.mragamericas.com. 6 p.

MSRA (Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006). 2006. Publication L. no. 109-479, 120 Stat. 3575.

Mueter, F. J., and B. L. Norcross. 2000. Changes in species composition of the demersal fish community in nearshore waters of Kodiak Island, Alaska. Canadian Journal of Fisheries and Aquatic Sciences, 57: 1169–1180.

Niemi, J. G., J. M. Hanowski, A. R. Lima, T. Nicholls, and N. Weiland. 1997. A critical analysis on the use of indicator species in management. Journal of Wildlife Management, 61: 1240–1252.

Parker, R.O., Jr. and J.L. Ross. 1986. Observing reef fishes from submersibles off North Carolina. Northeast Gulf Science, 8: 31-49.

Perry, A.L., Low, P.J., Ellis, J.R., and J.D. Reynolds. 2005. Climate change and distribution shifts in marine fishes. Science, 308: 1912–1915.

Reed, J.K., Pomponi, S.A., Weaver, D., Paull, C.K., and A.E. Wright. 2005. Deep-water sinkholes and bioherms of South Florida and the Pourtalés terrace – habitat and fauna. Bulletin of Marine Science, 77(2): 267-296.

Ross, J.L. 1978. Life history aspects of the gray tilefish *Caulolatilus microps* (Goode and Bean, 1878). Master's Thesis, College of William and Mary, Williamsburg, VA.

Ross, J.L. and G.R. Huntsman. 1982. Age, growth, and mortality of blueline tilefish from North Carolina and South Carolina. Transactions of the American Fisheries Scoiety, 111: 585-592.

SEDAR 15-SAR1. 2008. South Atlantic red snapper. SEDAR Charleston, South Carolina. (http://www.sefsc.noaa.gov/sedar/). 511 p.

SEDAR 15-SAR2. 2008. South Atlantic greater amberjack. SEDAR Charleston, South Carolina. (http://www.sefsc.noaa.gov/sedar/). 379 p.

SEDAR 24. 2010. Pre-review Stock Assessment Report, South Atlantic Red Snapper. SEDAR Charleston, South Carolina. 488 p.

Sedberry, G.R., Pashuk, O., Wyanski, D.M., Stephen, J.A., and P. Weinbach. 2006. Spawning locations for Atlantic reef fishes off the southeastern U.S. GCFI, 57: 463-514.

Farmer, N.A., Malinowski, R.P., and M.K. McGovern. Species groupings for management of the Gulf of Mexico Reef Fish Fishery. SERO-LAPP-2010-03. 90 p.

Shaul, L., L. Weitkamp, K. Simpson, and J. Sawada. 2007. Trends in abundance and size of coho salmon in the Pacific Rim. North Pacific Anadromous Fish Commission Bulletin, 4: 93–104.

Shertzer, K.W. and E.H. Williams. 2008. Fish assemblages and indicator species: reef fishes off the southeastern United States. Fisheries Bulletin, 106: 257-269.

Shertzer, K.W., Williams, E.H., and J.C. Taylor. 2009. Spatial structure and temporal patterns in a large marine ecosystem: Exploited reef fishes of the southeast United States. Fisheries Research, 100: 126-133.

Simberloff, D. 1998. Flagships, umbrellas, and keystones: Is single-species management passé in the landscape era? Biological Conservation, 83: 247–257.

Sneath, P.H.A. and R.R. Sokal. 1973. Numerical taxonomy. The principles and practice of numerical classification. Freeman, San Francisco. 573 p.

South Atlantic Fishery Independent Monitoring Program Workshop" Final Report. Nov. 17-20, 2009. Beaufort, NC.

Southeast Data Assessment and Review (SEDAR) 10: SAR2. 2006. Gulf of Mexico gag grouper. Charleston, SC. 250 p. Available online at www.sefsc.noaa.gov/sedar/.

Struhsaker, P. 1969. Demersal fish resources: composition, distribution, and commercial potential of the continental shelf stocks off the southeastern United States. Fishery Industrial Research, 4: 261-300.

Van Sant, S.B., M.R. Collins, and G.R. Sedberry. 1994. Preliminary evidence form a tagging study for a gag (*Myceterperca microlepis*) spawning migration, with notes on the use of oxytetracycline for chemical tagging. Proceedings of the Gulf and Caribbean Fisheries Institute. 43: 417-428.

Wells, H.W. and L.E. Gray. 1959. Summer upwelling off the northeast coast of North Carolina. Limnol. Oceanogr. 5, 108.

Williams, E.H. and S. Ralston. 2002. Distribution and co-occurrence of rockfishes (family: Sebastidae) over trawlable shelf and slope habitats of California and southern Oregon. Fishery Bulletin, 100: 836-855.

Williams, W.T. and J.M. Lambert. 1961. Nodal analysis of associated populations. Nature, 191: 202.

Zacharias, M. A., and J.C. Roff. C. 2001. Use of focal species in marine conservation and management: a review and critique. Aquatic Conservation of Marine and Freshwater Ecosystems, 11: 59–76.

Table 1. Life history parameters for managed reef fish species in U.S. south Atlantic (see Table A9 for references).

Common Name	*Scientific Name*	a_λ (yr)	K	L_{inf} (cm)	a_0 (yr)	W_{inf} (kg)	L_m (cm)	a_m (mo)	Min Depth	Max Depth	Ref #
Bar jack	*Carangoides ruber*	20.5	0.14	70.0	-0.97	8	37.9	55	0	35	19, 52
Jolthead porgy	*Calamus bajonado*	19.2	0.15	78.5	-0.77	10.1	42.0	52	3	200	19, 52
Knobbed porgy	*Calamus nodosus*	21.0	0.17	51.2	-0.86	1.7	28.6	48	7	90	19, 52, 71
Red porgy	*Pagrus pagrus*	13.0	0.21	51.0	-1.32	7.7	28.9	18	0	250	3, 12, 19, 22
Sand tilefish	*Malacanthus plumieri*	22.0	0.13	72.4	-1.04	2.1	39.1	59	10	153	13, 34
Tomtate	*Haemulon aurolineatum*	9.0	0.21	32.5	-0.79	0.70	19.0	41	9	55	19, 34, 52
White grunt (Carolinas)	*Haemulon plumierii*	27.0	0.43	32.8	-0.20	4.4	16.7	12	3	40	37, 46
White grunt (Florida)	*Haemulon plumierii*	15.0	0.19	32.7	-4.21	2.5	22.0	36	3	40	18, 50
Whitebone porgy	*Calamus leucosteus*	12.0	0.23	36.8	-0.69	0.5	21.0	37	10	100	19, 52, 77
Gag	*Mycteroperca microlepis*	26.0	0.20	118.4	-1.34	36.5	64.3	38	40	152	19, 21, 27, 51
Red Grouper	*Epinephelus morio*	26.0	0.21	84.8	-0.66	23.0	48.8	34	5	330	60
Black Grouper	*Mycteroperca bonaci*	33.0	0.14	133.4	-0.90	36.5	85.6	69	6	33	19, 27, 60
Black Sea Bass (Female)	*Centropristis striata*	10.0	0.16	54.5	-1.16	3.6	13.5	33	20	60	41, 67
Black Sea Bass (Male)	*Centropristis striata*	10.0	0.16	54.5	-1.16	3.6	27.3	38	20	60	19, 41, 67
Snowy Grouper	*Epinephelus niveatus*	29.0	0.12	111.7	-1.41	30.0	54.1	60	30	525	19, 27, 68, 80
Speckled Hind	*Epinephelus drummondhayi*	25.0	0.13	96.7	-1.01	30.0	49.7	56	25	183	19, 27, 38, 68
Warsaw Grouper	*Epinephelus nigritus*	41.0	0.05	239.4	-3.62	82.1	81.0	49	55	525	19, 27, 33
Red Snapper	*Lutjanus campechanus*	54.0	0.25	90.2	-0.03	26.0	37.0	22	10	190	42, 66, 79
Vermilion Snapper	*Rhomboplites aurorubens*	19.0	0.12	50.6	-3.50	3.2	15.0	12	40	300	1, 19, 59, 81
Golden Tilefish (female)	*Lopholatilus chamaeleonticeps*	32.0	0.10	77.7	-5.72	30.0	42.9	72	80	540	13, 15, 19, 47, 68
Golden Tilefish (male)	*Lopholatilus chamaeleonticeps*	32.0	0.14	96.7	-0.44	30.0	45.0	60	80	540	13, 15, 19, 47, 68
Wreckfish	*Polyprion americanus*	30.0	0.03	163.8	-16.56	15.0	83.8	96	40	600	70, 76
Rock Hind	*Epinephelus adscensionis*	12.0	0.16	49.9	-0.93	4.1	28.0	73	1	120	19, 27, 49
Red Hind	*Epinephelus guttatus*	11.0	0.20	47.1	-0.75	25.0	26.6	41	2	100	19, 27, 49
Scamp	*Mycteroperca phenax*	30.0	0.09	108.0	-1.36	12.6	35.3	15	30	100	19, 23, 27
Yellowfin Grouper	*Mycteroperca venenosa*	15.0	0.09	89.5	-0.75	18.5	54.0	44	2	137	19, 27, 44, 69, 74
Yellowedge Grouper	*Epinephelus flavolimbatus*	85.0	0.06	100.5	-4.75	18.6	54.7	96	64	275	10, 11, 19
Nassau Grouper	*Epinephelus striatus*	29.0	0.13	76.0	-1.12	27.0	40.0	60	1	90	19, 56
Goliath Grouper	*Epinephelus itajara*	37.0	0.13	200.6	-0.49	455.0	120.0	72	1	100	5, 53, 65
Yellowtail Snapper	*Ocyurus chrysurus*	13.0	0.17	60.8	-1.88	4.1	20.9	20	1	180	1, 19, 20, 61, 63
Gray Snapper	*Lutjanus griseus*	24.0	0.17	71.7	-0.03	8.0	23.0	24	5	180	6, 53, 56, 73
Silk Snapper	*Lutjnaus vivanus*	29.0	0.10	81.2	-1.32	8.3	43.4	63	90	242	19, 56
Lane Snapper	*Lutjanus syngaris*	10.0	0.10	61.8	-1.73	3.0	20.5	12	10	400	19, 56
Gray Triggerfish	*Balistes capriscus*	8.8	0.18	65.6	-1.58	6.2	32.8	12	1	360	19, 29, 30, 64
Greater Amberjack	*Seriola dumerilli*	17.0	0.28	124.2	-1.56	80.6	82.2	16	1	360	19, 25, 58, 64, 72
Banded Rudderfish	*Seriola zonata*	10.3	0.28	77.5	-0.46	5.2	41.5	27	30	130	19, 56
Almaco Jack	*Seriola rivoliana*	22.2	0.13	163.3	-0.83	60.0	81.1	53	5	160	19, 56
Blueline Tilefish (female)	*Caulolatilus microps*	43.0	0.11	63.4	-4.54	5.6	33.8	54	30	236	24, 54, 55, 68
Blueline Tilefish (male)	*Caulolatilus microps*	43.0	0.10	75.8	-5.40	7.0	51.3	72	30	236	13, 14, 19, 24, 54, 55, 68

Note: a_λ denotes maximum age in years, K denotes Brody growth coefficient, L_{inf} denotes asymptotic length coefficient for von Bertalanffy growth equation, a_0 denotes theoretical age at length zero scaling parameter for von Bertlanffy growth equation, W_{inf} denotes theoretical maximum weight in kilograms, L_m denotes length (in cm) at maturity, a_m denotes age (in months) at maturity, depths expressed in feet.

Table 2. Depth of occurrence (ft) for managed reef fish species in southeastern U.S. Atlantic Ocean (Source: Fishbase). Colors denote categorizations of 'shallow' (yellow), 'shalllow/mid' (pale orange), 'mid' (pale red), and 'deep-water' (blue). White lines denote median depth of occurrence.

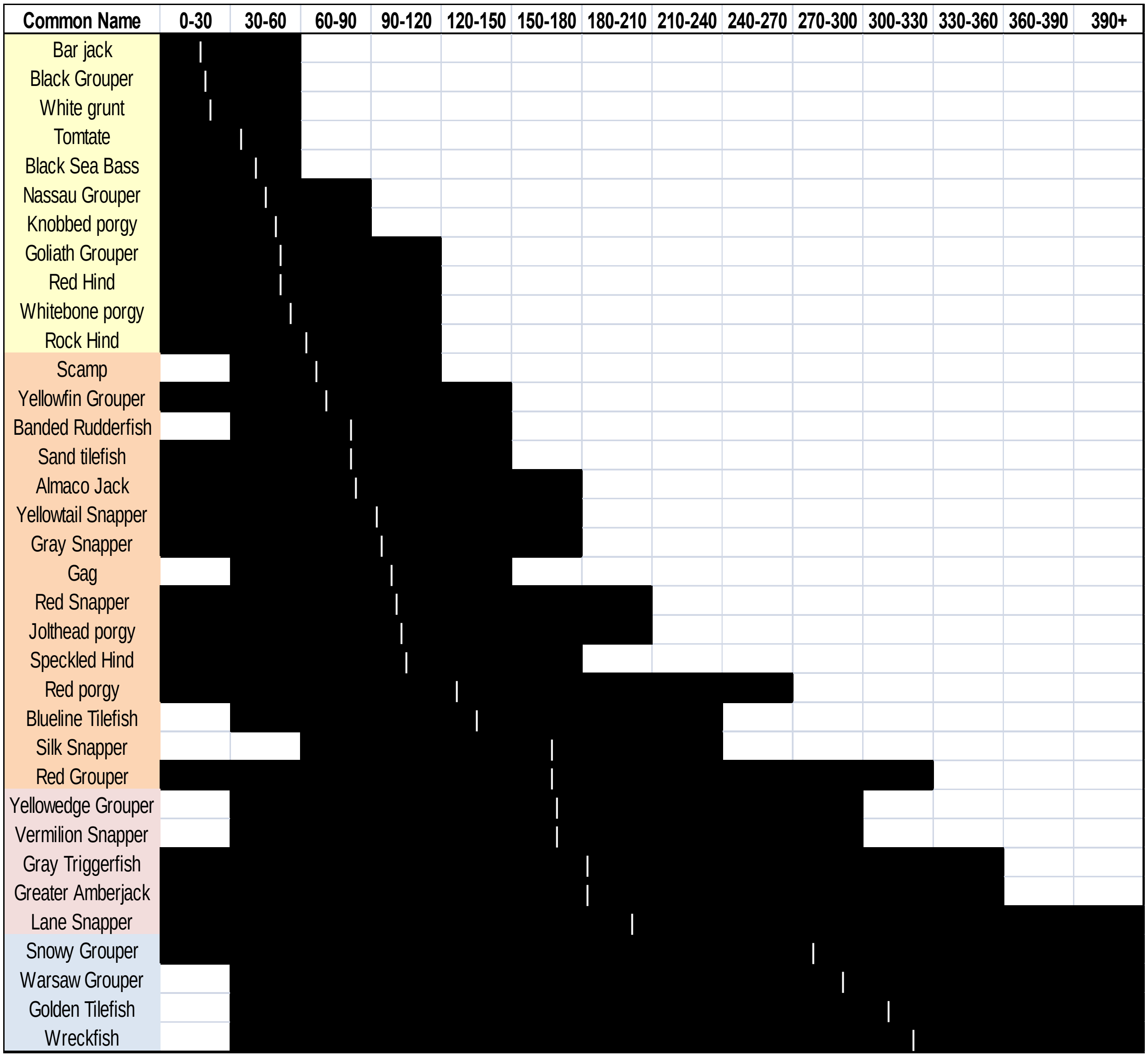


Table 3. Percent of commercial bottom longline (CLL), vertical line (CVL), reef fish observer (RFOP), headboat (HBS), Marine Recreational Fisheries Statistics Survey (MRFSS), Marine Resources Monitoring, Assessment and Prediction (MARMAP), and life history (LH) data matrix bins with records of SAFMC Snapper-Grouper FMU species.

COMMON NAME	CVL	CLL	RFOP	HBS	MRFSS	MARMAP	LH
almaco jack	25%	0%	13%	34%	14%	1%	100%
banded rudderfish	10%	0%	3%	29%	11%	0%	100%
bar jack	1%	0%	0%	5%	6%	0%	100%
black grouper	20%	2%	1%	19%	12%	0%	100%
black sea bass	0%	0%	0%	72%	85%	58%	100%
blueline tilefish	18%	29%	0%	3%	4%	1%	100%
gag	30%	4%	16%	73%	38%	1%	100%
goliath grouper	0%	0%	0%	2%	7%	0%	100%
gray snapper	20%	1%	0%	48%	33%	0%	100%
gray triggerfish	32%	1%	27%	80%	41%	21%	100%
greater amberjack	35%	3%	8%	48%	28%	1%	100%
jolthead porgy	16%	0%	0%	33%	12%	0%	100%
knobbed porgy	7%	0%	7%	26%	9%	10%	100%
lane snapper	7%	0%	0%	42%	24%	0%	100%
nassau grouper	0%	0%	0%	0%	2%	0%	100%
red grouper	36%	4%	24%	53%	24%	3%	100%
red hind	12%	0%	4%	13%	6%	0%	100%
red porgy	22%	0%	43%	39%	19%	42%	100%
red snapper	28%	1%	8%	51%	25%	2%	100%
rock hind	14%	0%	6%	24%	6%	0%	100%
sand tilefish	2%	0%	2%	9%	12%	0%	100%
scamp	30%	0%	34%	47%	17%	9%	100%
silk snapper	5%	0%	0%	6%	2%	0%	100%
snowy grouper	26%	35%	2%	8%	5%	3%	100%
speckled hind	3%	0%	9%	11%	3%	2%	100%
tilefish	6%	65%	0%	0%	3%	0%	100%
tomtate	0%	0%	6%	47%	24%	41%	100%
vermilion snapper	35%	0%	33%	67%	33%	25%	100%
warsaw grouper	0%	0%	1%	8%	3%	0%	100%
white grunt	17%	0%	12%	57%	41%	11%	100%
whitebone porgy	4%	0%	1%	40%	12%	2%	100%
wreckfish	0%	0%	0%	0%	0%	0%	100%
yellowedge grouper	4%	16%	1%	1%	1%	0%	100%
yellowfin grouper	2%	0%	1%	3%	0%	0%	100%
yellowtail snapper	20%	0%	1%	40%	25%	0%	100%

Table 4. Number of SAFMC managed Snapper-Grouper species in binned commercial vertical line (CVL), longline (CLL), reef fish observer (RFOP), headboat (HBS), Marine Recreational Fisheries Statistics Survey (MRFSS), and Marine Resources Monitoring, Assessment and Prediction (MARMAP), and life history (LH) datasets.

PERCENT OF BINS	CVL	CLL	RFOP	HBS	MRFSS	MARMAP	LH
>0%	**32**	**18**	**28**	**33**	**34**	**26**	**35**
>1%	28	10	21	31	32	15	35
>5%	22	4	14	28	26	8	35

Table 5. Weighting terms for mean cluster strength matrix for commercial vertical line (CVL), longline (CLL), reef fish observer (RFOP), headboat (HBS), Marine Recreational Fisheries Statistics Survey (MRFSS), and Marine Resources Monitoring, Assessment and Prediction (MARMAP), and life history (LH).

COMMON NAME	CVL	CLL	RFOP	HBS	MRFSS	MARMAP	LH
almaco jack	0.25	0.00	0.13	0.34	0.14	0.01	1.00
banded rudderfish	0.10	0.00	0.03	0.29	0.11	0.00	1.00
bar jack	0.01	0.00	0.00	0.05	0.06	0.00	1.00
black grouper	0.20	0.02	0.01	0.19	0.12	0.00	1.00
black sea bass	0.00	0.00	0.00	0.72	0.85	0.58	1.00
blueline tilefish	0.18	0.29	0.00	0.03	0.04	0.01	1.00
gag	0.30	0.04	0.16	0.73	0.38	0.01	1.00
goliath grouper	0.00	0.00	0.00	0.02	0.07	0.00	1.00
gray snapper	0.20	0.01	0.00	0.48	0.33	0.00	1.00
gray triggerfish	0.32	0.01	0.27	0.80	0.41	0.21	1.00
greater amberjack	0.35	0.03	0.08	0.48	0.28	0.01	1.00
jolthead porgy	0.16	0.00	0.00	0.33	0.12	0.00	1.00
knobbed porgy	0.07	0.00	0.07	0.26	0.09	0.10	1.00
lane snapper	0.07	0.00	0.00	0.42	0.24	0.00	1.00
nassau grouper	0.00	0.00	0.00	0.00	0.02	0.00	1.00
red grouper	0.36	0.04	0.24	0.53	0.24	0.03	1.00
red hind	0.12	0.00	0.04	0.13	0.06	0.00	1.00
red porgy	0.22	0.00	0.43	0.39	0.19	0.42	1.00
red snapper	0.28	0.01	0.08	0.51	0.25	0.02	1.00
rock hind	0.14	0.00	0.06	0.24	0.06	0.00	1.00
sand tilefish	0.02	0.00	0.02	0.09	0.12	0.00	1.00
scamp	0.30	0.00	0.34	0.47	0.17	0.09	1.00
silk snapper	0.05	0.00	0.00	0.06	0.02	0.00	1.00
snowy grouper	0.26	0.35	0.02	0.08	0.05	0.03	1.00
speckled hind	0.03	0.00	0.09	0.11	0.03	0.02	1.00
tilefish	0.06	0.65	0.00	0.00	0.03	0.00	1.00
tomtate	0.00	0.00	0.06	0.47	0.24	0.41	1.00
vermilion snapper	0.35	0.00	0.33	0.67	0.33	0.25	1.00
warsaw grouper	0.00	0.00	0.01	0.08	0.03	0.00	1.00
white grunt	0.17	0.00	0.12	0.57	0.41	0.11	1.00
whitebone porgy	0.04	0.00	0.01	0.40	0.12	0.02	1.00
wreckfish	0.00	0.00	0.00	0.00	0.00	0.00	1.00
yellowedge grouper	0.04	0.16	0.01	0.01	0.01	0.00	1.00
yellowfin grouper	0.02	0.00	0.01	0.03	0.00	0.00	1.00
yellowtail snapper	0.20	0.00	0.01	0.40	0.25	0.00	1.00

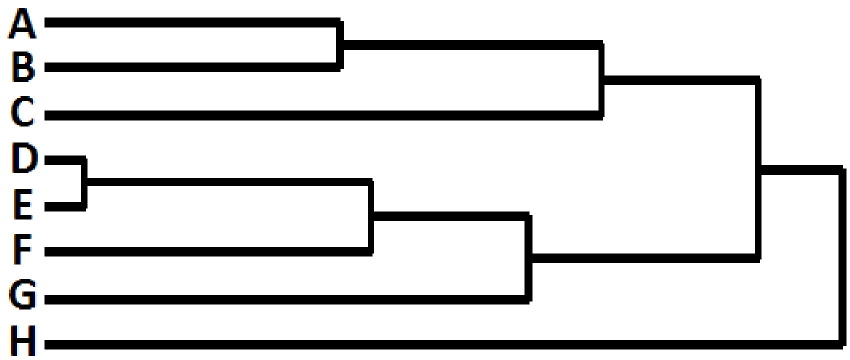
Table 6. Weighted mean cluster association matrix generated from 20 fishery-dependent, 4 fishery-independent, and 2 life history clusters (see Appendix). Darker red shading denotes higher levels of association between species on row with species in column.

	almaco jack	banded rudderfish	bar jack	black grouper	black sea bass	blueline tilefish	gag	goliath grouper	gray snapper	gray triggerfish	greater amberjack	jolthead porgy	knobbed porgy	lane snapper	nassau grouper	red grouper	red hind	red porgy	red snapper	rock hind	sand tilefish	scamp	silk snapper	snowy grouper	speckled hind	tilefish	tomtate	vermilion snapper	warsaw grouper	white grunt	whitebone porgy	wreckfish	yellowedge grouper	yellowfin grouper	yellowtail snapper
almaco jack		0.14	0.00	0.36	0.00	0.00	0.01	0.05	0.00	0.07	0.10	0.00	0.03	0.00	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.02	0.00	0.00	0.00	0.00
banded rudderfish	0.20		0.00	0.00	0.00	0.00	0.06	0.00	0.08	0.00	0.10	0.02	0.05	0.00	0.00	0.07	0.01	0.12	0.06	0.01	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.00	0.08
bar jack	0.00	0.00		0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.31	0.30	0.01	0.11	0.01	0.02	0.00	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
black grouper	0.48	0.00	0.00		0.04	0.00	0.00	0.03	0.09	0.00	0.00	0.01	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.16
black sea bass	0.02	0.02	0.00	0.09		0.00	0.04	0.02	0.02	0.04	0.02	0.00	0.12	0.02	0.00	0.01	0.05	0.05	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.20	0.08	0.00	0.06	0.10	0.00	0.00	0.00	0.02
blueline tilefish	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00
gag	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.08	0.22	0.00	0.00	0.05	0.00	0.00	0.02	0.01	0.00	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00
goliath grouper	0.00	0.00	0.00	0.05	0.00	0.00	0.00		0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.07	0.00	0.00	0.21	0.00	0.00	0.21	0.21	0.00	0.01
gray snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
gray triggerfish	0.01	0.01	0.00	0.00	0.01	0.00	0.20	0.00	0.00		0.01	0.00	0.02	0.15	0.00	0.00	0.00	0.10	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.38	0.00	0.05	0.01	0.00	0.00	0.00	0.00
greater amberjack	0.17	0.07	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.07		0.00	0.02	0.00	0.00	0.05	0.01	0.02	0.17	0.01	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.05	0.00	0.00	0.00	0.00
jolthead porgy	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.19	0.00	0.06	0.02	0.12	0.00	0.00	0.13	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.01
knobbed porgy	0.03	0.02	0.17	0.00	0.04	0.00	0.01	0.01	0.00	0.00	0.00	0.24		0.00	0.06	0.02	0.04	0.00	0.00	0.17	0.06	0.05	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
lane snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.31	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.02	0.00	0.00	0.00	0.09
nassau grouper	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00		0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.24	0.00
red grouper	0.00	0.00	0.00	0.02	0.00	0.00	0.29	0.00	0.09	0.00	0.00	0.04	0.02	0.09	0.00		0.06	0.02	0.00	0.02	0.03	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.07
red hind	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.08	0.01	0.00	0.00	0.05		0.01	0.01	0.12	0.01	0.01	0.00	0.00	0.00	0.00	0.29	0.01	0.00	0.01	0.29	0.00	0.00	0.04	0.01
red porgy	0.01	0.01	0.00	0.00	0.01	0.00	0.06	0.00	0.12	0.20	0.01	0.00	0.00	0.00	0.00	0.02	0.00		0.01	0.00	0.00	0.16	0.00	0.00	0.00	0.05	0.07	0.15	0.00	0.00	0.01	0.00	0.00	0.00	0.12
red snapper	0.02	0.05	0.00	0.00	0.02	0.00	0.30	0.00	0.00	0.05	0.21	0.00	0.00	0.00	0.00	0.05	0.00	0.07		0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.02	0.11	0.00	0.01	0.01	0.00	0.00	0.00	0.00
rock hind	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.26	0.00	0.04	0.01	0.17	0.00	0.00		0.04	0.00	0.00	0.00	0.04	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.00
sand tilefish	0.00	0.01	0.15	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.21	0.09	0.00	0.09	0.00	0.01	0.00	0.00	0.01		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.04
scamp	0.02	0.02	0.00	0.00	0.01	0.13	0.10	0.00	0.00	0.02	0.15	0.00	0.04	0.00	0.00	0.15	0.00	0.17	0.00	0.00	0.00		0.00	0.04	0.10	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
silk snapper	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.21	0.00	0.60	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.08	0.00
snowy grouper	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10		0.00	0.11	0.00	0.00	0.20	0.00	0.00	0.00	0.17	0.00	0.00
speckled hind	0.01	0.01	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.05	0.06	0.00	0.21	0.00	0.00	0.01	0.01	0.06	0.05	0.08	0.01	0.00		0.00	0.01	0.01	0.05	0.00	0.00	0.00	0.01	0.24	0.00
tilefish	0.00	0.00	0.00	0.00	0.00	0.09	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
tomtate	0.00	0.00	0.00	0.00	0.07	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.15	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.28	0.00	0.02	0.40	0.00	0.00	0.00	0.00
vermilion snapper	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.45	0.01	0.00	0.00	0.10	0.00	0.00	0.00	0.13	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.17		0.00	0.00	0.01	0.00	0.00	0.00	0.00
warsaw grouper	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.14	0.14	0.05	0.14	0.01	0.00		0.00	0.01	0.00	0.41	0.01	0.00
white grunt	0.00	0.00	0.00	0.00	0.07	0.00	0.08	0.00	0.00	0.09	0.00	0.20	0.08	0.00	0.00	0.12	0.11	0.00	0.00	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.03	0.00		0.07	0.00	0.00	0.00	0.00
whitebone porgy	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.00	0.01	0.02	0.00	0.00	0.23	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.00		0.00	0.00	0.00	0.01
wreckfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.00	0.00	0.35	0.00	0.00		0.35	0.00	0.00
yellowedge grouper	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.24	0.00	0.10	0.00	0.00	0.44	0.00	0.00	0.00		0.01	0.00
yellowfin grouper	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.29	0.00	0.02	0.00	0.00	0.06	0.06	0.00	0.04	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		0.00
yellowtail snapper	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.02	0.00	0.15	0.00	0.00	0.00	0.09	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Table 7. Table of SAFMC Snapper-Grouper FMU species, indicating species with completed or pending assessments and top five most associated species, by species, per weighted mean cluster association index. Productivity-Susceptibility Analysis (PSA) scores of overall risk from MRAG Americas South Atlantic Final Report provided when available (MRAG 2009a,b). Color-coding denotes associations; dashed lines denote distinct life histories between associated species.

COMMON NAME	1	2	3	4	5	ASSESSED?	PSA
wreckfish	warsaw grouper	yellowedge grouper	silk snapper	tilefish	snowy grouper	Vaughan et al. 2001	3.64
warsaw grouper	yellowedge grouper	silk snapper	snowy grouper	tilefish	speckled hind		3.83
yellowedge grouper	warsaw grouper	snowy grouper	tilefish	blueline tilefish	silk snapper		3.52
snowy grouper	blueline tilefish	warsaw grouper	yellowedge grouper	tilefish	silk snapper	SEDAR 4 (2004)	3.45
silk snapper	tilefish	snowy grouper	yellowfin grouper	wreckfish	warsaw grouper		3.52
blueline tilefish	snowy grouper	sand tilefish	scamp	yellowedge grouper	tilefish		3.4
sand tilefish	blueline tilefish	jolthead porgy	bar jack	knobbed porgy	nassau grouper		3.37
tilefish	silk snapper	gag	snowy grouper	yellowedge grouper	blueline tilefish	SEDAR 4 (2004)	3.4
goliath grouper	yellowedge grouper	warsaw grouper	wreckfish	silk snapper	snowy grouper	SEDAR 23 (2010)	3.42*
nassau grouper	yellowfin grouper	speckled hind	bar jack	jolthead porgy	knobbed porgy		3.3
speckled hind	yellowfin grouper	nassau grouper	scamp	knobbed porgy	rock hind		3.42
yellowfin grouper	speckled hind	nassau grouper	bar jack	sand tilefish	knobbed porgy		3.39
gag	red grouper	red snapper	gray triggerfish	white grunt	red porgy	SEDAR 10 (2006)	3.52
red grouper	gag	scamp	white grunt	gray snapper	lane snapper	SEDAR 19 (2010)	3.28
scamp	red porgy	red grouper	greater amberjack	blueline tilefish	speckled hind	Manooch et al. (1998)	3.25
black grouper	almaco jack	yellowtail snapper	gray snapper	black sea bass	lane snapper	SEDAR 19 (2010)	3.36
banded rudderfish	almaco jack	red porgy	greater amberjack	gray snapper	yellowtail snapper		3.26
greater amberjack	scamp	red snapper	almaco jack	vermilion snapper	banded rudderfish	SEDAR 15 (2008)	3.07
almaco jack	black grouper	banded rudderfish	greater amberjack	vermilion snapper	gray triggerfish		3.35
red porgy	gray triggerfish	scamp	vermilion snapper	gray snapper	yellowtail snapper	SEDAR 1 Update (2006)	2.93
gray triggerfish	vermilion snapper	gag	lane snapper	red porgy	white grunt		2.46
vermilion snapper	gray triggerfish	tomtate	red porgy	lane snapper	gag	SEDAR 17 (2008)	3.14
red snapper	gag	greater amberjack	vermilion snapper	red porgy	scamp	SEDAR 24 (2010)	3.14
black sea bass	tomtate	knobbed porgy	whitebone porgy	black grouper	vermilion snapper	SEDAR 2 Update (2005)	3.02
red hind	whitebone porgy	tomtate	rock hind	jolthead porgy	red grouper	Potts & Manooch (1995)	3.18
rock hind	knobbed porgy	jolthead porgy	red hind	bar jack	yellowfin grouper	Potts & Manooch (1995)	3.23
knobbed porgy	jolthead porgy	bar jack	rock hind	white grunt	nassau grouper		3.14
whitebone porgy	tomtate	red hind	almaco jack	greater amberjack	banded rudderfish		3.51
jolthead porgy	knobbed porgy	bar jack	sand tilefish	white grunt	rock hind		3.18
tomtate	whitebone porgy	vermilion snapper	red hind	black sea bass	gray triggerfish		2.63
white grunt	jolthead porgy	red grouper	red hind	gray triggerfish	knobbed porgy		2.78
bar jack	jolthead porgy	knobbed porgy	sand tilefish	nassau grouper	red hind		3.33
gray snapper	lane snapper	yellowtail snapper	red porgy	warsaw grouper	silk snapper		3.24
lane snapper	gray snapper	gray triggerfish	vermilion snapper	yellowtail snapper	whitebone porgy		2.92
yellowtail snapper	gray snapper	black grouper	lane snapper	red porgy	sand tilefish	SEDAR 3 (2003)	2.84*

(*) = from MRAG Gulf of Mexico Final Report.



	A	B	C	D	E	F	G	H
A		1	0	0	0	0	0	0
B	1		0	0	0	0	0	0
C	0.5	0.5		0	0	0	0	0
D	0	0	0		1	0	0	0
E	0	0	0	1		0	0	0
F	0	0	0	0.5	0.5		0	0
G	0	0	0	0.33	0.33	0.33		0
H	0.14	0.14	0.14	0.14	0.14	0.14	0.14	

Figure 1. Example dendrogram and cluster association matrix.

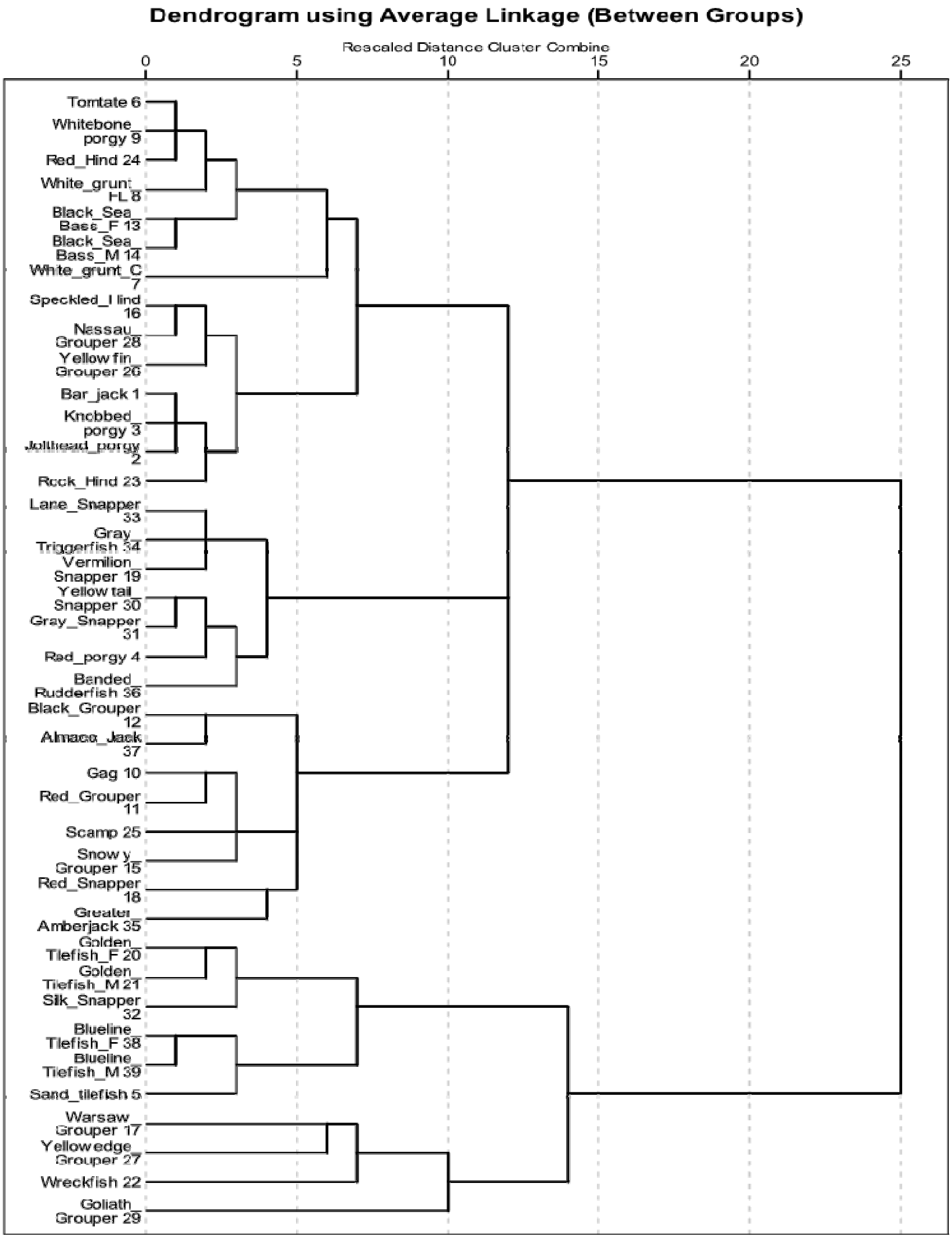


Figure 2. Hierarchical cluster analysis of life history parameters for SAFMC Snapper-Grouper species with dummy variable for genus (Linkage Method: Ward's, Dissimilarity Measure: Euclidean Distance, Transformation: Z-Score by Variable). Note 'F' denotes female, 'FL' denotes Florida population. Numbers denote case numbers.

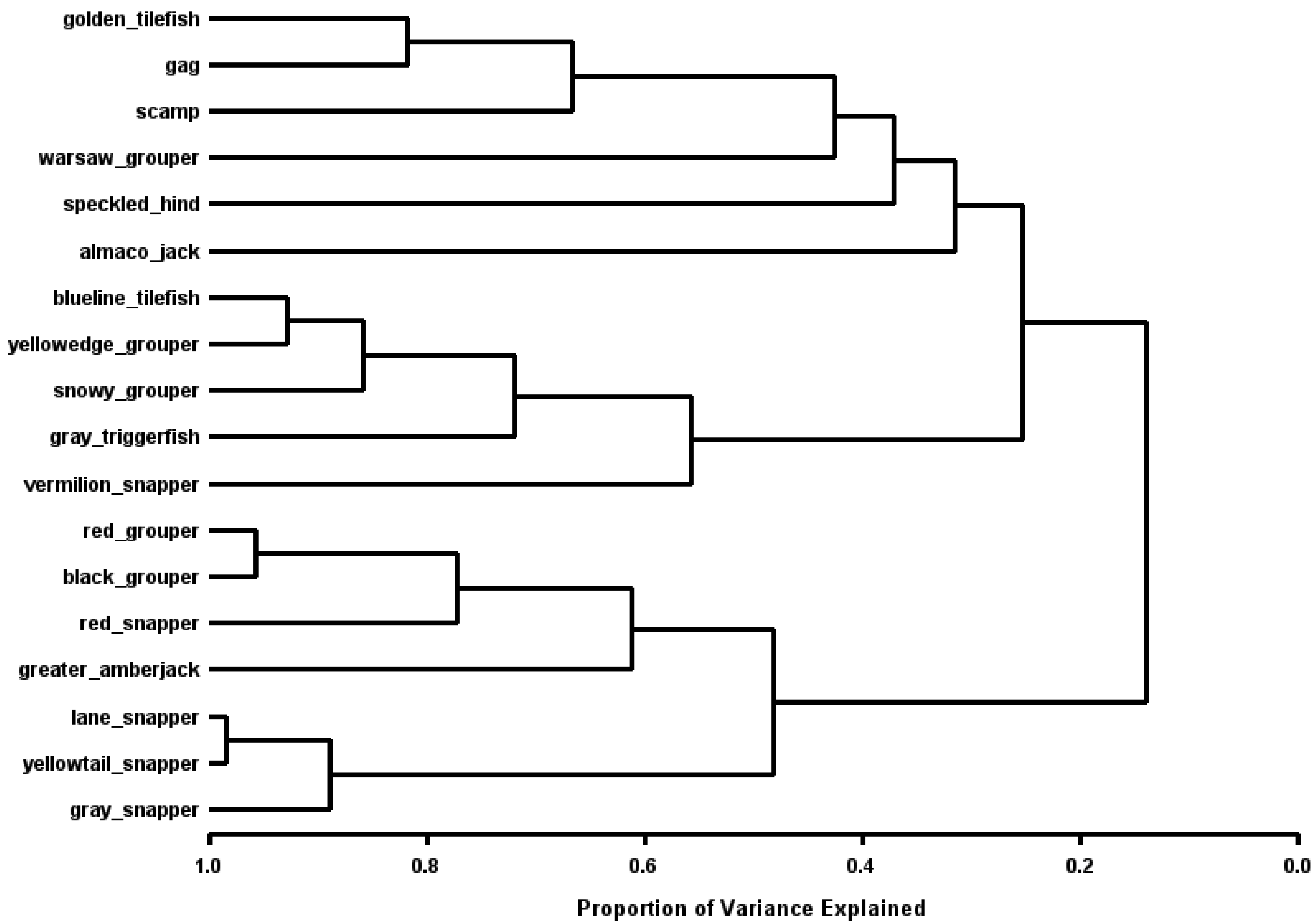


Figure 3. Dimension reduction cluster of presence-absence in SAFMC Snapper-Grouper commercial longline landings (2005-2009) aggregated by year, month, area, and depth (Linkage Method: VARCLUS, Height Measure: Proportion of Variance Explained, Transformation: Binary).

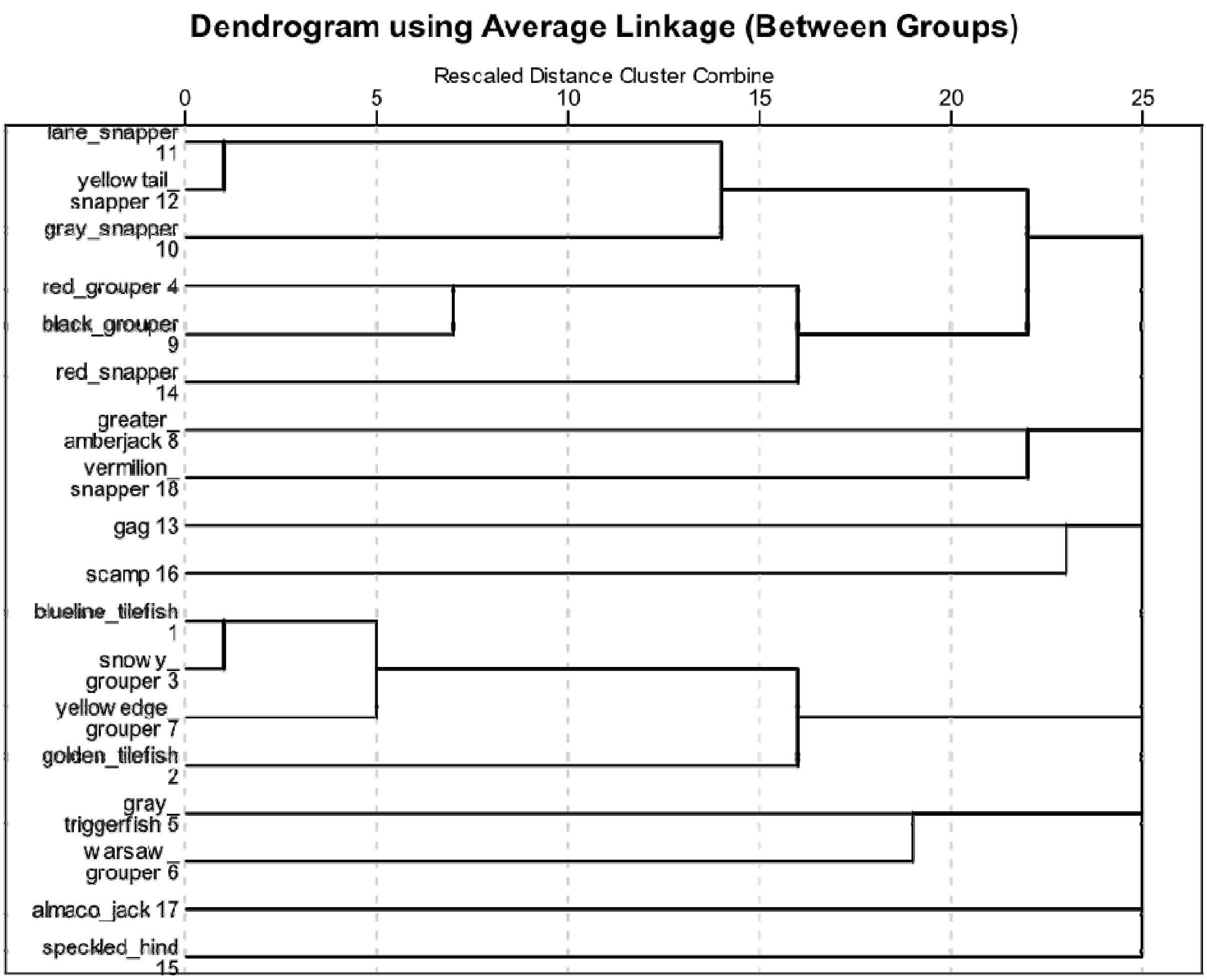


Figure 4. Hierarchical cluster analysis of species presence-absence in SAFMC Snapper-Grouper commercial longline landings (2005-2009) aggregated by year, month, area, and depth (Linkage Method: Between (Average), Dissimilarity Measure: Sørenson (Binary)). Numbers denote case numbers.

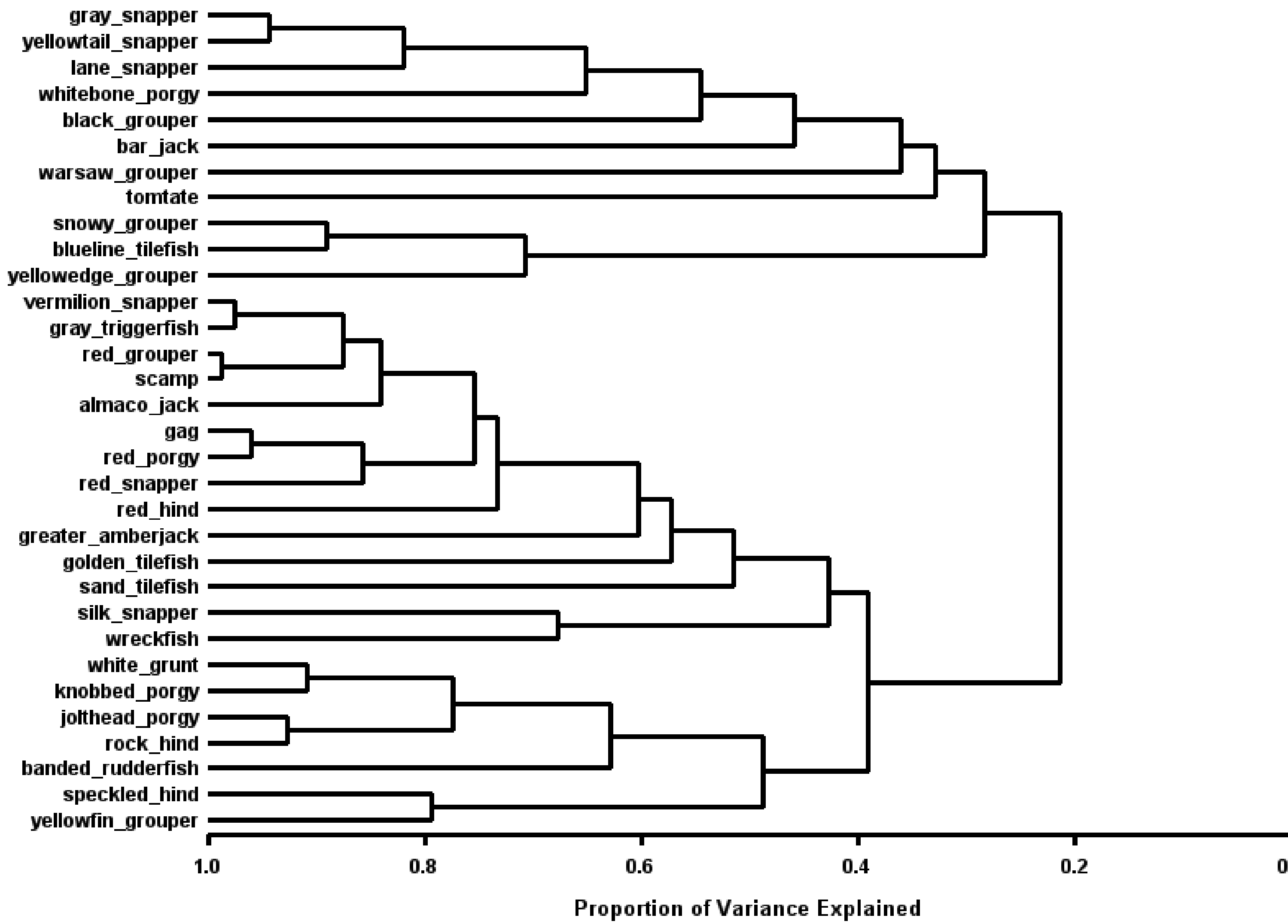


Figure 5. Dimension reduction cluster of SAFMC Snapper-Grouper commercial vertical line landings (2005-2009) aggregated by year, month, area, and depth (Linkage Method: VARCLUS, Height Measure: Proportion of Variance Explained, Transformation: Binary).

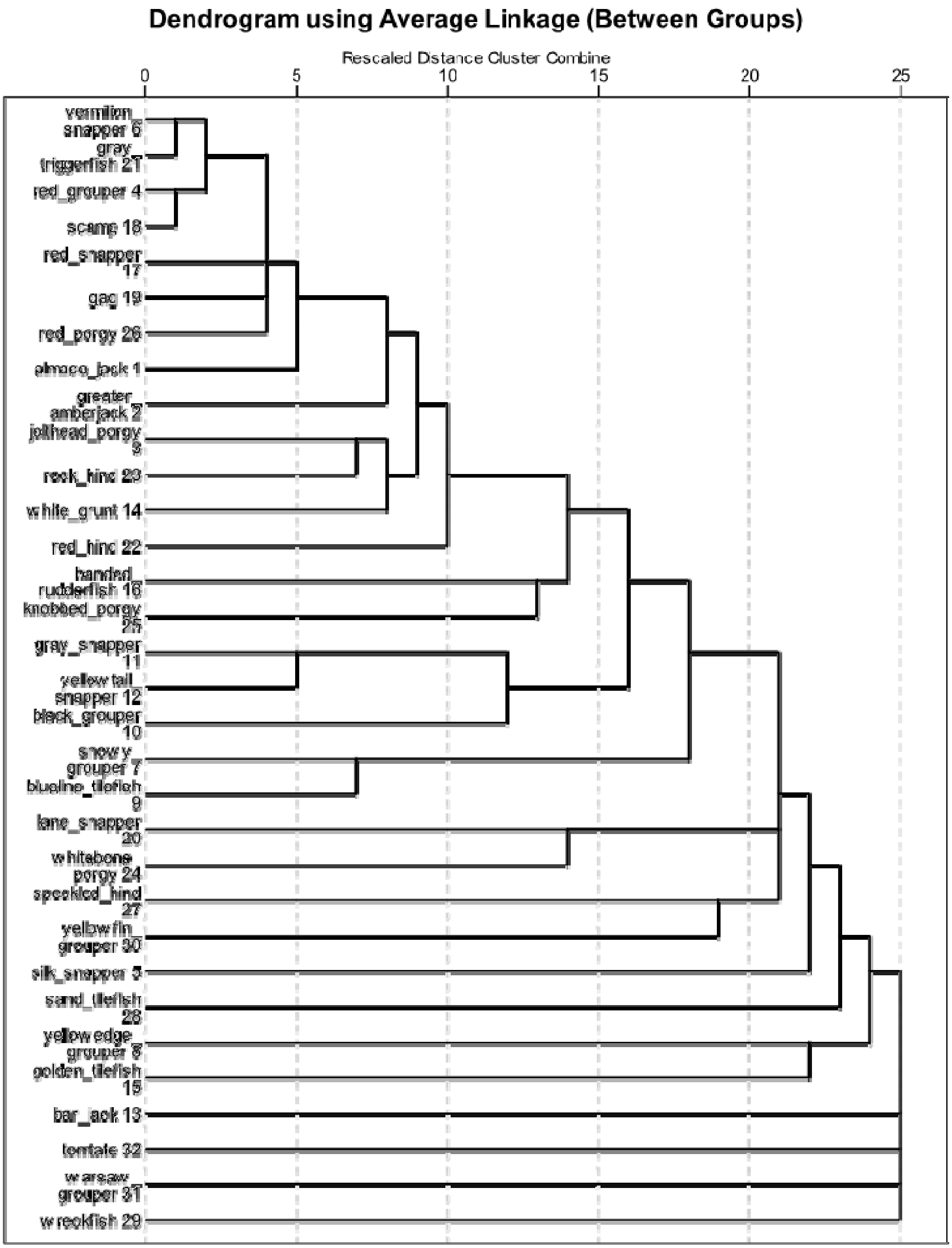


Figure 6. Hierarchical cluster analysis of species presence-absence in SAFMC Snapper-Grouper commercial vertical line landings aggregated by year, month, area, and depth (Linkage Method: Between (Average), Dissimilarity Measure: Sørenson (Binary)). Numbers denote case numbers.

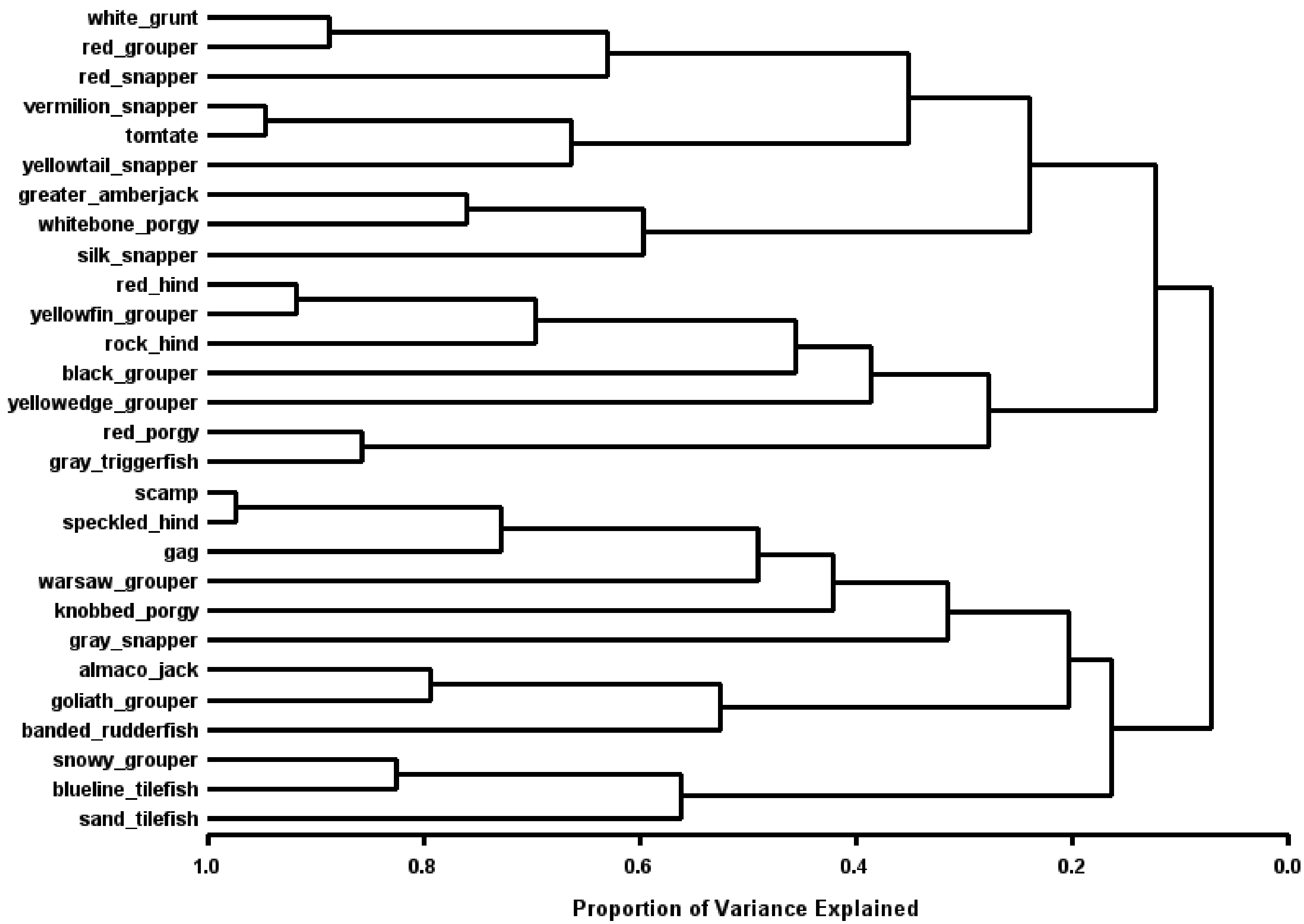


Figure 7. Dimension reduction cluster of species presence-absence in SAFMC Snapper-Grouper reef fish observer program landings aggregated at the individual set level (Linkage Method: VARCLUS, Measure: Proportion of Variance Explained, Transformation: Binary).

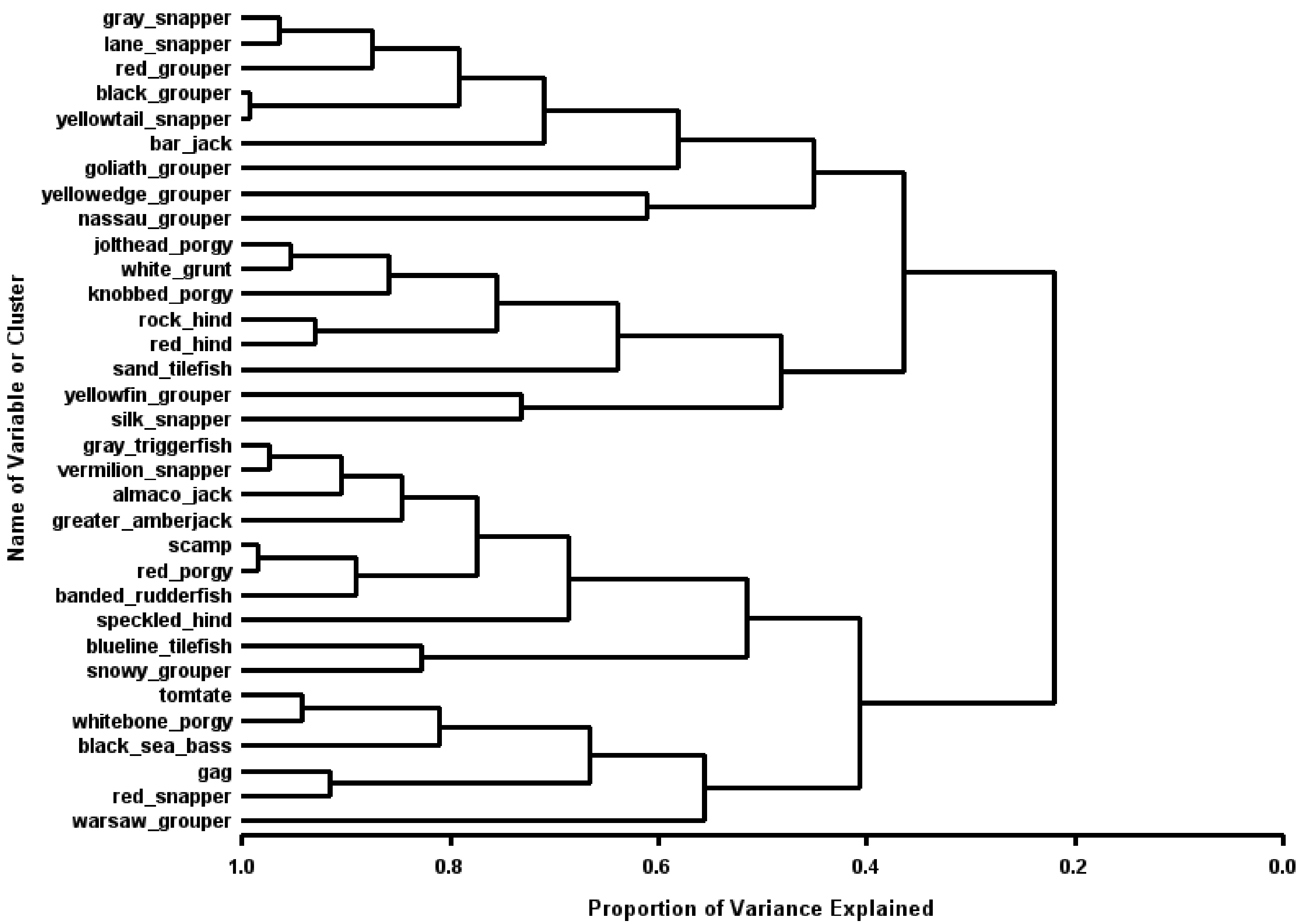


Figure 8. Dimension reduction cluster of landed catch (in numbers) of SAFMC Snapper-Grouper by recreational headboat aggregated by year, month, area, and trip duration (Linkage Method: VARCLUS, Height Measure: Proportion of Variance Explained, Transformation: Root-Root).

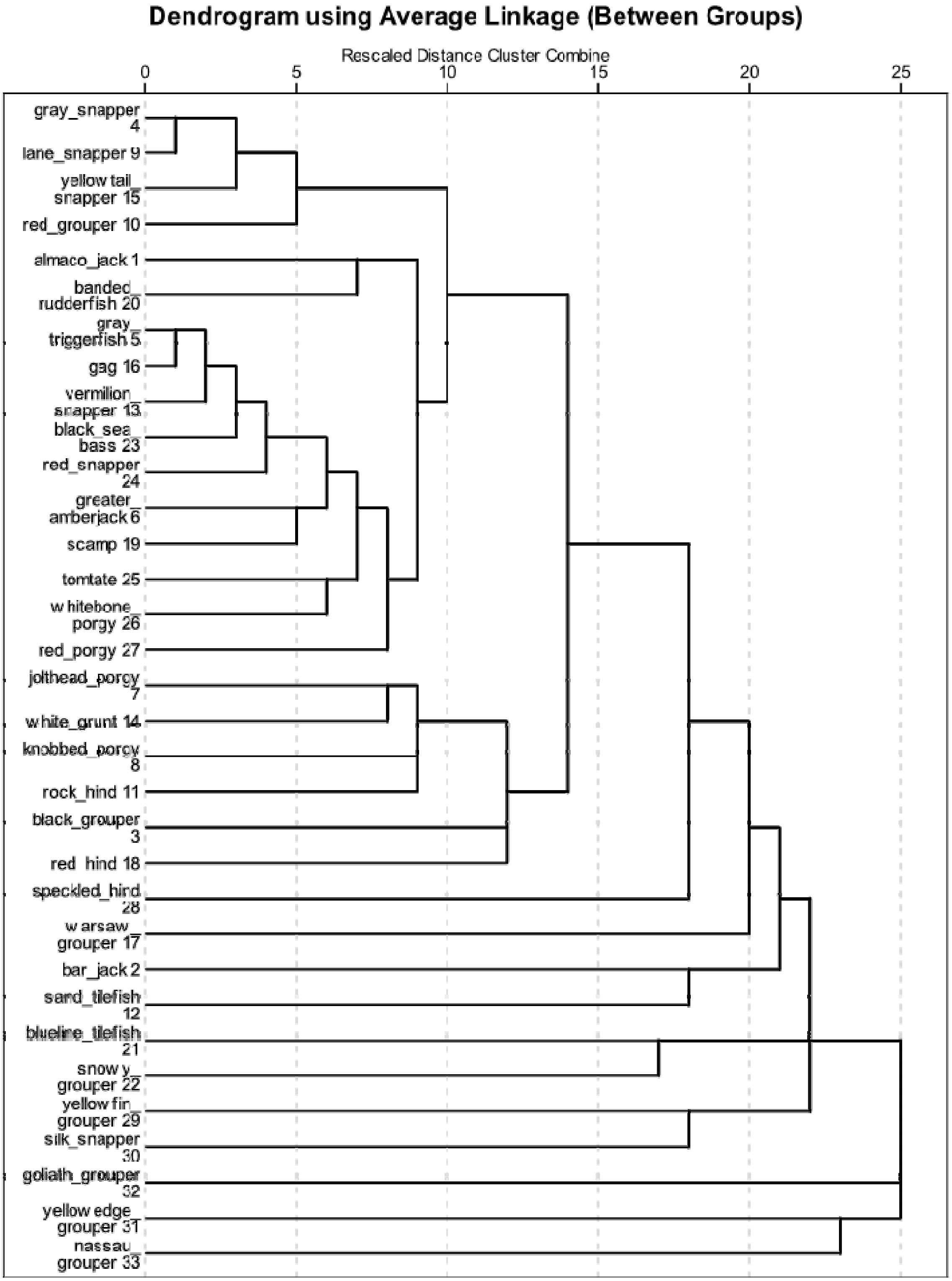


Figure 9. Hierarchical cluster analysis of presence-absence of SAFMC Snapper-Grouper by recreational headboat aggregated by year, month, area, and trip duration (Linkage Method: Between Groups Average, Dissimilarity Measure: Sørenson, Transformation: Binary). Numbers denote case numbers.

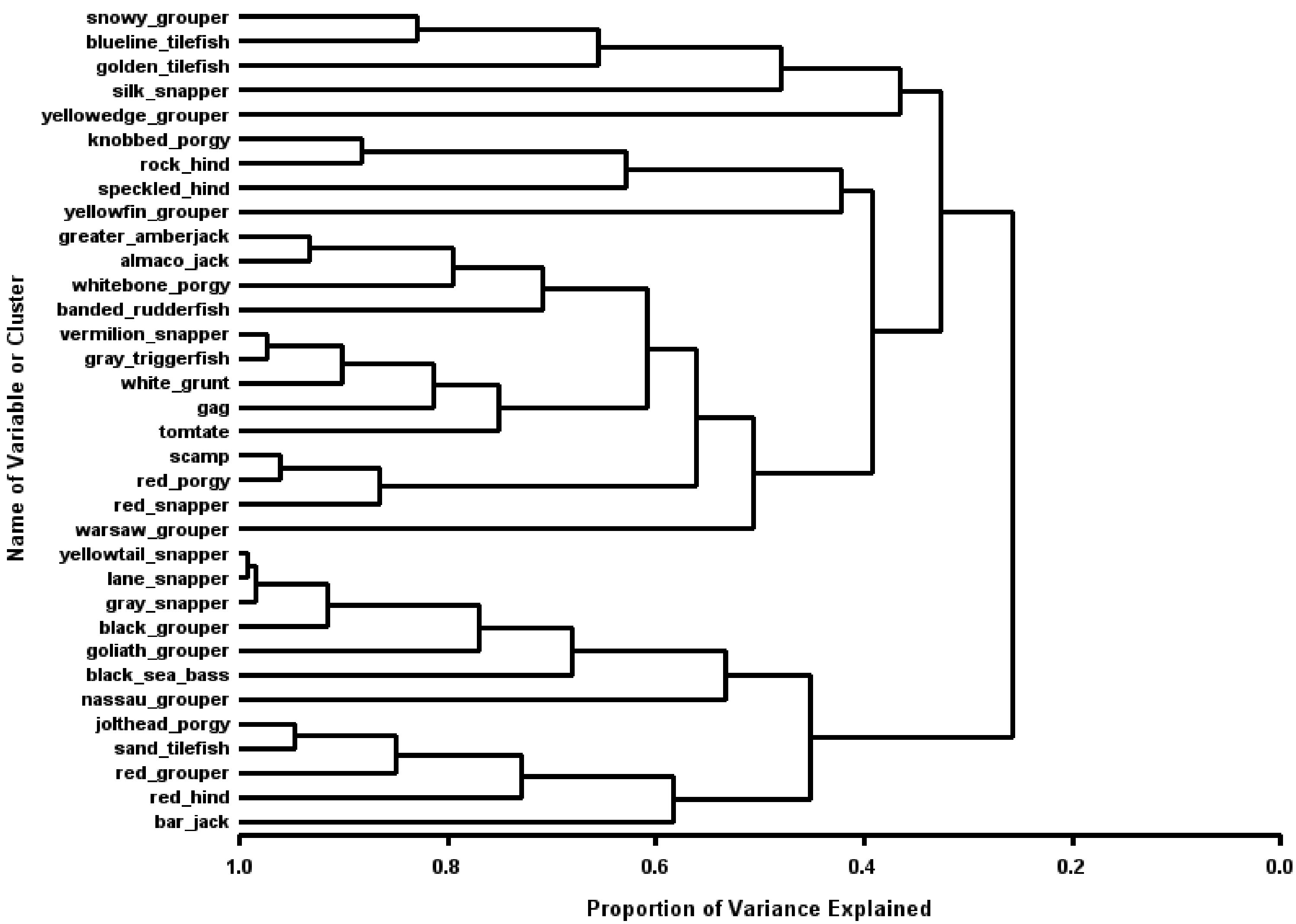


Figure 10. Dimension reduction cluster of species presence-absence in SAFMC Snapper-Grouper recreational MRFSS-reported landings aggregated by state, year, wave, mode of fishing, and area fished (Linkage Method: VARCLUS, Height Measure: Proportion of Variance Explained, Transformation: Binary).

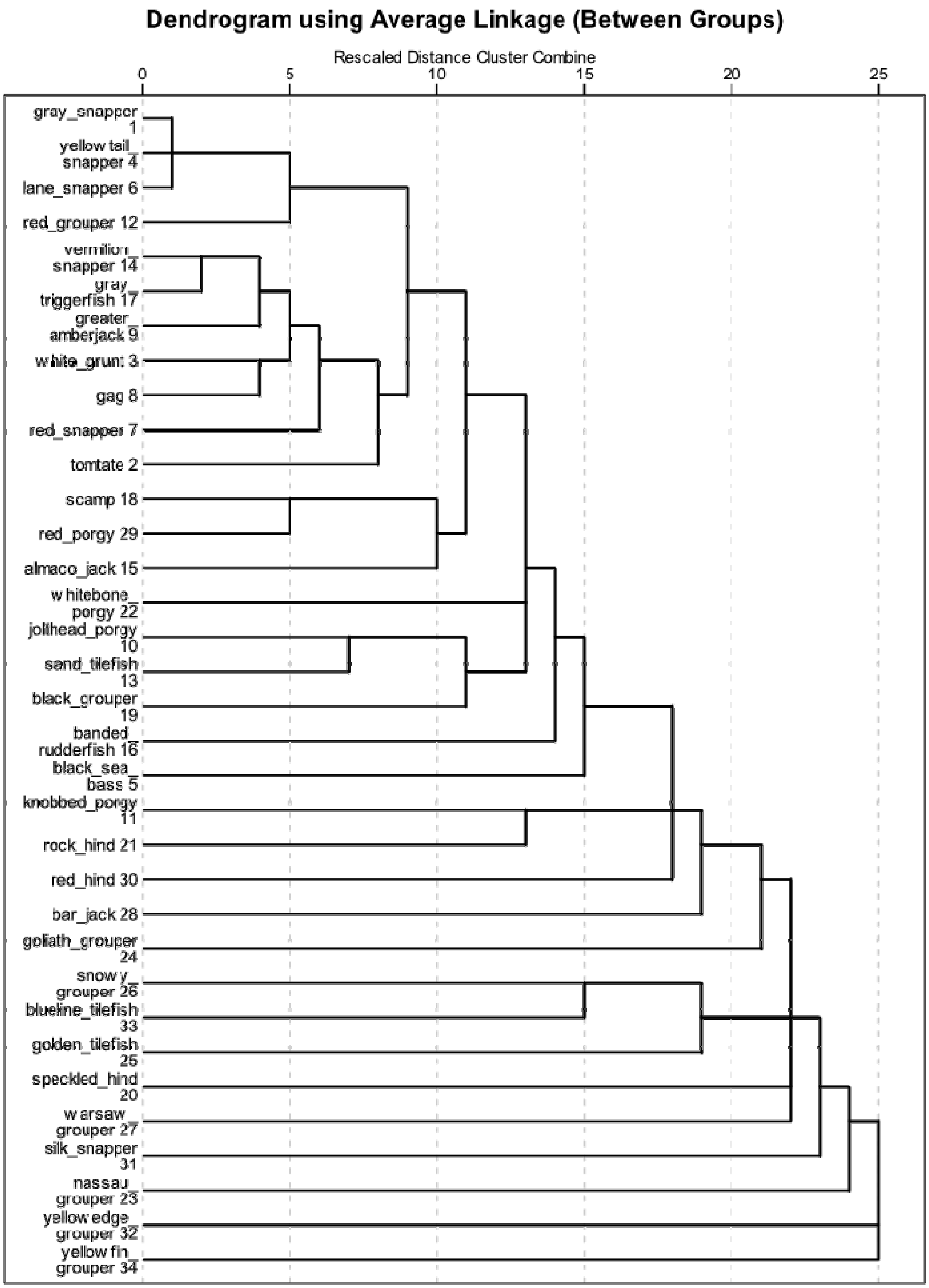


Figure 11. Hierarchical cluster analysis of species presence-absence in MRFSS-reported landings aggregated by state, year, wave, mode of fishing, and area fished (Linkage Method: Between Groups Average, Dissimilarity Measure: Sørenson, Transformation: Binary). Numbers denote case numbers.

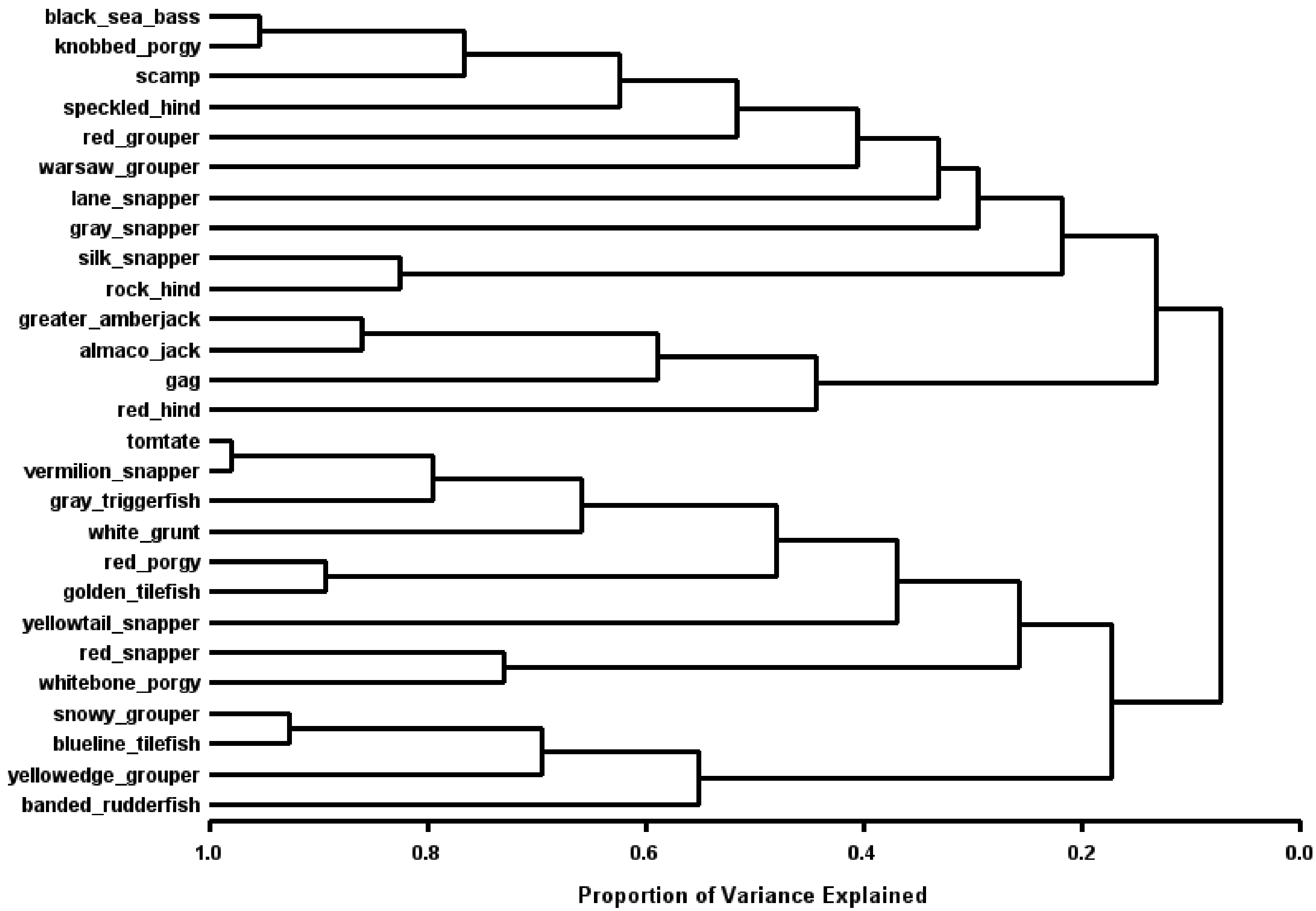
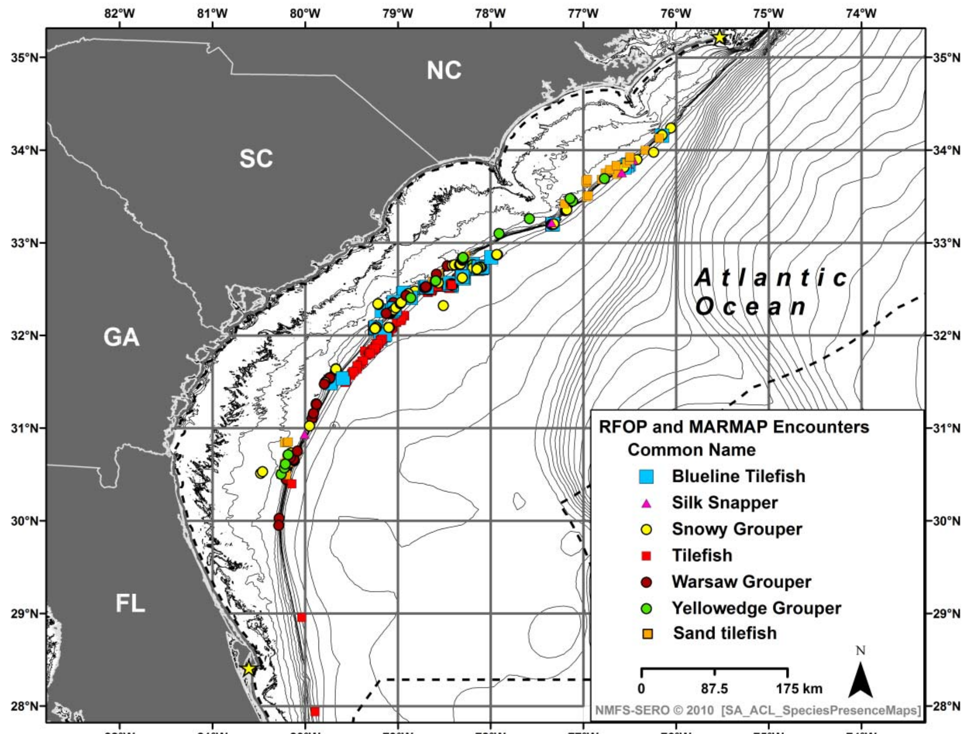
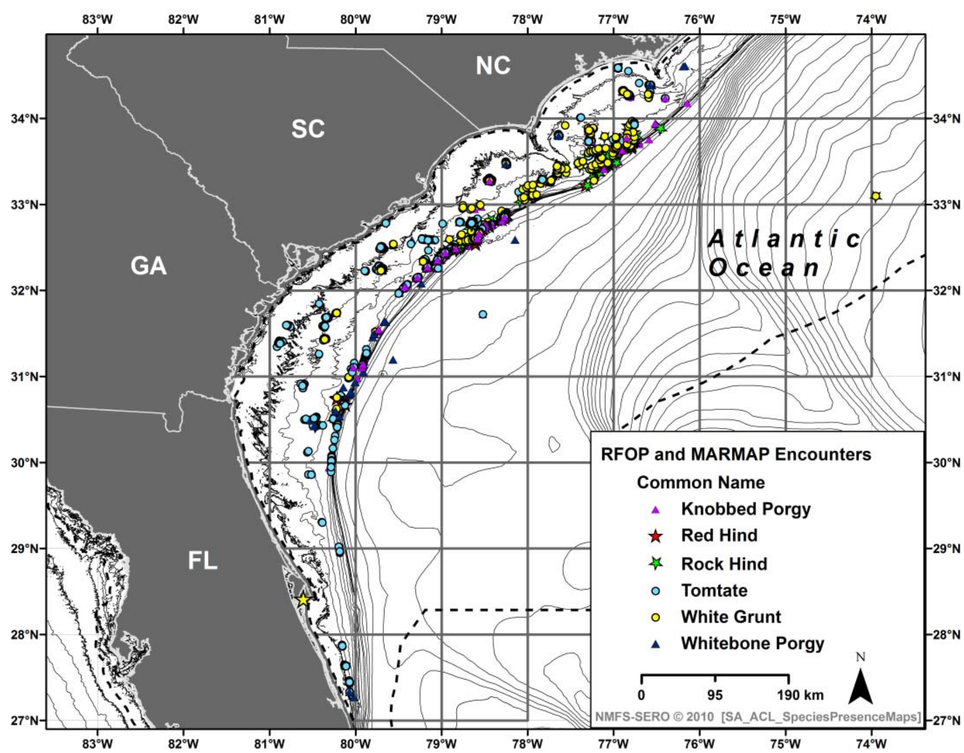


Figure 12. Hierarchical cluster analysis of species presence-absence in MARMAP scientific sample catch aggregated by gear and set (Linkage Method: VARCLUS, Height Measure: Proportion of variance explained, Transformation: Binary).

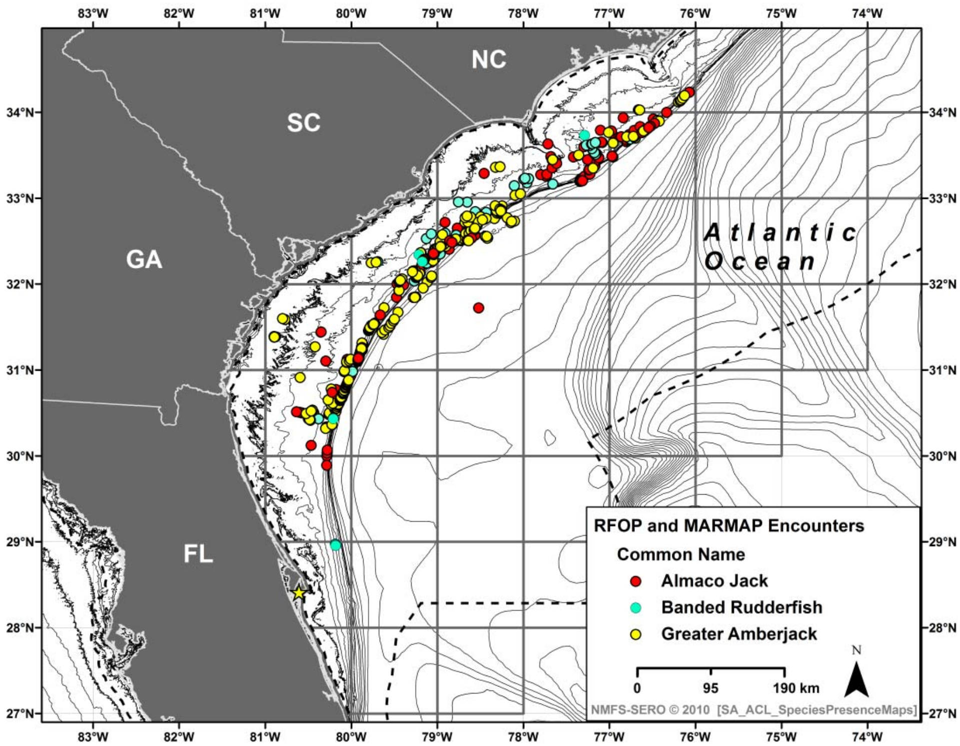


A)

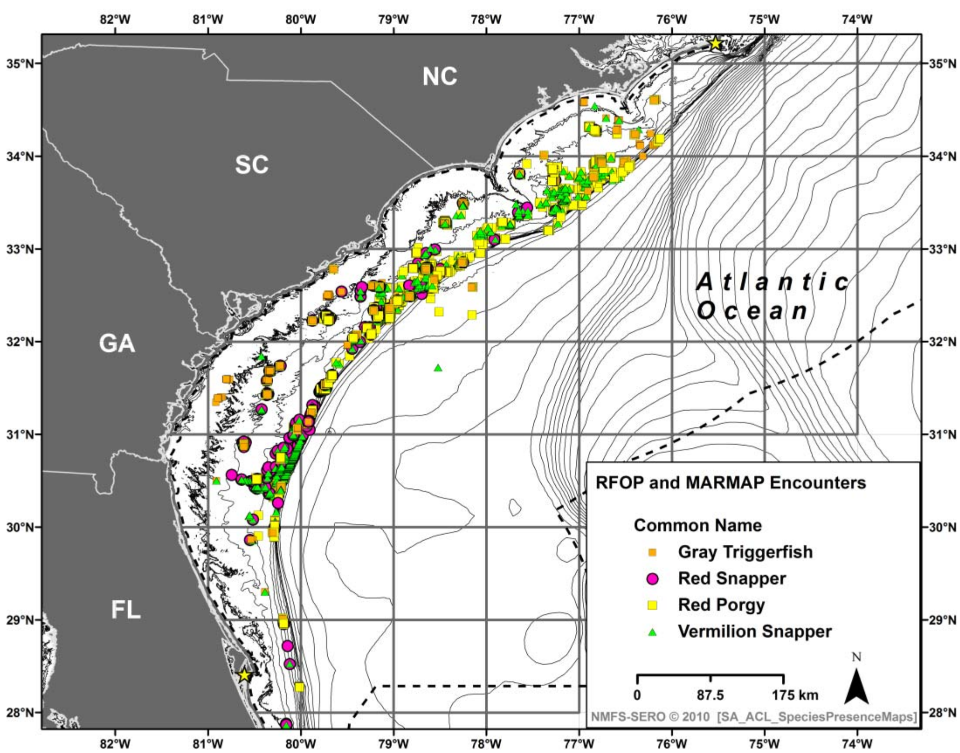


B)

Figure 13. Map of A) deep-water grouper and tilefish and B) porgy, hind, and grunt observations from aggregated MARMAP and Reef Fish Observer Program datasets relative to bathymetry and commercial fishery statistical reporting areas in U.S. southern Atlantic Ocean (Port Canaveral, FL denoted by star).

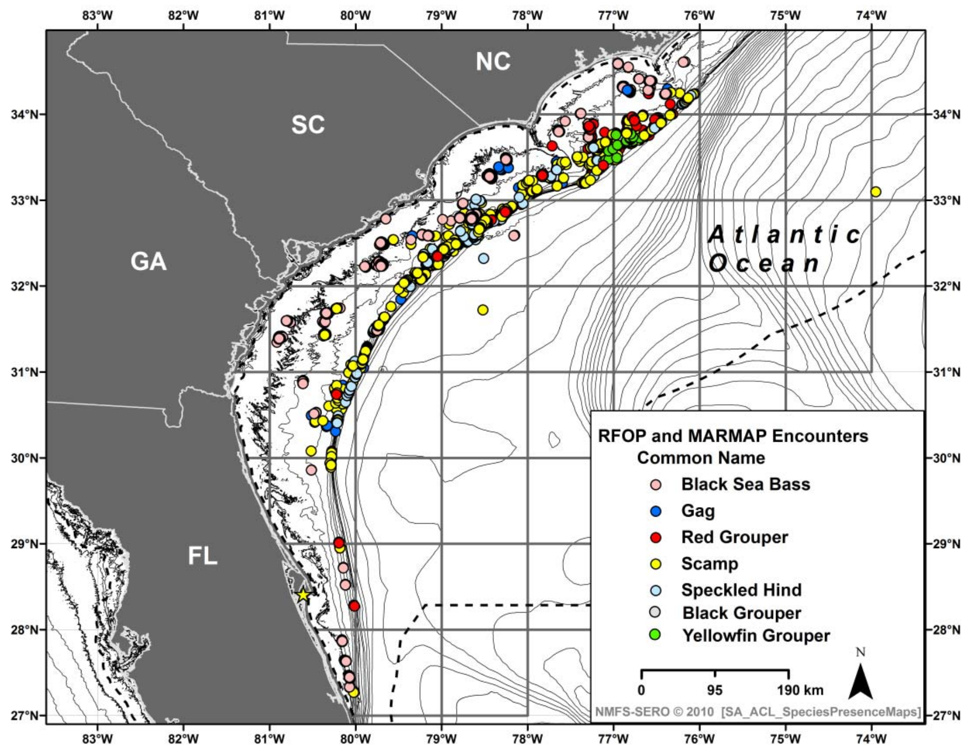


A)

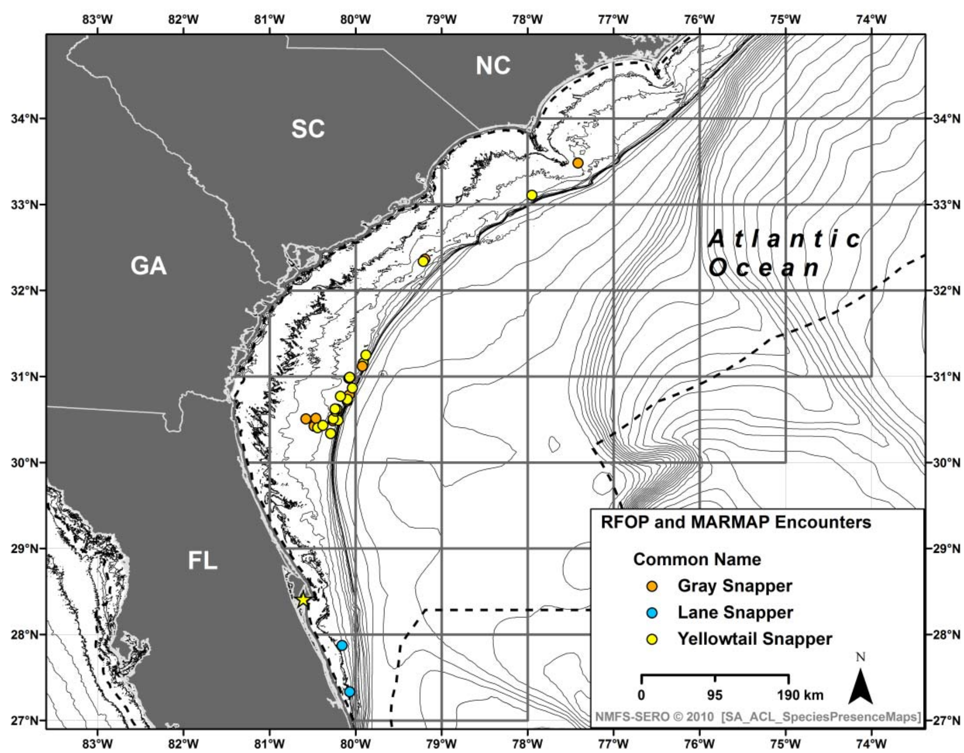


B)

Figure 14. Map of A) jacks and B) mid-depth species observations from aggregated MARMAP and Reef Fish Observer Program datasets relative to bathymetry and commercial fishery statistical reporting areas in U.S. southern Atlantic Ocean (Port Canaveral, FL denoted by star).



A)



B)

Figure 15. Map of A) shallow-water grouper and B) shallow-water snapper observations from aggregated MARMAP and Reef Fish Observer Program datasets relative to bathymetry and commercial fishery statistical reporting areas in U.S. southern Atlantic Ocean (Port Canaveral, FL denoted by star).

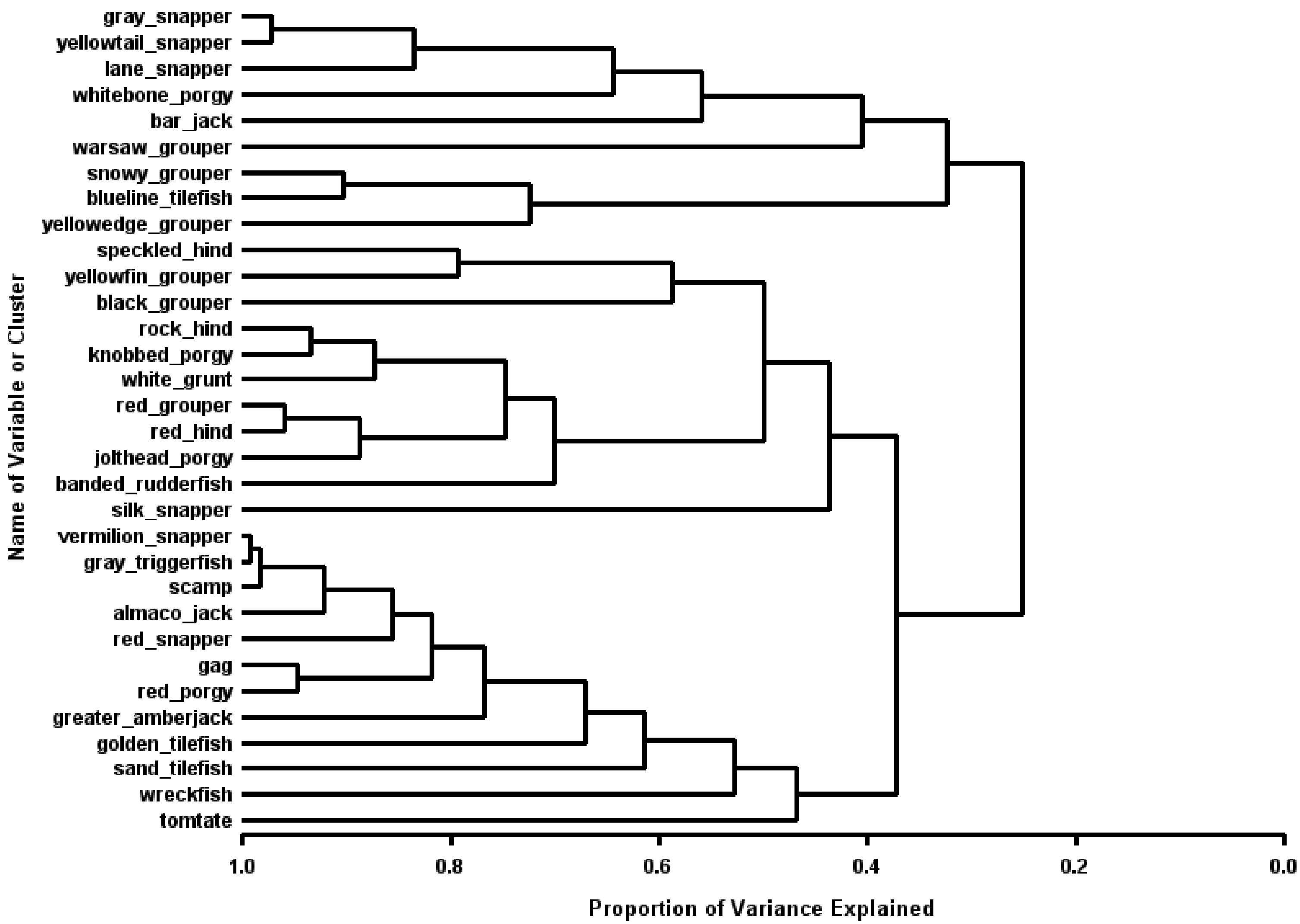


Figure A1. Commercial vertical line dimension reduction dendrogram (Transformation: Root-Root).

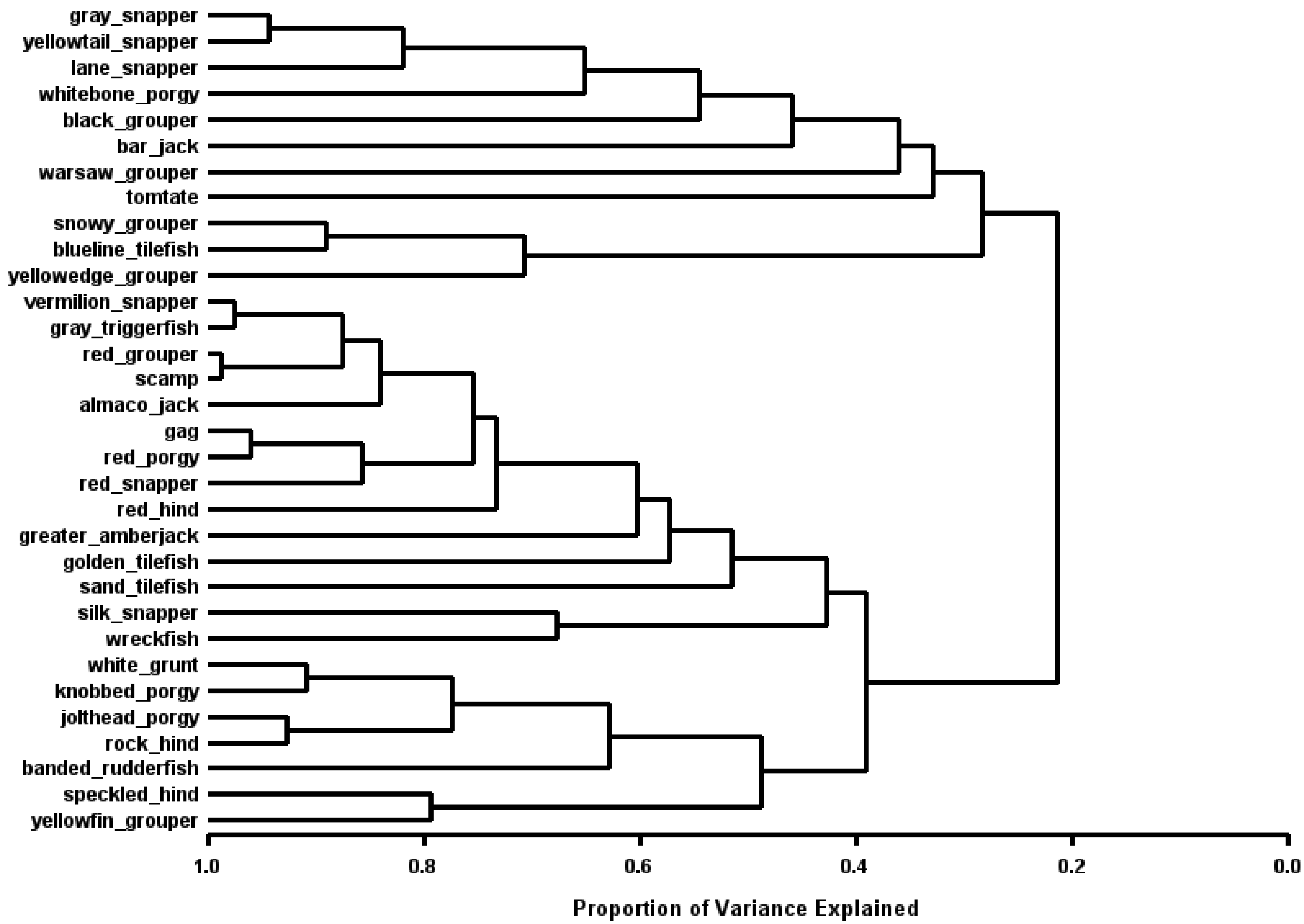


Figure A2. Commercial vertical line dimension reduction dendrogram (Transformation: Binary).

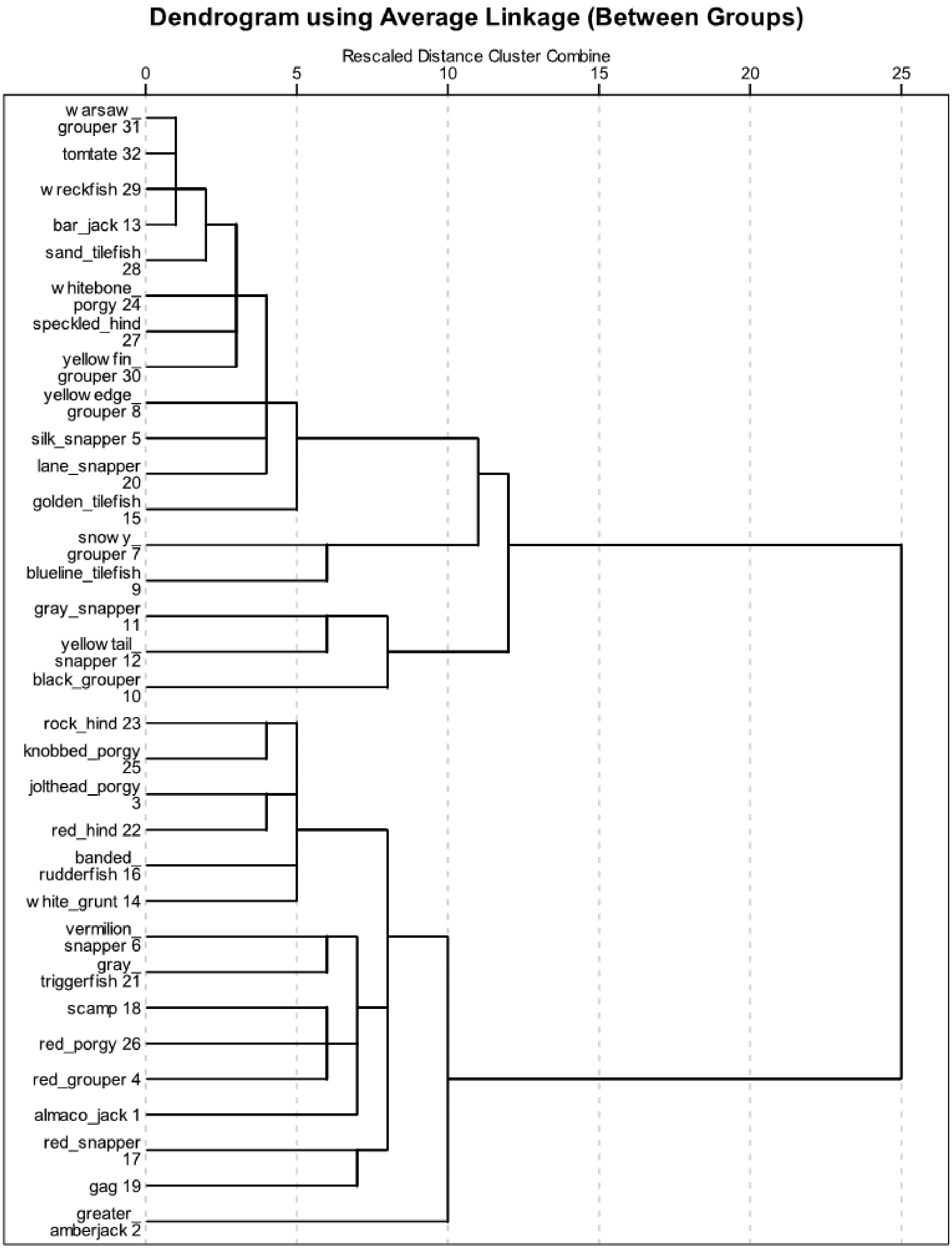


Figure A3. Commercial vertical line hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

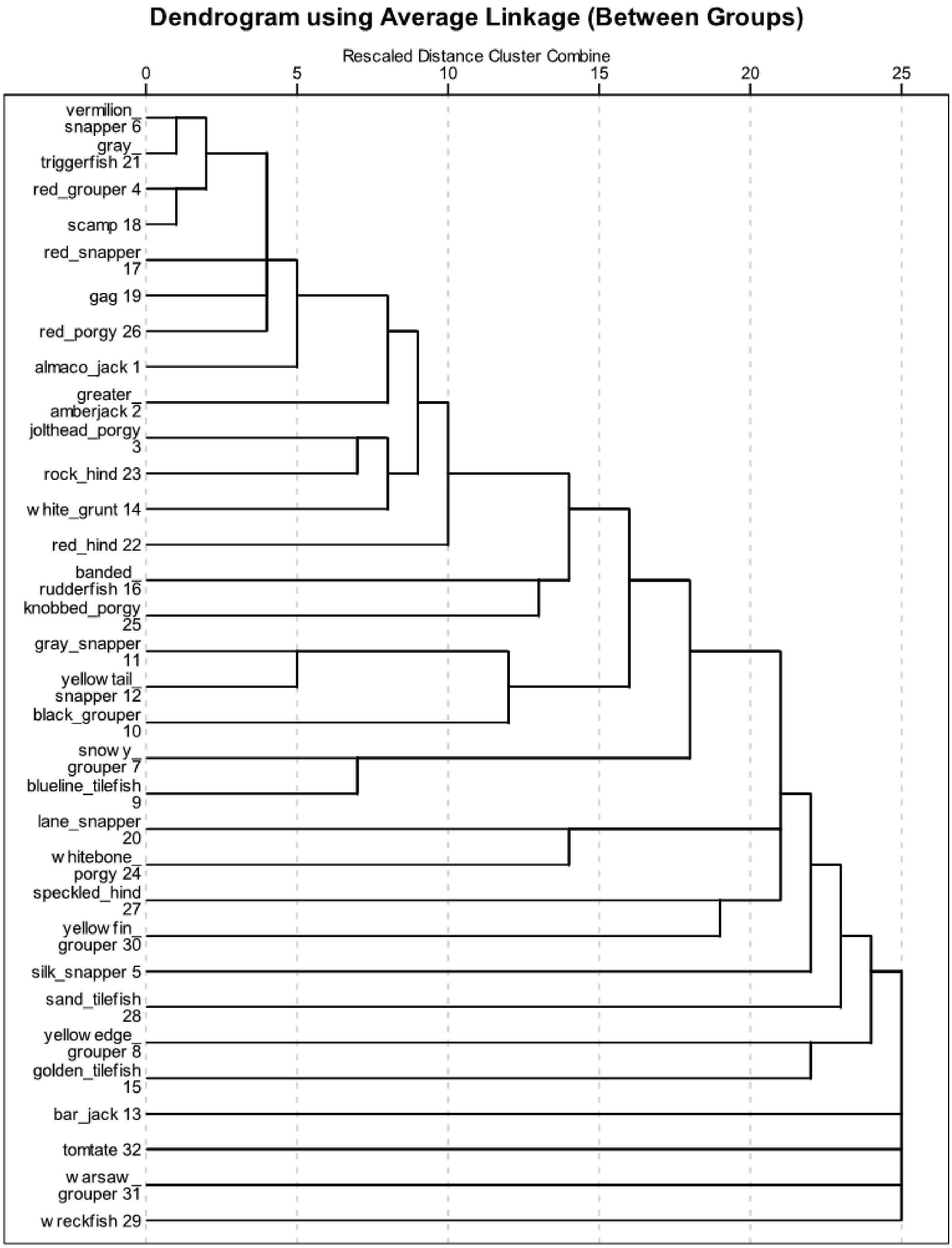


Figure A4. Commercial vertical line hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

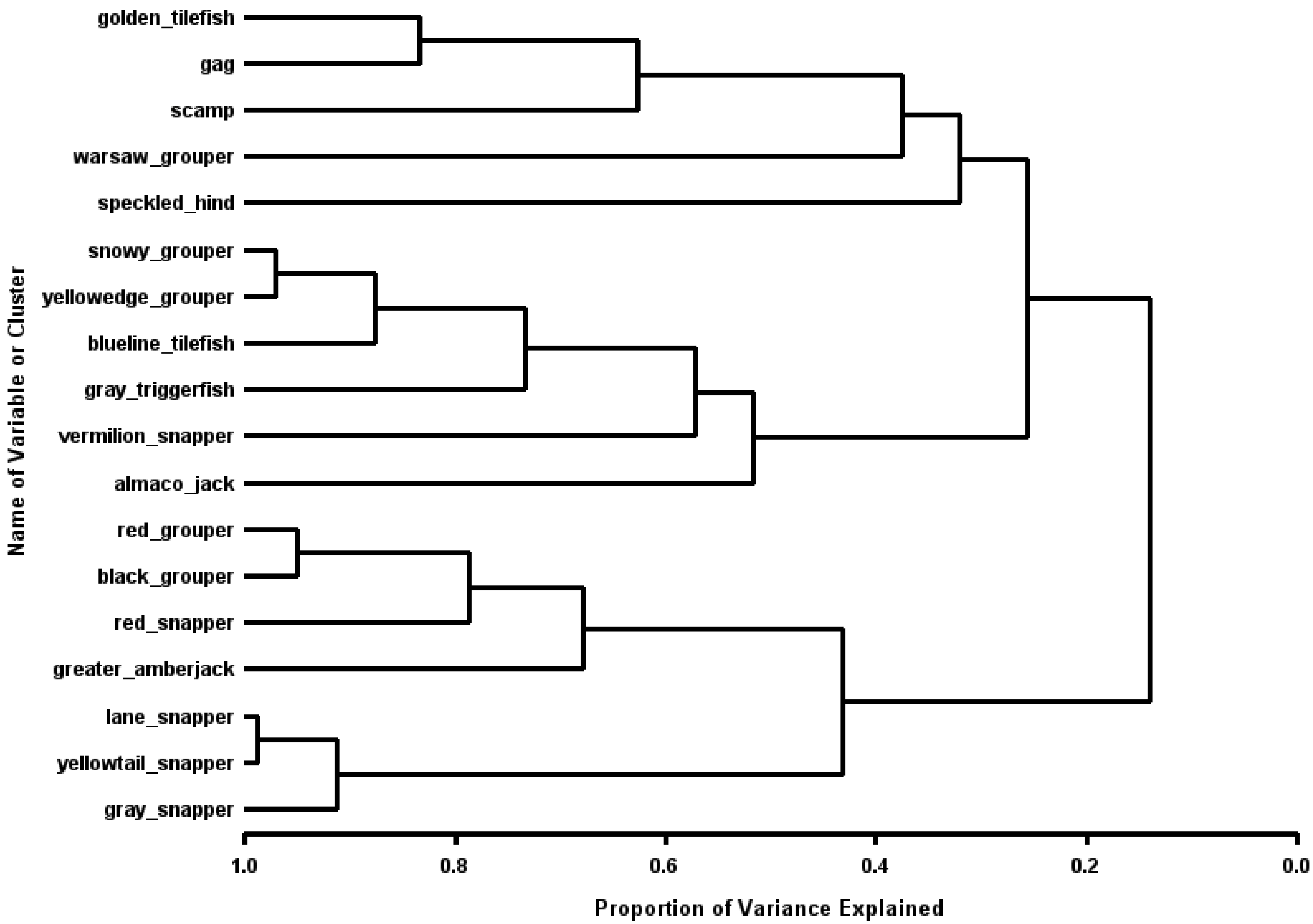


Figure A5. Commercial longline dimension reduction dendrogram (Transformation: Root-Root).

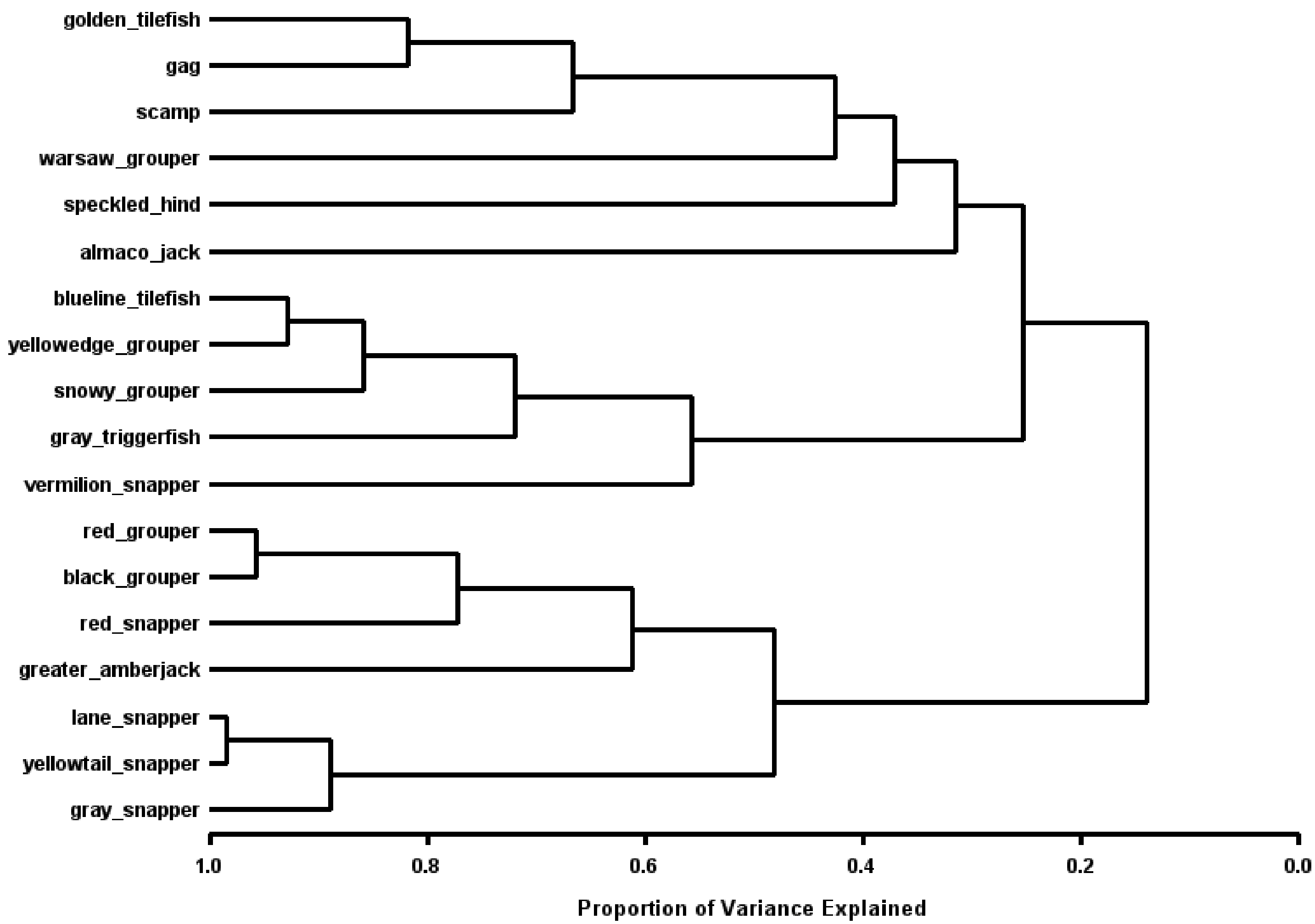


Figure A6. Commercial longline dimension reduction dendrogram (Transformation: Binary).

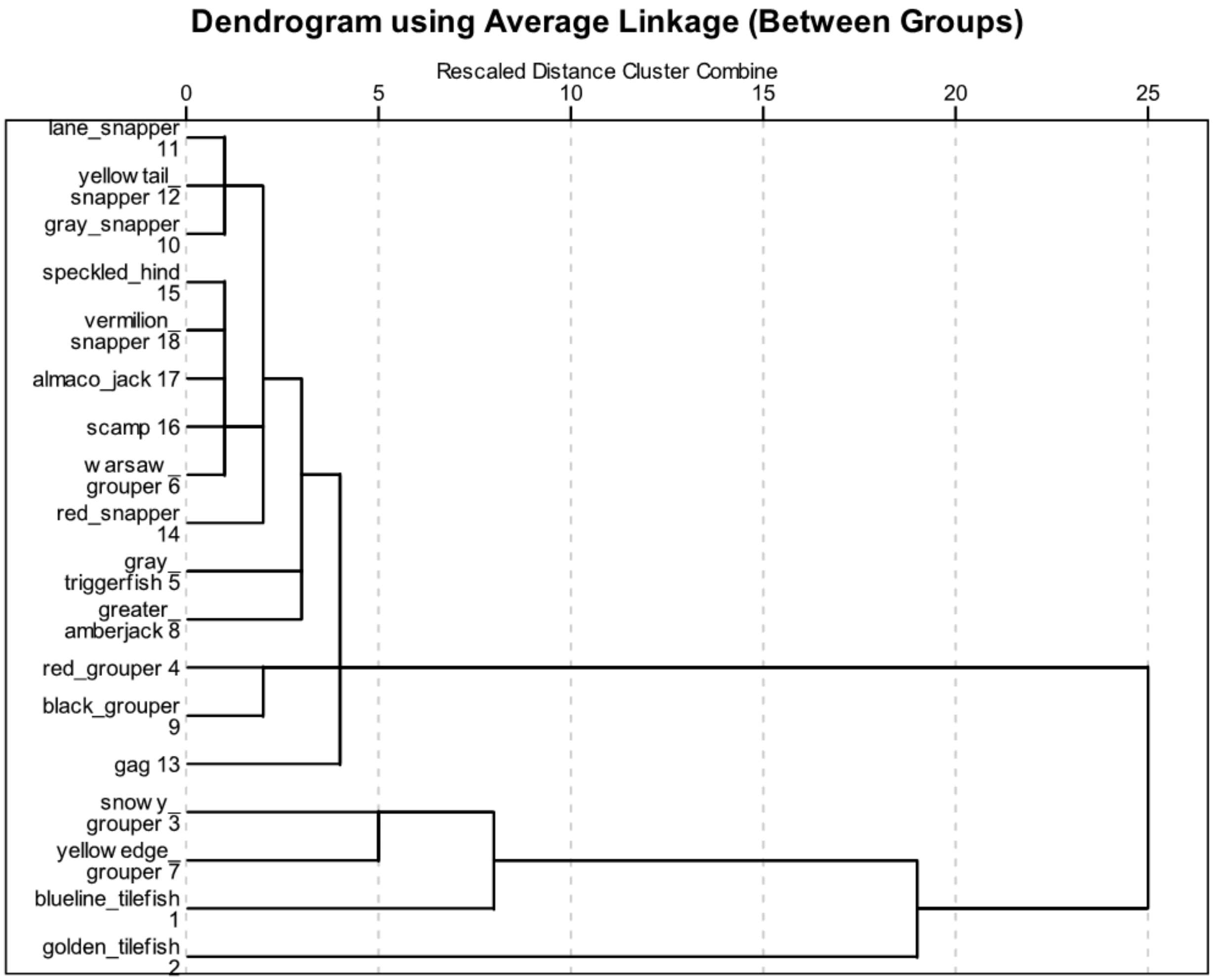


Figure A7. Commercial longline hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

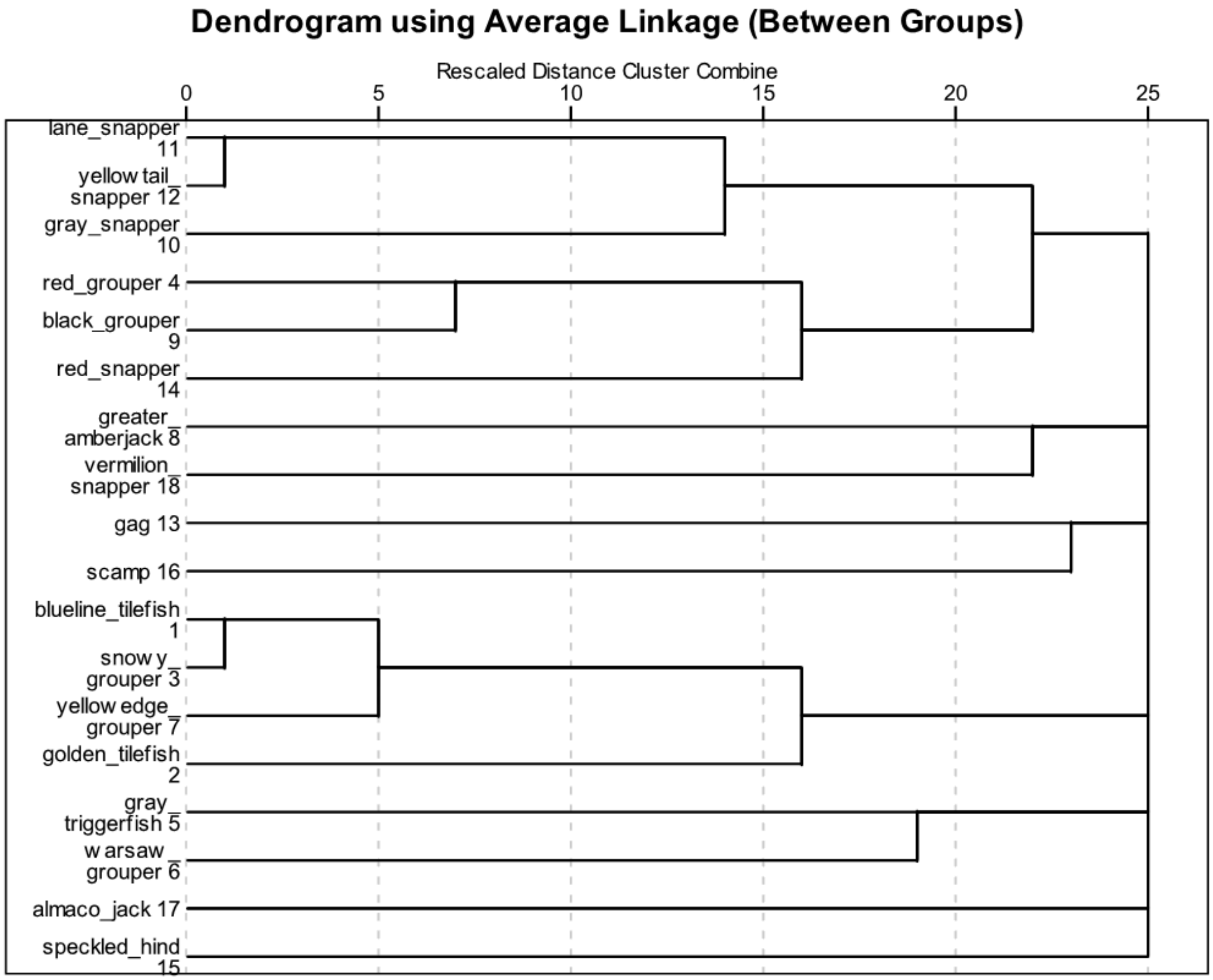


Figure A8. Commercial longline hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

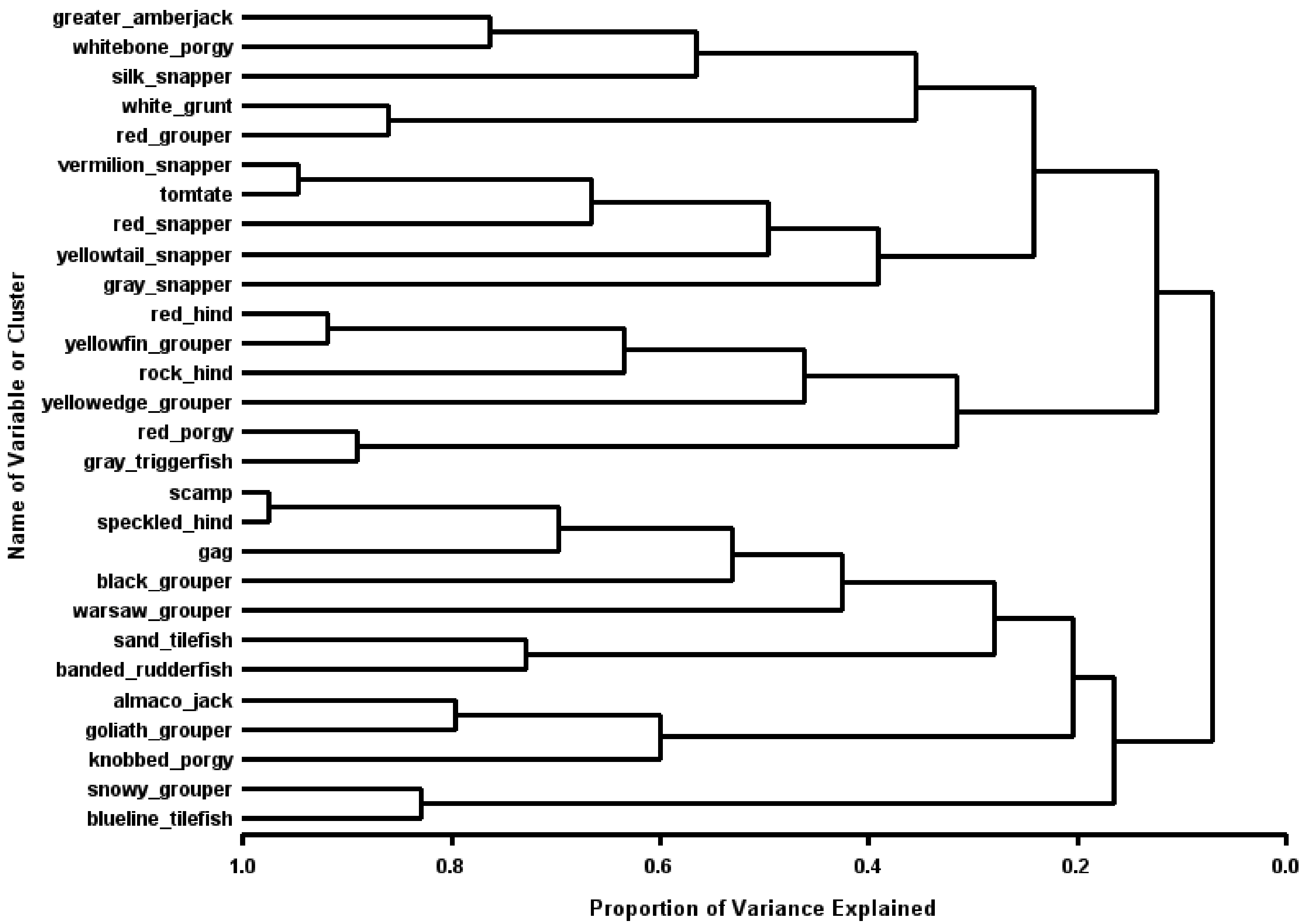


Figure A9. Commercial RFOP dimension reduction dendrogram (Transformation: Root-Root).

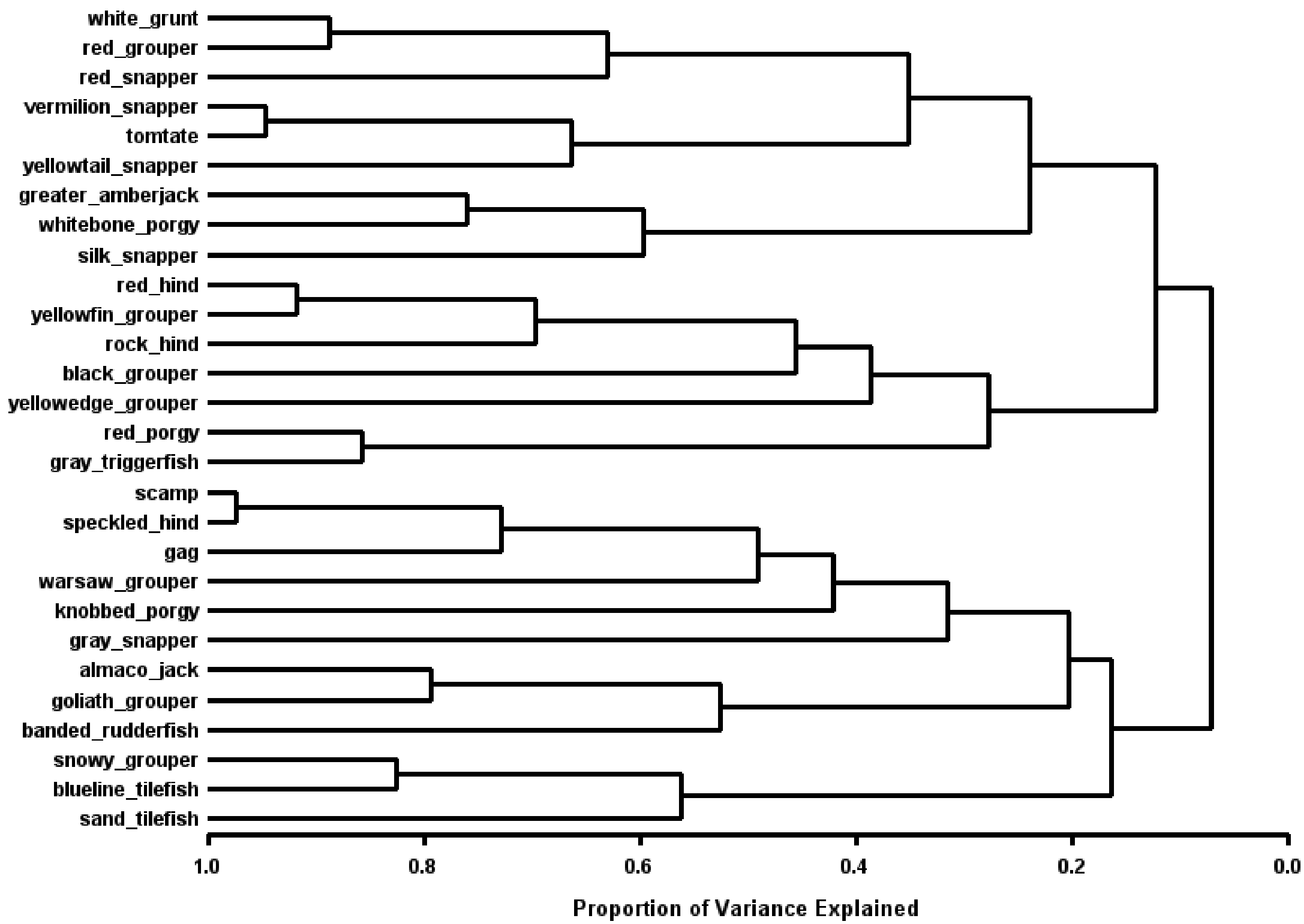


Figure A10. Commercial RFOP dimension reduction dendrogram (Transformation: Binary).

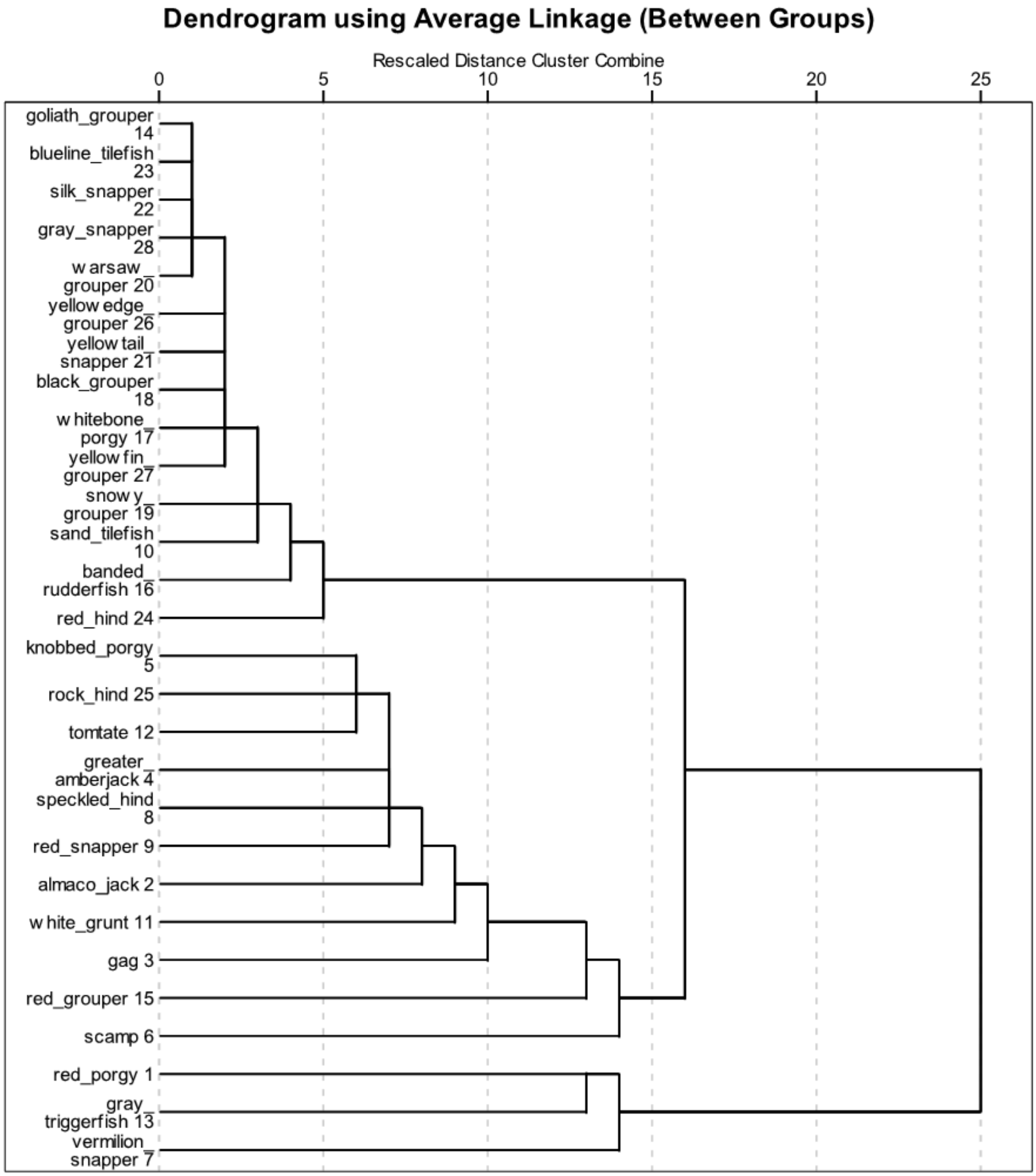


Figure A11. Commercial RFOP hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

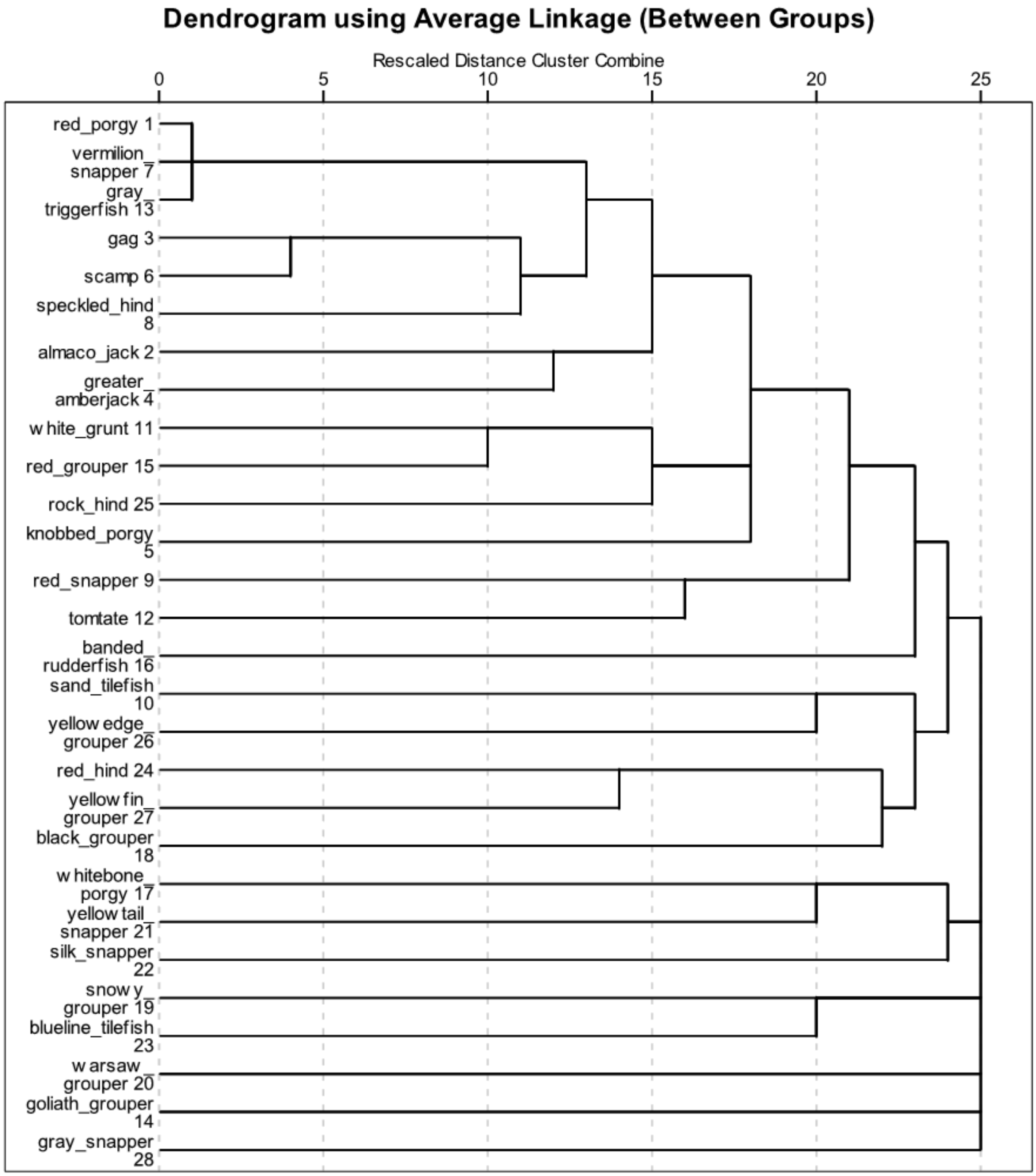


Figure A12. Commercial reef fish observer hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

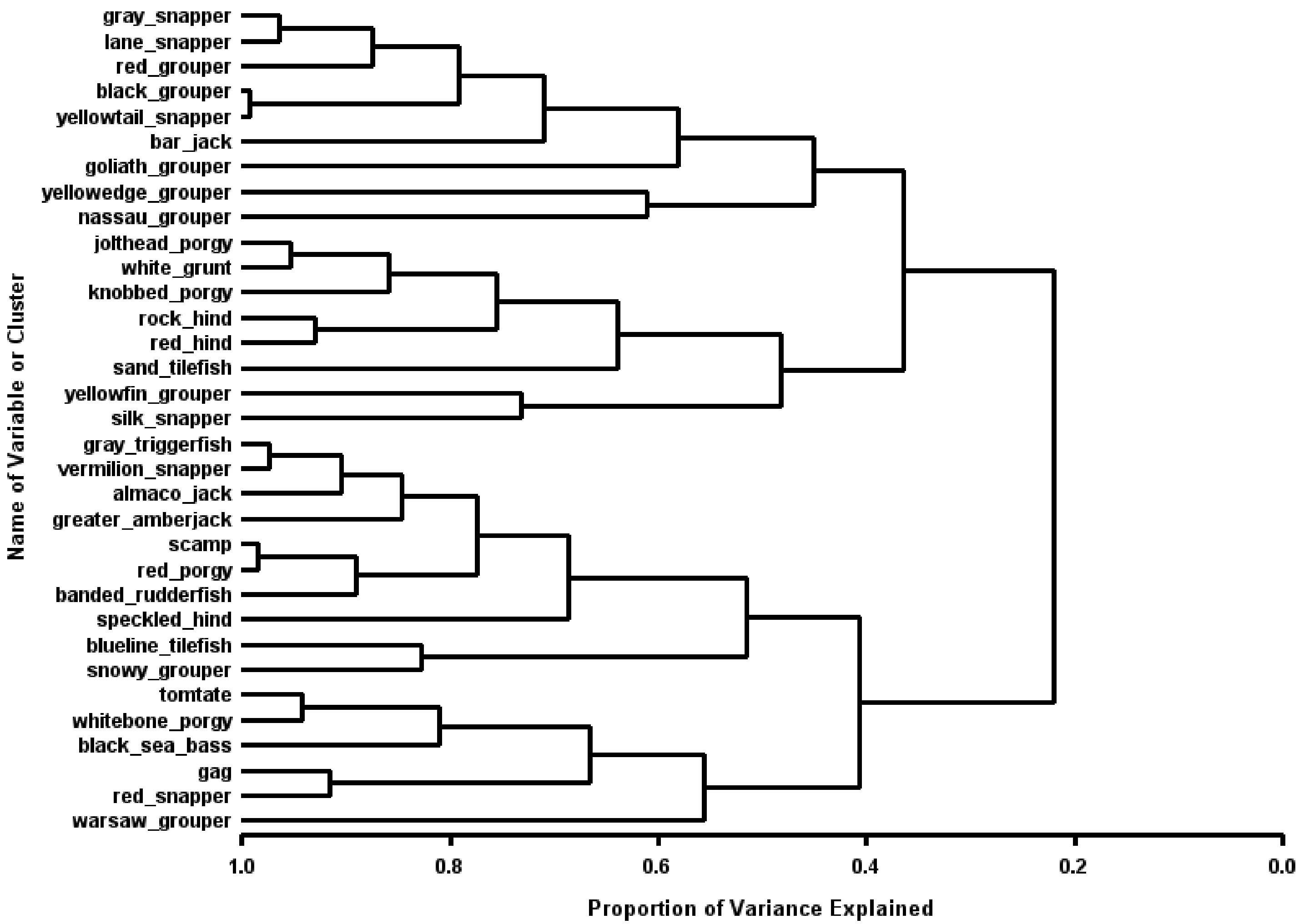


Figure A13. Headboat dimension reduction dendrogram (Transformation: Root-Root).

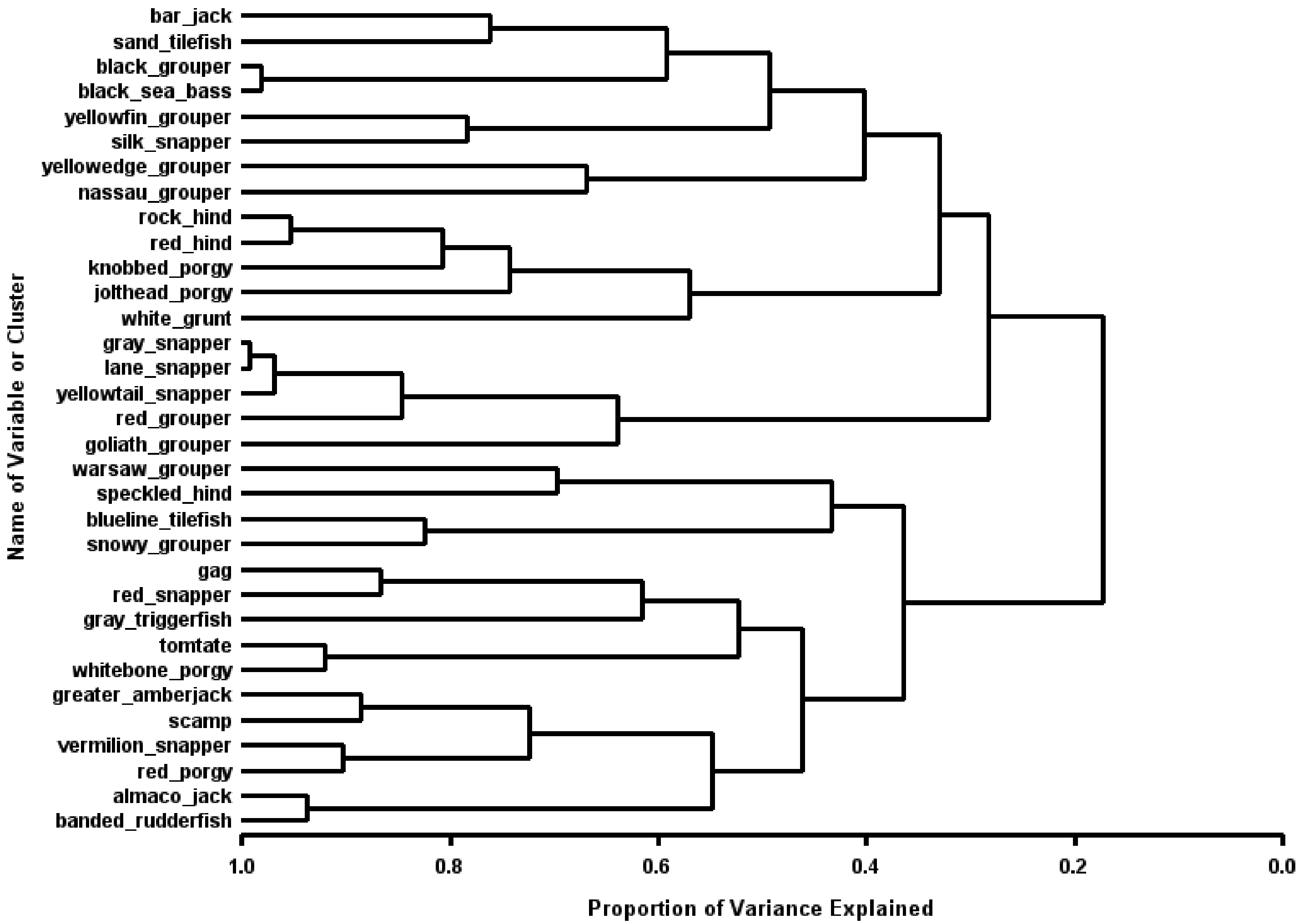


Figure A14. Headboat dimension reduction dendrogram (Transformation: Binary).

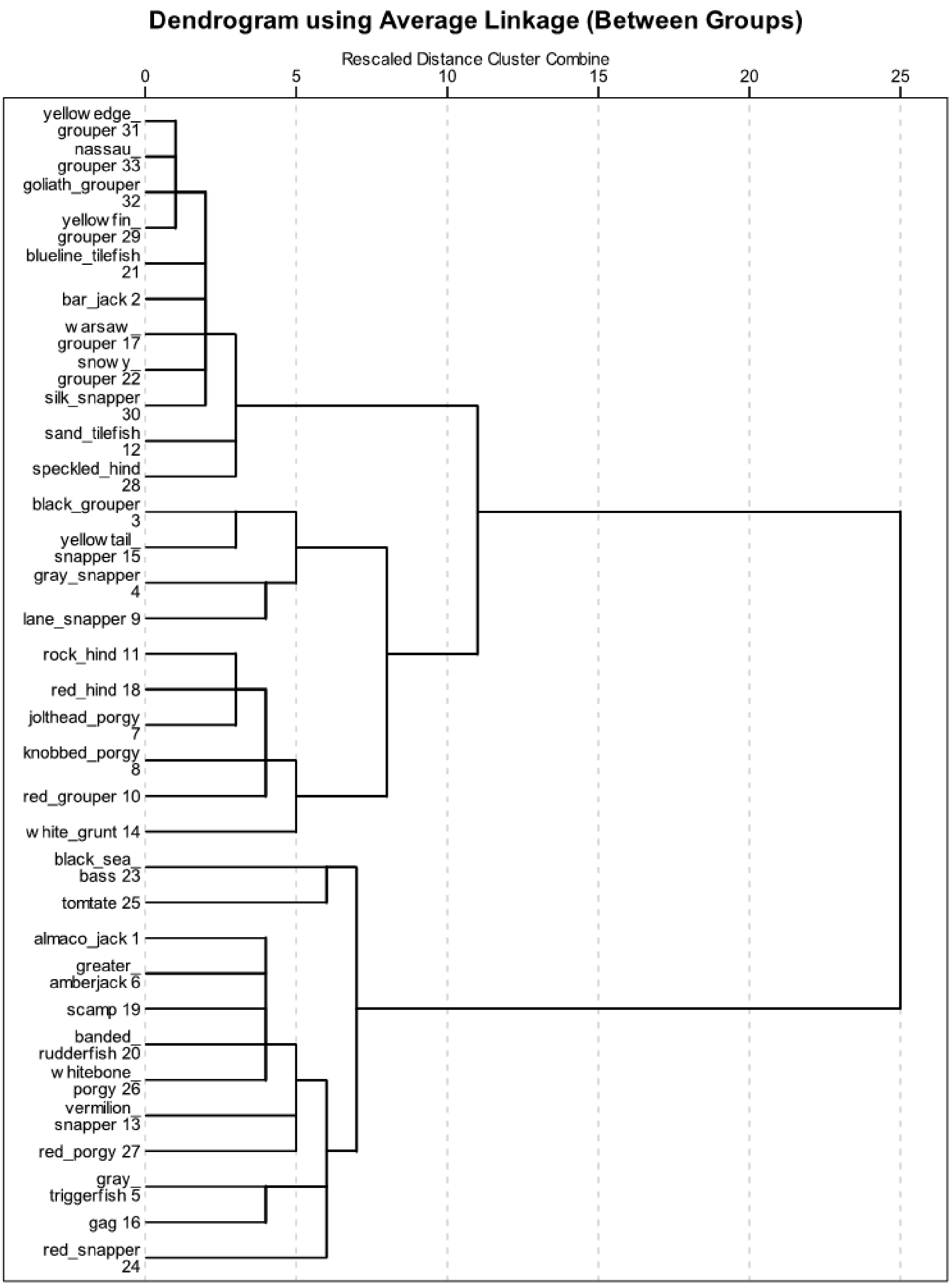


Figure A15. Headboat hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

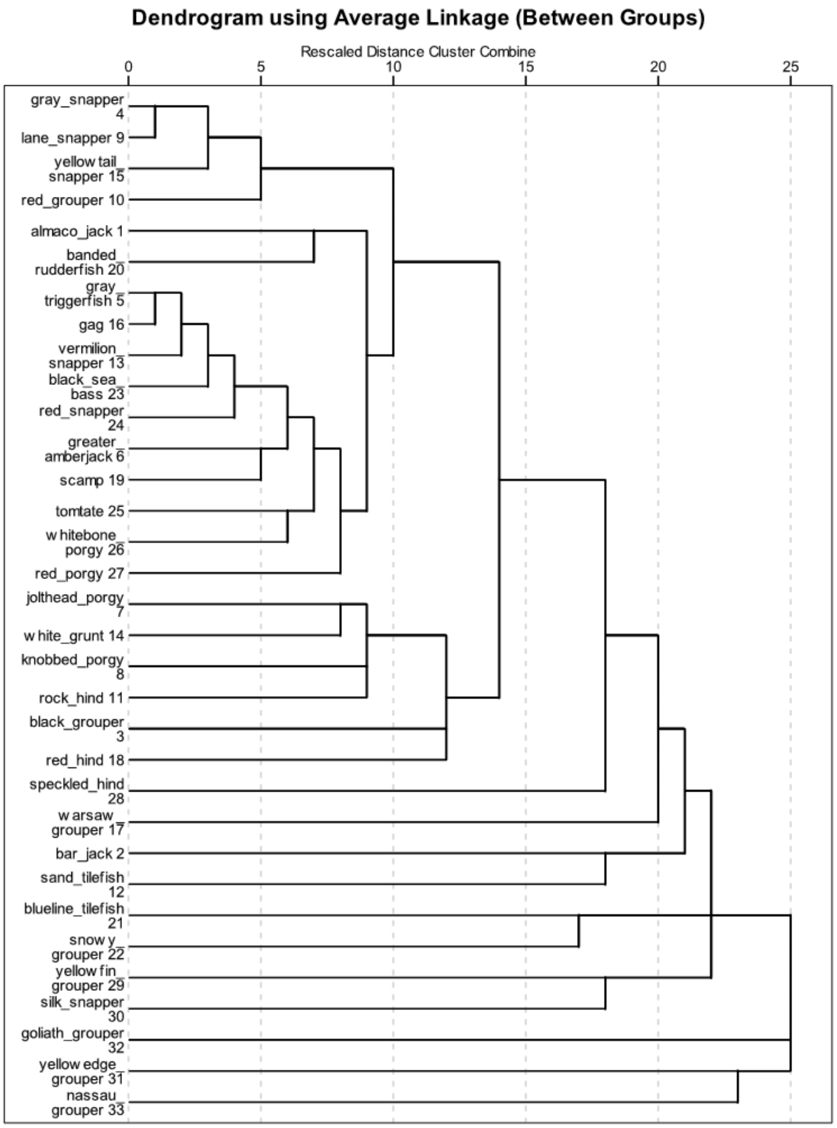


Figure A16. Recreational headboat hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

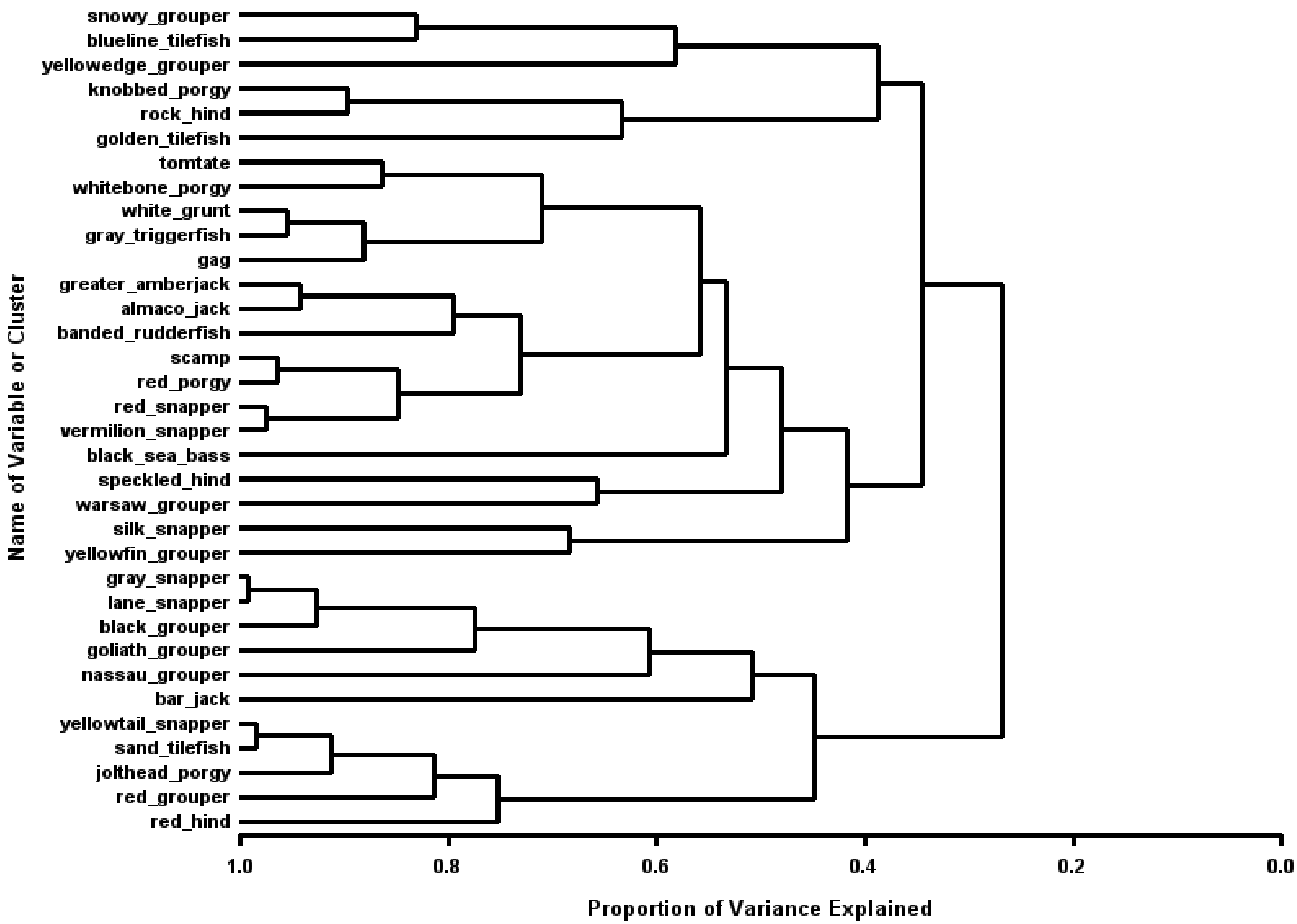


Figure A17. MRFSS dimension reduction dendrogram (Transformation: Root-Root).

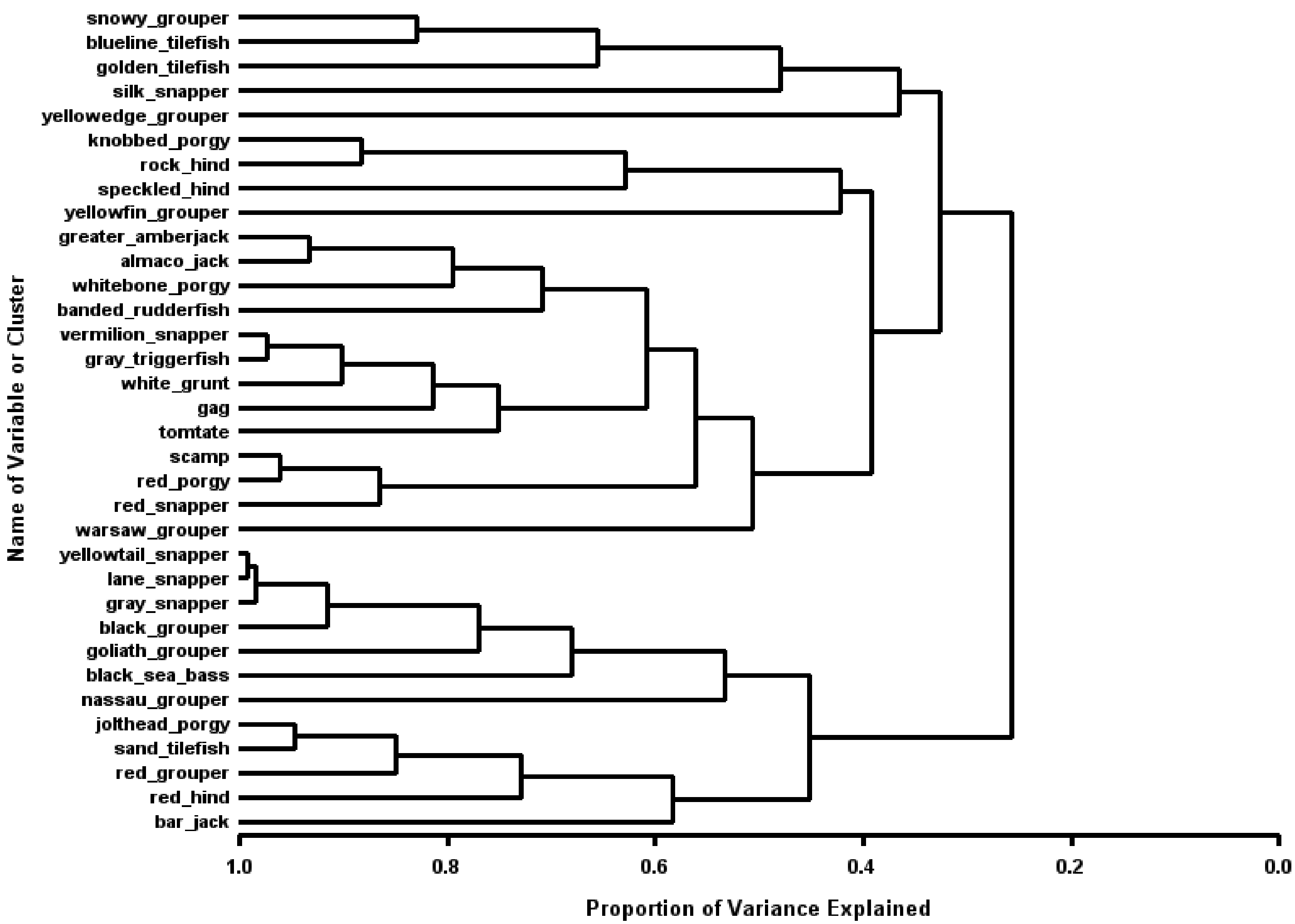


Figure A18. MRFSS dimension reduction dendrogram (Transformation: Binary).

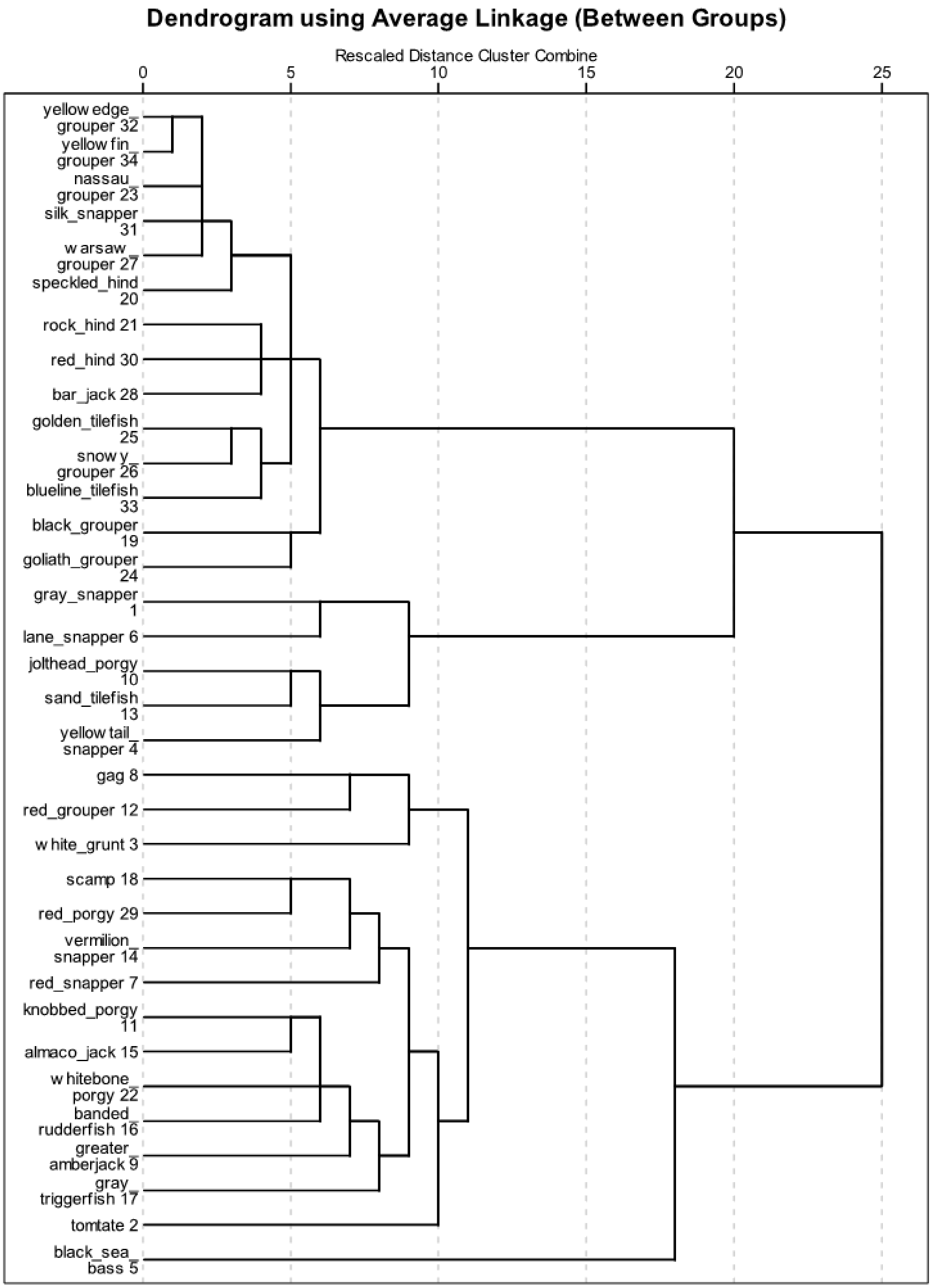


Figure A19. MRFSS hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

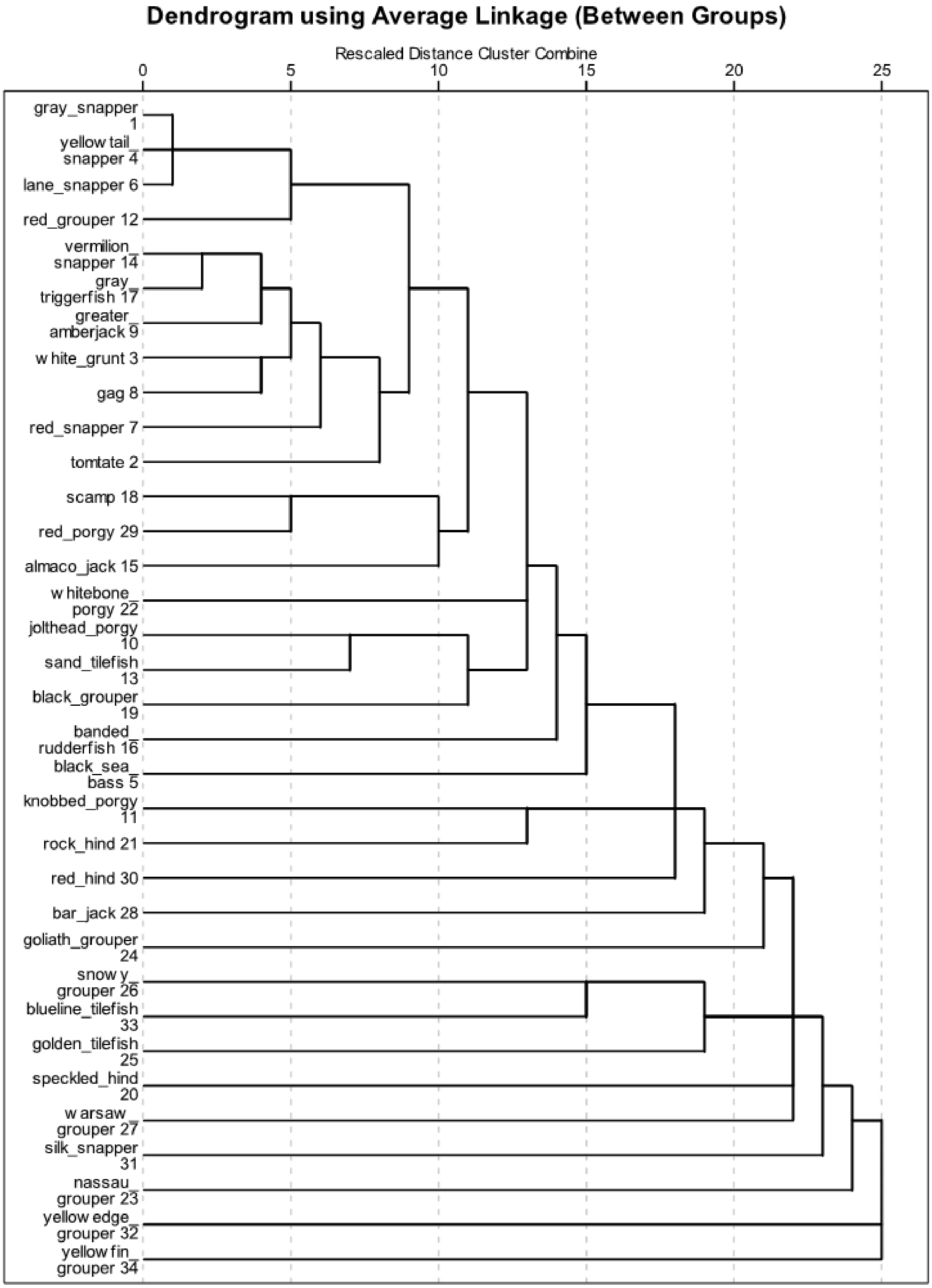


Figure A20. MRFSS hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

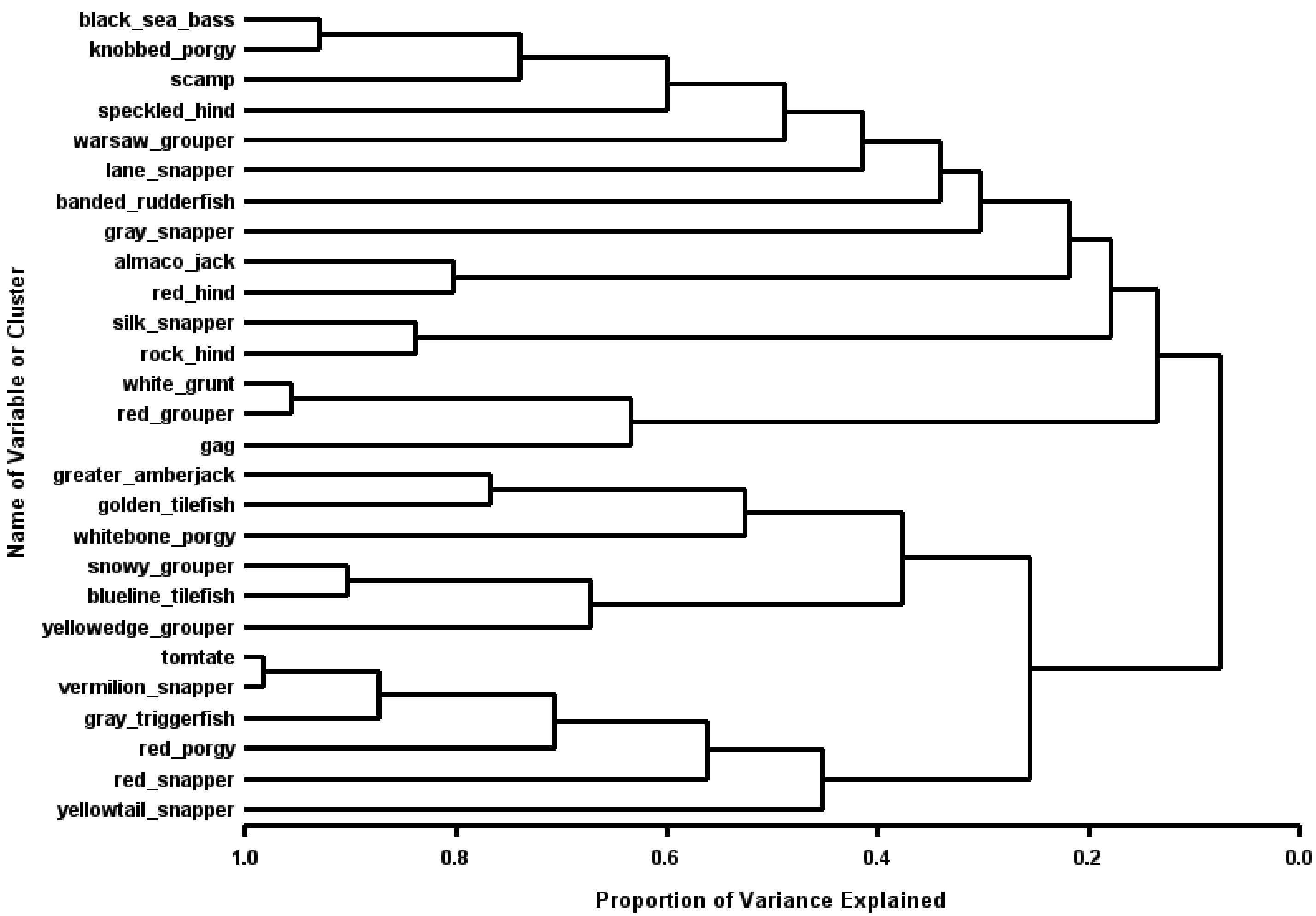


Figure A21. MARMAP dimension reduction dendrogram (Transformation: Root-Root).

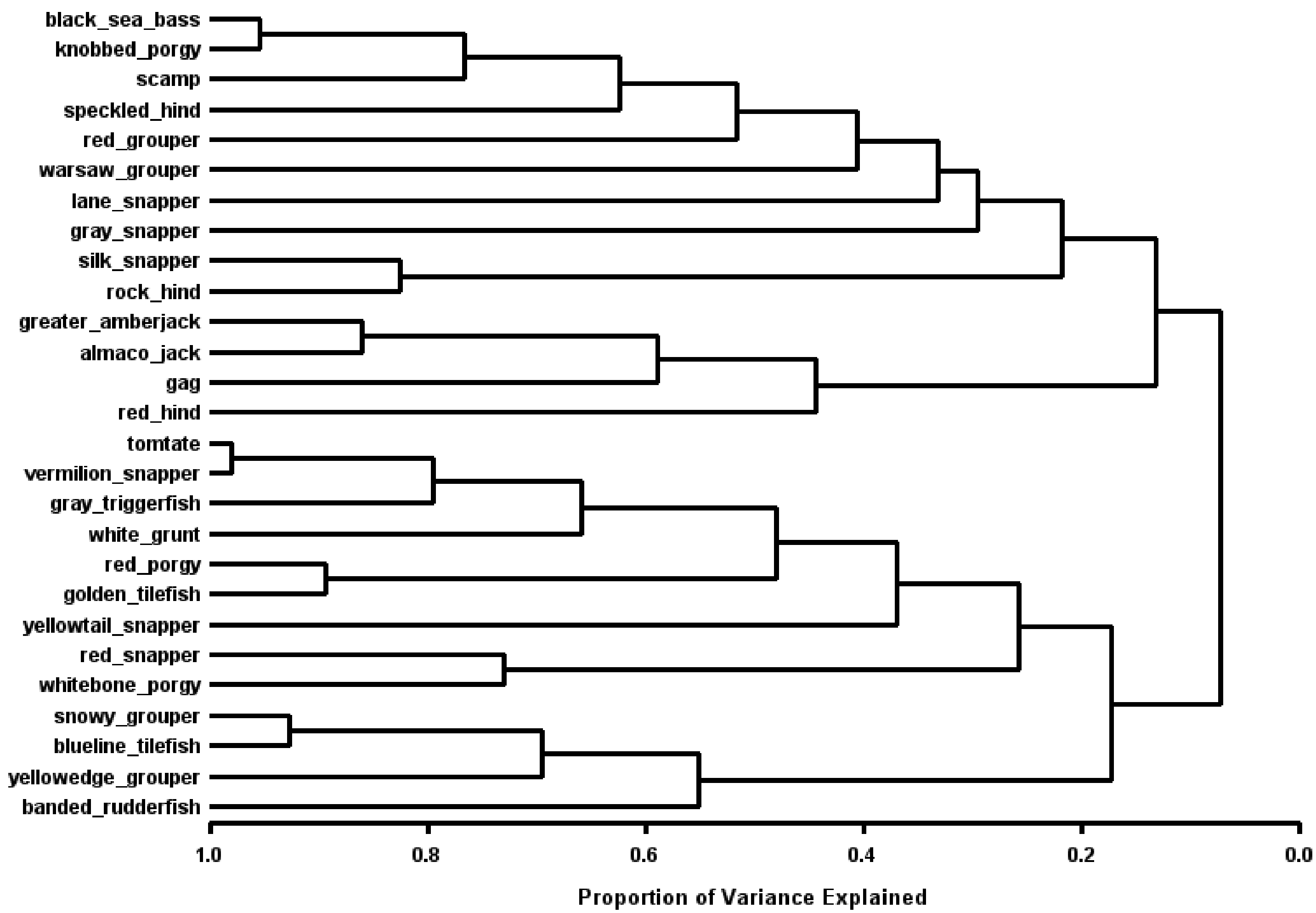


Figure A22. MARMAP dimension reduction dendrogram (Transformation: Binary).

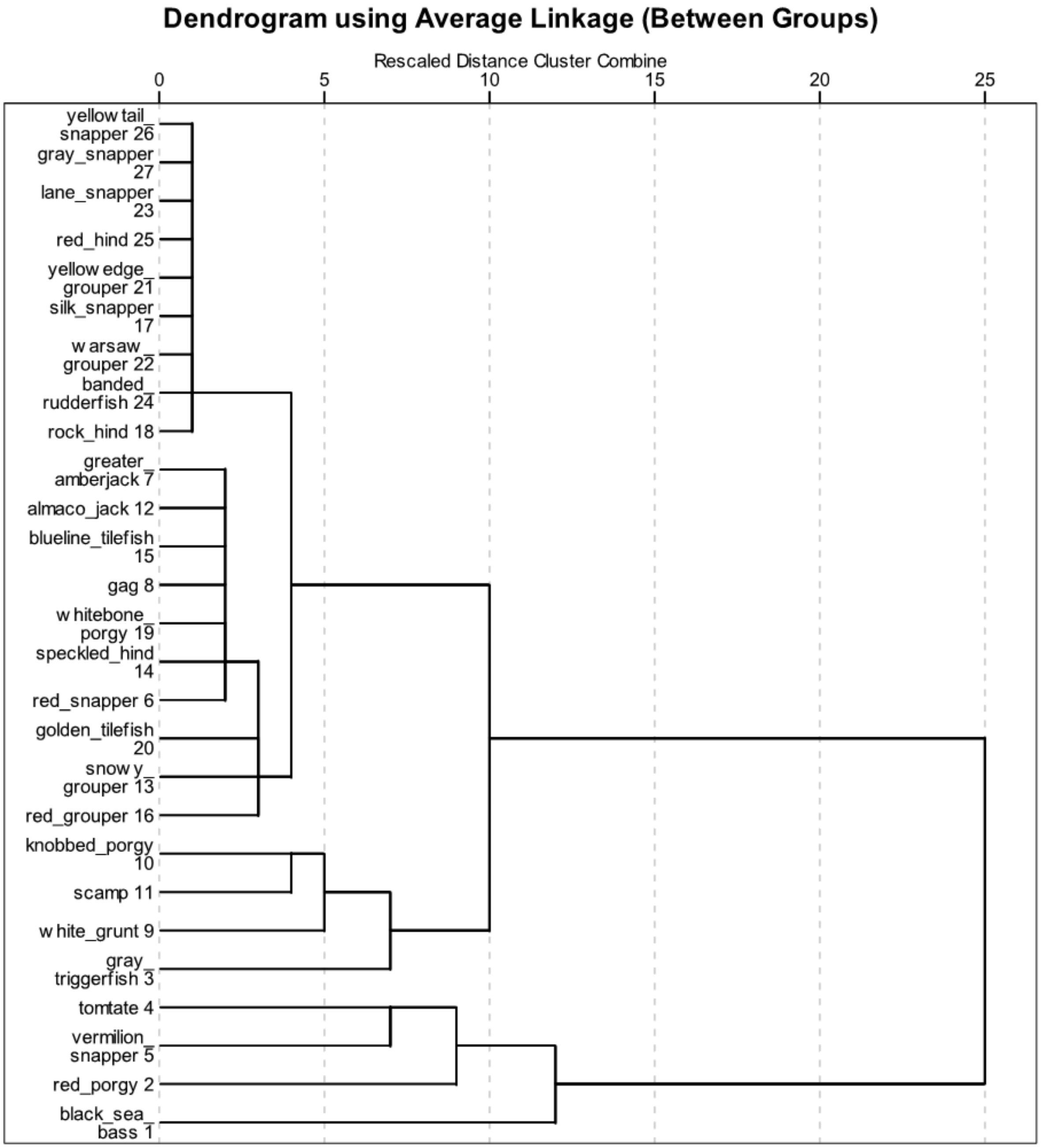


Figure A23. MARMAP hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

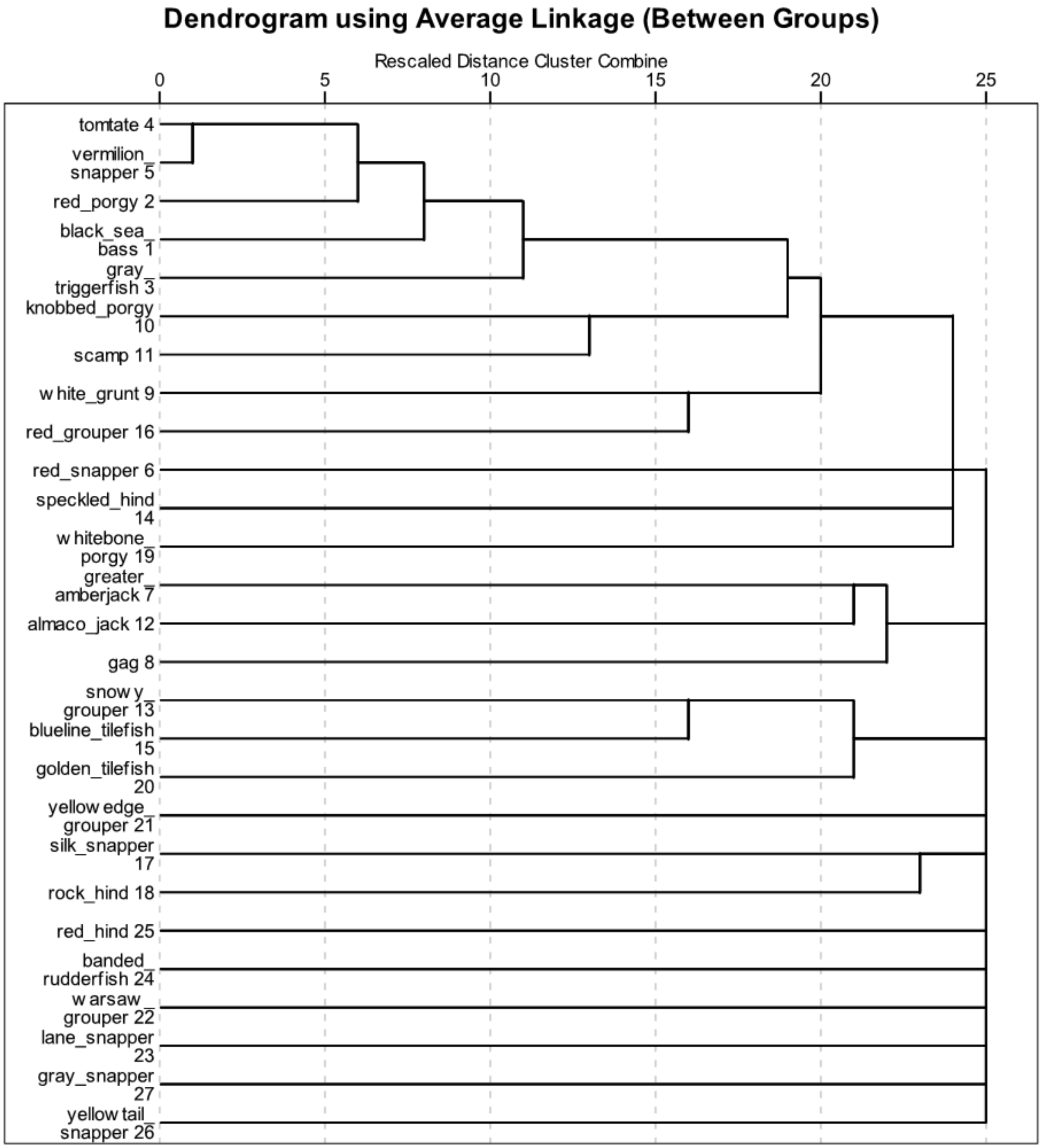


Figure A24. MARMAP hierarchical cluster analysis dendrogram (Linkage: Average, Measure: Sorenson, Transformation: Binary).

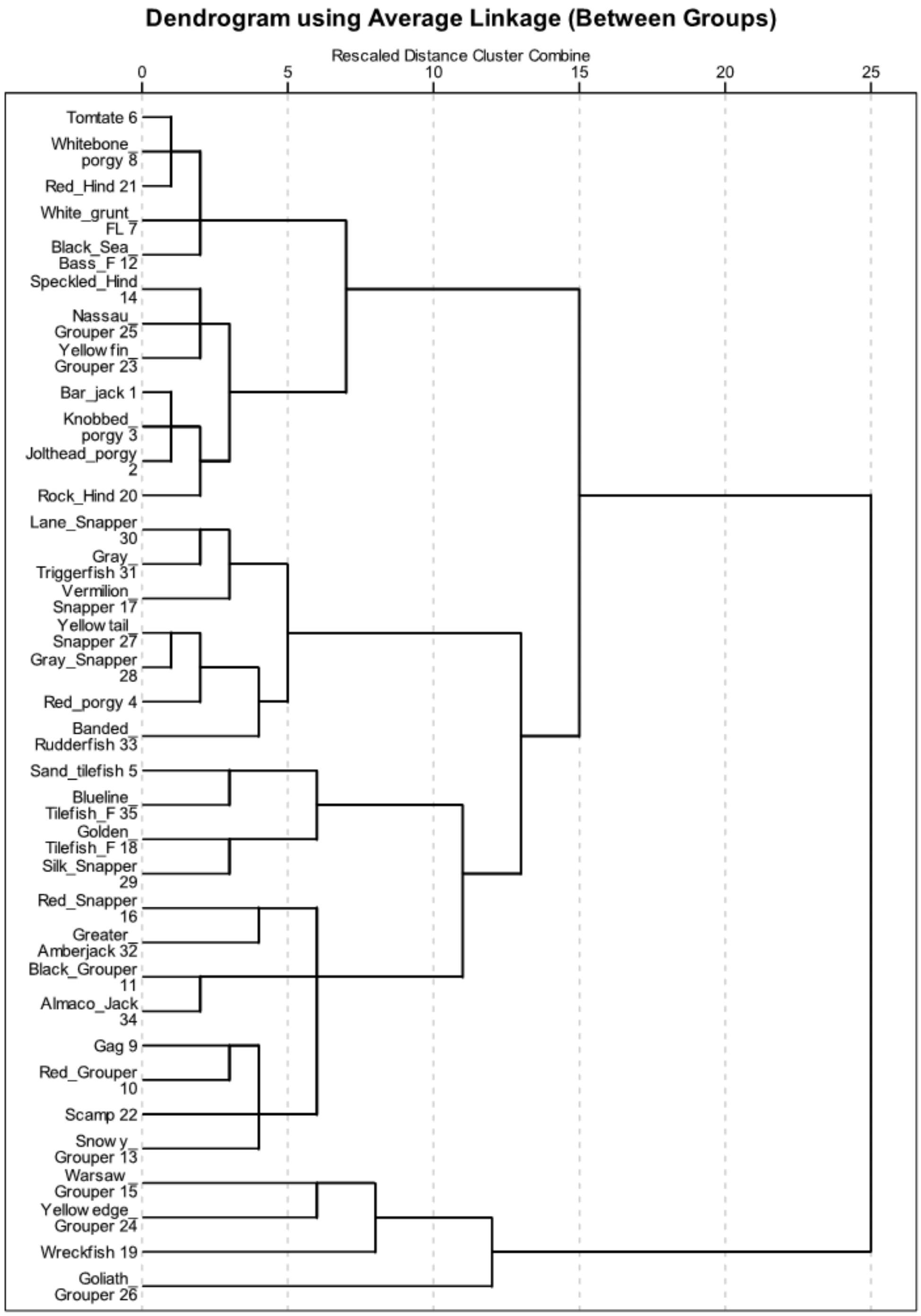


Figure A25. MARMAP hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

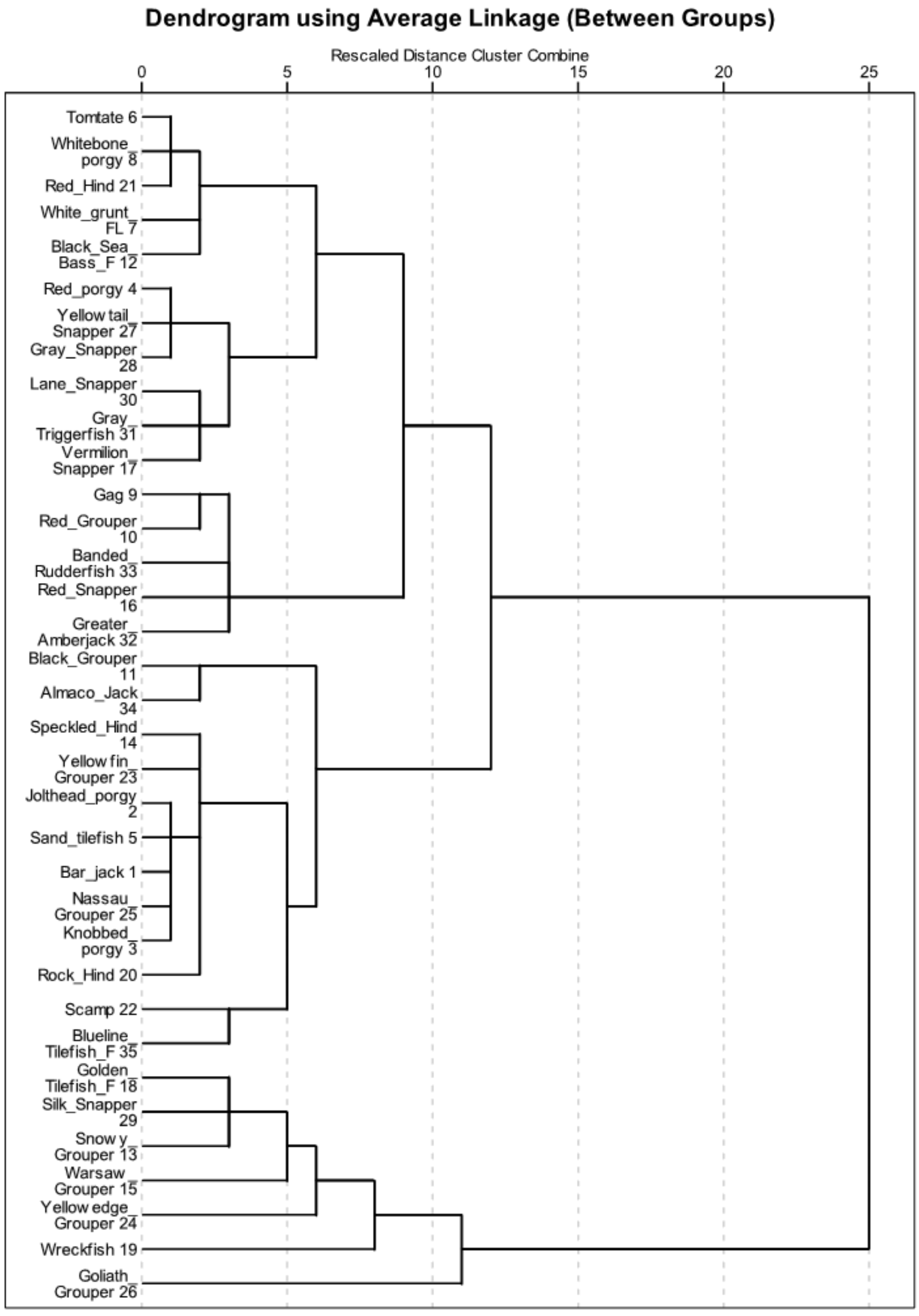


Figure A26. MARMAP hierarchical cluster analysis dendrogram (Linkage: Ward, Measure: Chi-Square, Transformation: Root-Root).

Table A1. Weighting terms for the cluster association matrix with no weighting for life history.

COMMON NAME	CVL	CLL	RFOP	HBS	MRFSS	MARMAP	LH
almaco jack	0.75	0.01	0.37	1.00	0.43	0.02	0.00
banded rudderfish	0.33	0.00	0.11	1.00	0.37	0.00	0.00
bar jack	0.12	0.00	0.00	0.92	1.00	0.00	0.00
black grouper	1.00	0.09	0.05	0.91	0.57	0.00	0.00
black sea bass	0.00	0.00	0.00	0.84	1.00	0.69	0.00
blueline tilefish	0.62	1.00	0.01	0.11	0.12	0.03	0.00
gag	0.41	0.06	0.22	1.00	0.52	0.02	0.00
goliath grouper	0.00	0.00	0.03	0.22	1.00	0.00	0.00
gray snapper	0.41	0.02	0.01	1.00	0.69	0.00	0.00
gray triggerfish	0.41	0.02	0.33	1.00	0.51	0.26	0.00
greater amberjack	0.73	0.06	0.17	1.00	0.59	0.02	0.00
jolthead porgy	0.47	0.00	0.00	1.00	0.36	0.00	0.00
knobbed porgy	0.29	0.00	0.26	1.00	0.35	0.38	0.00
lane snapper	0.17	0.00	0.00	1.00	0.56	0.00	0.00
nassau grouper	0.00	0.00	0.00	0.14	1.00	0.00	0.00
red grouper	0.68	0.07	0.45	1.00	0.45	0.06	0.00
red hind	0.91	0.00	0.30	1.00	0.47	0.00	0.00
red porgy	0.51	0.00	1.00	0.90	0.43	0.97	0.00
red snapper	0.54	0.03	0.15	1.00	0.49	0.03	0.00
rock hind	0.58	0.00	0.24	1.00	0.25	0.01	0.00
sand tilefish	0.14	0.00	0.18	0.79	1.00	0.00	0.00
scamp	0.63	0.01	0.72	1.00	0.35	0.18	0.00
silk snapper	0.81	0.00	0.08	1.00	0.35	0.01	0.00
snowy grouper	0.76	1.00	0.05	0.23	0.15	0.10	0.00
speckled hind	0.28	0.03	0.79	1.00	0.25	0.15	0.00
tilefish	0.09	1.00	0.00	0.00	0.05	0.00	0.00
tomtate	0.00	0.00	0.12	1.00	0.52	0.86	0.00
vermilion snapper	0.52	0.00	0.50	1.00	0.49	0.38	0.00
warsaw grouper	0.00	0.06	0.08	1.00	0.32	0.01	0.00
white grunt	0.31	0.00	0.21	1.00	0.72	0.19	0.00
whitebone porgy	0.11	0.00	0.03	1.00	0.30	0.04	0.00
wreckfish	1.00	0.00	0.00	0.00	0.00	0.00	0.00
yellowedge grouper	0.25	1.00	0.06	0.04	0.04	0.00	0.00
yellowfin grouper	0.89	0.00	0.45	1.00	0.13	0.00	0.00
yellowtail snapper	0.49	0.01	0.02	1.00	0.64	0.00	0.00

Table A2. Cluster association matrix with no weighting for life history.

	almaco jack	banded rudderfish	bar jack	black grouper	black sea bass	blueline tilefish	gag	goliath grouper	gray snapper	gray triggerfish	greater amberjack	jolthead porgy	knobbed porgy	lane snapper	nassau grouper	red grouper	red hind	red porgy	red snapper	rock hind	sand tilefish	scamp	silk snapper	snowy grouper	speckled hind	tilefish	tomtate	vermilion snapper	warsaw grouper	white grunt	whitebone porgy	wreckfish	yellowedge grouper	yellowfin grouper	yellowtail snapper
almaco jack		0.22	0.00	0.00	0.00	0.00	0.01	0.07	0.00	0.12	0.15	0.00	0.05	0.00	0.00	0.04	0.00	0.05	0.02	0.01	0.00	0.11	0.00	0.00	0.01	0.00	0.01	0.12	0.00	0.00	0.02	0.00	0.00	0.00	0.00
banded rudderfish	0.38		0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.08	0.03	0.09	0.00	0.00	0.01	0.02	0.07	0.00	0.03	0.02	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.00	0.00	0.00	0.00
bar jack	0.01	0.01		0.06	0.01	0.01	0.01	0.04	0.06	0.01	0.01	0.04	0.01	0.06	0.04	0.06	0.10	0.01	0.01	0.07	0.26	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.03
black grouper	0.00	0.00	0.00		0.09	0.00	0.00	0.05	0.17	0.00	0.00	0.03	0.00	0.07	0.00	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.31
black sea bass	0.02	0.02	0.00	0.11		0.00	0.05	0.02	0.02	0.05	0.02	0.01	0.14	0.02	0.00	0.01	0.00	0.07	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.19	0.09	0.00	0.02	0.06	0.00	0.00	0.00	0.02
blueline tilefish	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00
gag	0.01	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.28	0.01	0.00	0.00	0.00	0.00	0.07	0.00	0.10	0.28	0.00	0.00	0.06	0.00	0.00	0.03	0.01	0.00	0.03	0.00	0.11	0.00	0.00	0.00	0.00	0.00
goliath grouper	0.02	0.01	0.02	0.33	0.01	0.00	0.01		0.15	0.01	0.01	0.01	0.01	0.15	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.08
gray snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
gray triggerfish	0.01	0.01	0.00	0.00	0.01	0.00	0.25	0.00	0.00		0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.12	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.41	0.00	0.06	0.01	0.00	0.00	0.00	0.00
greater amberjack	0.24	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.09		0.01	0.02	0.00	0.00	0.03	0.01	0.03	0.04	0.01	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.01	0.07	0.00	0.00	0.00	0.00
jolthead porgy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.05	0.00	0.00	0.03	0.21	0.00	0.00	0.24	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.02
knobbed porgy	0.06	0.03	0.00	0.00	0.08	0.00	0.01	0.01	0.00	0.00	0.00	0.12		0.00	0.00	0.03	0.08	0.00	0.00	0.31	0.00	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00
lane snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.15
nassau grouper	0.01	0.01	0.01	0.10	0.04	0.01	0.01	0.11	0.10	0.01	0.01	0.01	0.01	0.10		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.01	0.01	0.01	0.01	0.01	0.06	0.01	0.01	0.00	0.16	0.07	0.04
red grouper	0.01	0.00	0.00	0.03	0.00	0.00	0.05	0.00	0.12	0.00	0.01	0.06	0.03	0.12	0.00		0.09	0.03	0.01	0.03	0.03	0.16	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.09
red hind	0.02	0.00	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.02	0.01	0.18	0.02	0.00	0.00	0.13		0.02	0.02	0.28	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.09	0.01
red porgy	0.01	0.01	0.00	0.00	0.01	0.00	0.08	0.00	0.00	0.26	0.02	0.00	0.00	0.00	0.00	0.02	0.00		0.01	0.00	0.00	0.21	0.00	0.00	0.00	0.06	0.09	0.20	0.00	0.00	0.02	0.00	0.00	0.00	0.00
red snapper	0.03	0.01	0.00	0.00	0.03	0.00	0.37	0.00	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.10		0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.03	0.16	0.00	0.02	0.02	0.00	0.00	0.00	0.00
rock hind	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.28	0.00	0.00	0.01	0.34	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.05	0.00	0.00	0.00	0.03	0.00
sand tilefish	0.00	0.02	0.20	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.37	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.02		0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03	0.01	0.12
scamp	0.03	0.02	0.00	0.00	0.02	0.00	0.07	0.00	0.00	0.03	0.20	0.00	0.05	0.00	0.00	0.14	0.00	0.24	0.01	0.01	0.00		0.00	0.00	0.13	0.00	0.01	0.03	0.00	0.01	0.02	0.00	0.00	0.00	0.00
silk snapper	0.01	0.01	0.02	0.01	0.00	0.03	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.02	0.01	0.01		0.03	0.02	0.01	0.01	0.01	0.04	0.01	0.03	0.10	0.03	0.42	0.01
snowy grouper	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00
speckled hind	0.02	0.02	0.01	0.01	0.02	0.01	0.05	0.01	0.01	0.02	0.04	0.01	0.05	0.01	0.02	0.01	0.01	0.02	0.03	0.03	0.01	0.23	0.02	0.01		0.00	0.03	0.02	0.15	0.01	0.01	0.00	0.02	0.10	0.01
tilefish	0.00	0.00	0.00	0.00	0.00	0.16	0.44	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.17	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
tomtate	0.01	0.01	0.00	0.00	0.10	0.00	0.02	0.00	0.00	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00		0.39	0.00	0.02	0.36	0.00	0.00	0.00	0.00
vermilion snapper	0.01	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.44	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.04	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.22		0.00	0.00	0.01	0.00	0.00	0.00	0.00
warsaw grouper	0.02	0.01	0.02	0.01	0.04	0.03	0.06	0.03	0.01	0.02	0.01	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.05	0.01	0.00	0.03	0.04	0.02	0.25	0.01	0.05	0.02		0.01	0.05	0.00	0.04	0.04	0.01
white grunt	0.00	0.01	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.12	0.00	0.27	0.11	0.00	0.00	0.16	0.05	0.00	0.00	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.00		0.00	0.00	0.00	0.00	0.00
whitebone porgy	0.09	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00		0.00	0.00	0.00	0.02
wreckfish	0.03	0.01	0.09	0.01	0.00	0.01	0.03	0.00	0.01	0.03	0.03	0.01	0.01	0.01	0.00	0.01	0.01	0.03	0.03	0.01	0.03	0.03	0.26	0.01	0.01	0.03	0.09	0.03	0.09	0.01	0.01		0.01	0.01	0.01
yellowedge grouper	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.50	0.00	0.05	0.00	0.00	0.01	0.00	0.01	0.00		0.02	0.00
yellowfin grouper	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.14	0.00	0.00	0.00	0.01	0.00	0.32	0.00	0.29	0.00	0.01	0.00	0.02	0.00	0.02	0.01	0.05		0.01
yellowtail snapper	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.04	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Table A3. Top 5 associated species under cluster association matrix with no life history.

COMMON NAME	1	2	3	4	5	ASSESSED?	PSA
wreckfish	silk snapper	bar jack	tomtate	warsaw grouper	almaco jack	Vaughan et al. 2001	3.64
yellowedge grouper	snowy grouper	blueline tilefish	tilefish	nassau grouper	yellowfin grouper		3.52
snowy grouper	blueline tilefish	yellowedge grouper	tilefish	goliath grouper	silk snapper	SEDAR 4 (2004)	3.45
blueline tilefish	snowy grouper	yellowedge grouper	tilefish	goliath grouper	silk snapper		3.4
sand tilefish	jolthead porgy	bar jack	yellowtail snapper	yellowedge grouper	blueline tilefish		3.37
tilefish	gag	snowy grouper	yellowedge grouper	blueline tilefish	knobbed porgy	SEDAR 4 (2004)	3.4
silk snapper	yellowfin grouper	wreckfish	warsaw grouper	blueline tilefish	yellowedge grouper		3.52
warsaw grouper	speckled hind	gag	whitebone porgy	tomtate	red snapper		3.83
speckled hind	scamp	warsaw grouper	yellowfin grouper	gag	knobbed porgy		3.42
yellowfin grouper	silk snapper	speckled hind	red hind	yellowedge grouper	goliath grouper		3.39
gag	red snapper	gray triggerfish	white grunt	red porgy	red grouper	SEDAR 10 (2006)	3.52
red grouper	scamp	white grunt	gray snapper	lane snapper	yellowtail snapper	SEDAR 19 (2010)	3.28
scamp	red porgy	greater amberjack	red grouper	speckled hind	gag		3.25
black grouper	yellowtail snapper	gray snapper	black sea bass	lane snapper	goliath grouper	SEDAR 19 (2010)	3.36
goliath grouper	black grouper	gray snapper	lane snapper	yellowtail snapper	red grouper	SEDAR 23 (2010)	3.42*
nassau grouper	yellowedge grouper	goliath grouper	black grouper	gray snapper	lane snapper		3.3
banded rudderfish	almaco jack	scamp	knobbed porgy	greater amberjack	red porgy		3.26
greater amberjack	scamp	almaco jack	vermilion snapper	gray triggerfish	whitebone porgy	SEDAR 15 (2008)	3.07
almaco jack	banded rudderfish	greater amberjack	vermilion snapper	gray triggerfish	scamp		3.35
red porgy	gray triggerfish	scamp	vermilion snapper	tomtate	gag	SEDAR 1 Update (2006)	2.93
gray triggerfish	vermilion snapper	gag	red porgy	white grunt	red snapper		2.46
vermilion snapper	gray triggerfish	tomtate	red porgy	gag	red snapper	SEDAR 17 (2008)	3.14
red snapper	gag	vermilion snapper	red porgy	scamp	gray triggerfish	SEDAR 24 (2010)	3.14
black sea bass	tomtate	knobbed porgy	black grouper	vermilion snapper	red porgy	SEDAR 2 Update (2005)	3.02
red hind	rock hind	jolthead porgy	red grouper	yellowfin grouper	sand tilefish	Potts & Manooch (1995)	3.18
rock hind	red hind	knobbed porgy	jolthead porgy	white grunt	yellowfin grouper	Potts & Manooch (1995)	3.23
knobbed porgy	rock hind	white grunt	jolthead porgy	scamp	black sea bass		3.14
whitebone porgy	tomtate	almaco jack	greater amberjack	banded rudderfish	scamp		3.51
jolthead porgy	white grunt	rock hind	red hind	sand tilefish	knobbed porgy		3.18
tomtate	vermilion snapper	whitebone porgy	black sea bass	gray triggerfish	red snapper		2.63
white grunt	jolthead porgy	red grouper	gray triggerfish	knobbed porgy	gag		2.78
bar jack	sand tilefish	red hind	rock hind	gray snapper	lane snapper		3.33
gray snapper	lane snapper	yellowtail snapper	warsaw grouper	silk snapper	blueline tilefish		3.24
lane snapper	gray snapper	yellowtail snapper	whitebone porgy	warsaw grouper	speckled hind		2.92
yellowtail snapper	gray snapper	black grouper	lane snapper	sand tilefish	jolthead porgy	SEDAR 3 (2003)	2.84*

Table A4. Weighting terms for cluster association matrix with life history weighted equal to highest weighting term from fishery-dependent data.

COMMON NAME	CVL	CLL	RFOP	HBS	MRFSS	MARMAP	LH
almaco jack	0.75	0.01	0.37	1.00	0.43	0.02	1.00
banded rudderfish	0.33	0.00	0.11	1.00	0.37	0.00	1.00
bar jack	0.12	0.00	0.00	0.92	1.00	0.00	1.00
black grouper	1.00	0.09	0.05	0.91	0.57	0.00	1.00
black sea bass	0.00	0.00	0.00	0.84	1.00	0.69	1.00
blueline tilefish	0.62	1.00	0.01	0.11	0.12	0.03	1.00
gag	0.41	0.06	0.22	1.00	0.52	0.02	1.00
goliath grouper	0.00	0.00	0.03	0.22	1.00	0.00	1.00
gray snapper	0.41	0.02	0.01	1.00	0.69	0.00	1.00
gray triggerfish	0.41	0.02	0.33	1.00	0.51	0.26	1.00
greater amberjack	0.73	0.06	0.17	1.00	0.59	0.02	1.00
jolthead porgy	0.47	0.00	0.00	1.00	0.36	0.00	1.00
knobbed porgy	0.29	0.00	0.26	1.00	0.35	0.38	1.00
lane snapper	0.17	0.00	0.00	1.00	0.56	0.00	1.00
nassau grouper	0.00	0.00	0.00	0.14	1.00	0.00	1.00
red grouper	0.68	0.07	0.45	1.00	0.45	0.06	1.00
red hind	0.91	0.00	0.30	1.00	0.47	0.00	1.00
red porgy	0.51	0.00	1.00	0.90	0.43	0.97	1.00
red snapper	0.54	0.03	0.15	1.00	0.49	0.03	1.00
rock hind	0.58	0.00	0.24	1.00	0.25	0.01	1.00
sand tilefish	0.14	0.00	0.18	0.79	1.00	0.00	1.00
scamp	0.63	0.01	0.72	1.00	0.35	0.18	1.00
silk snapper	0.81	0.00	0.08	1.00	0.35	0.01	1.00
snowy grouper	0.76	1.00	0.05	0.23	0.15	0.10	1.00
speckled hind	0.28	0.03	0.79	1.00	0.25	0.15	1.00
tilefish	0.09	1.00	0.00	0.00	0.05	0.00	1.00
tomtate	0.00	0.00	0.12	1.00	0.52	0.86	1.00
vermilion snapper	0.52	0.00	0.50	1.00	0.49	0.38	1.00
warsaw grouper	0.00	0.06	0.08	1.00	0.32	0.01	1.00
white grunt	0.31	0.00	0.21	1.00	0.72	0.19	1.00
whitebone porgy	0.11	0.00	0.03	1.00	0.30	0.04	1.00
wreckfish	1.00	0.00	0.00	0.00	0.00	0.00	1.00
yellowedge grouper	0.25	1.00	0.06	0.04	0.04	0.00	1.00
yellowfin grouper	0.89	0.00	0.45	1.00	0.13	0.00	1.00
yellowtail snapper	0.49	0.01	0.02	1.00	0.64	0.00	1.00

Table A5. Weighted mean cluster association matrix with life history weighted equal to highest weighting term from fishery-dependent data.

	almaco jack	banded rudderfish	bar jack	black grouper	black sea bass	blueline tilefish	gag	goliath grouper	gray snapper	gray triggerfish	greater amberjack	jolthead porgy	knobbed porgy	lane snapper	nassau grouper	red grouper	red hind	red porgy	red snapper	rock hind	sand tilefish	scamp	silk snapper	snowy grouper	speckled hind	tilefish	tomtate	vermilion snapper	warsaw grouper	white grunt	whitebone porgy	wreckfish	yellowedge grouper	yellowfin grouper	yellowtail snapper
almaco jack		0.18	0.00	0.16	0.00	0.00	0.01	0.06	0.00	0.10	0.13	0.00	0.04	0.00	0.00	0.04	0.00	0.04	0.01	0.01	0.00	0.09	0.00	0.00	0.01	0.00	0.01	0.10	0.00	0.00	0.02	0.00	0.00	0.00	0.00
banded rudderfish	0.30		0.00	0.00	0.00	0.00	0.03	0.01	0.04	0.00	0.09	0.02	0.07	0.00	0.00	0.04	0.01	0.09	0.03	0.02	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00	0.00	0.04
bar jack	0.00	0.00		0.04	0.00	0.01	0.00	0.03	0.05	0.00	0.00	0.10	0.08	0.05	0.06	0.05	0.08	0.00	0.00	0.05	0.24	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.01	0.03
black grouper	0.16	0.00	0.00		0.07	0.00	0.00	0.05	0.14	0.00	0.00	0.02	0.00	0.06	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.04	0.26
black sea bass	0.02	0.02	0.00	0.09		0.00	0.04	0.02	0.02	0.04	0.02	0.00	0.12	0.02	0.00	0.01	0.04	0.05	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.20	0.08	0.00	0.06	0.09	0.00	0.00	0.00	0.02
blueline tilefish	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.56	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00
gag	0.01	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.23	0.01	0.00	0.00	0.00	0.00	0.24	0.00	0.08	0.23	0.00	0.00	0.05	0.00	0.00	0.02	0.01	0.00	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00
goliath grouper	0.01	0.01	0.01	0.24	0.01	0.00	0.01		0.10	0.01	0.01	0.01	0.01	0.10	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.00	0.02	0.01	0.01	0.07	0.01	0.01	0.07	0.08	0.01	0.06
gray snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
gray triggerfish	0.01	0.01	0.00	0.00	0.01	0.00	0.21	0.00	0.00		0.01	0.00	0.02	0.12	0.00	0.00	0.00	0.10	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.38	0.00	0.05	0.01	0.00	0.00	0.00	0.00
greater amberjack	0.20	0.06	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08		0.00	0.02	0.00	0.00	0.04	0.01	0.03	0.11	0.01	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.06	0.00	0.00	0.00	0.00
jolthead porgy	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.12	0.00	0.03	0.03	0.17	0.00	0.00	0.19	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.02
knobbed porgy	0.05	0.03	0.07	0.00	0.07	0.00	0.01	0.01	0.00	0.00	0.00	0.17		0.00	0.02	0.02	0.07	0.00	0.00	0.26	0.02	0.08	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00
lane snapper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.17	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.02	0.00	0.00	0.00	0.11
nassau grouper	0.00	0.00	0.04	0.07	0.03	0.00	0.00	0.08	0.07	0.00	0.00	0.04	0.04	0.07		0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.08	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.11	0.12	0.03
red grouper	0.00	0.00	0.00	0.02	0.00	0.00	0.20	0.00	0.10	0.00	0.00	0.05	0.02	0.10	0.00		0.07	0.03	0.00	0.02	0.03	0.13	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.08
red hind	0.02	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.15	0.02	0.00	0.00	0.11		0.01	0.01	0.24	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.01	0.00	0.02	0.08	0.00	0.00	0.07	0.01
red porgy	0.01	0.01	0.00	0.00	0.01	0.00	0.07	0.00	0.06	0.23	0.01	0.00	0.00	0.00	0.00	0.02	0.00		0.01	0.00	0.00	0.19	0.00	0.00	0.00	0.06	0.08	0.18	0.00	0.00	0.01	0.00	0.00	0.00	0.06
red snapper	0.02	0.03	0.00	0.00	0.02	0.00	0.33	0.00	0.00	0.06	0.14	0.00	0.00	0.00	0.00	0.04	0.00	0.08		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.02	0.13	0.00	0.02	0.01	0.00	0.00	0.00	0.00
rock hind	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.27	0.00	0.01	0.01	0.28	0.00	0.00		0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.00
sand tilefish	0.00	0.02	0.19	0.00	0.00	0.11	0.00	0.01	0.00	0.00	0.00	0.33	0.04	0.00	0.03	0.00	0.02	0.00	0.00	0.02		0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03	0.01	0.10
scamp	0.02	0.02	0.00	0.00	0.01	0.07	0.08	0.00	0.00	0.02	0.17	0.00	0.05	0.00	0.00	0.15	0.00	0.20	0.01	0.01	0.00		0.00	0.02	0.11	0.00	0.01	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00
silk snapper	0.00	0.01	0.02	0.01	0.00	0.03	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00		0.07	0.02	0.15	0.01	0.00	0.03	0.01	0.02	0.08	0.03	0.34	0.01
snowy grouper	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05		0.00	0.06	0.00	0.00	0.09	0.00	0.00	0.00	0.23	0.00	0.00
speckled hind	0.02	0.02	0.02	0.00	0.01	0.01	0.04	0.01	0.00	0.02	0.03	0.02	0.05	0.00	0.07	0.01	0.00	0.02	0.02	0.04	0.02	0.19	0.01	0.01		0.00	0.02	0.02	0.12	0.01	0.01	0.00	0.01	0.14	0.00
tilefish	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.19	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00
tomtate	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.08	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00		0.33	0.00	0.02	0.38	0.00	0.00	0.00	0.00
vermilion snapper	0.01	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.45	0.01	0.00	0.00	0.07	0.00	0.00	0.00	0.14	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.18		0.00	0.00	0.01	0.00	0.00	0.00	0.00
warsaw grouper	0.01	0.01	0.02	0.01	0.03	0.02	0.05	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.04	0.01	0.00	0.02	0.07	0.06	0.18	0.05	0.04	0.01		0.01	0.04	0.00	0.15	0.03	0.01
white grunt	0.00	0.01	0.00	0.00	0.04	0.00	0.09	0.00	0.00	0.10	0.00	0.23	0.09	0.00	0.00	0.13	0.09	0.00	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.04	0.00		0.04	0.00	0.00	0.00	0.00
whitebone porgy	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.06	0.00	0.01	0.03	0.00	0.00	0.13	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00		0.00	0.00	0.00	0.02
wreckfish	0.02	0.01	0.06	0.01	0.00	0.01	0.02	0.00	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.21	0.04	0.01	0.06	0.06	0.02	0.18	0.01	0.01		0.12	0.01	0.01
yellowedge grouper	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.40	0.00	0.07	0.00	0.00	0.17	0.00	0.00	0.00		0.02	0.00
yellowfin grouper	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.02	0.00	0.08	0.00	0.11	0.00	0.00	0.02	0.02	0.00	0.27	0.00	0.29	0.00	0.01	0.00	0.02	0.00	0.02	0.01	0.04		0.00
yellowtail snapper	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.03	0.00	0.19	0.00	0.00	0.00	0.05	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Table A6. Top 5 associated species from cluster association matrix with life history weighted equal to maximum from fishery data.

COMMON NAME	1	2	3	4	5	ASSESSED?	PSA
yellowedge grouper	snowy grouper	blueline tilefish	warsaw grouper	tilefish	silk snapper		3.52
snowy grouper	blueline tilefish	yellowedge grouper	warsaw grouper	tilefish	silk snapper	SEDAR 4 (2004)	3.45
blueline tilefish	snowy grouper	yellowedge grouper	sand tilefish	scamp	tilefish		3.4
tilefish	gag	silk snapper	snowy grouper	yellowedge grouper	blueline tilefish	SEDAR 4 (2004)	3.4
wreckfish	silk snapper	warsaw grouper	yellowedge grouper	bar jack	tomtate	Vaughan et al. 2001	3.64
silk snapper	yellowfin grouper	tilefish	wreckfish	snowy grouper	warsaw grouper		3.52
warsaw grouper	speckled hind	yellowedge grouper	silk snapper	snowy grouper	tilefish		3.83
speckled hind	scamp	yellowfin grouper	warsaw grouper	nassau grouper	knobbed porgy		3.42
yellowfin grouper	speckled hind	silk snapper	red hind	nassau grouper	yellowedge grouper		3.39
nassau grouper	yellowfin grouper	yellowedge grouper	speckled hind	goliath grouper	black grouper		3.3
gag	red grouper	red snapper	gray triggerfish	white grunt	red porgy	SEDAR 10 (2006)	3.52
red grouper	gag	scamp	white grunt	gray snapper	lane snapper	SEDAR 19 (2010)	3.28
scamp	red porgy	greater amberjack	red grouper	speckled hind	gag	Manooch et al. (1998)	3.25
black grouper	yellowtail snapper	almaco jack	gray snapper	black sea bass	lane snapper	SEDAR 19 (2010)	3.36
goliath grouper	black grouper	gray snapper	lane snapper	yellowedge grouper	warsaw grouper	SEDAR 23 (2010)	3.42*
banded rudderfish	almaco jack	red porgy	greater amberjack	scamp	knobbed porgy		3.26
greater amberjack	scamp	almaco jack	red snapper	vermilion snapper	gray triggerfish	SEDAR 15 (2008)	3.07
almaco jack	banded rudderfish	black grouper	greater amberjack	vermilion snapper	gray triggerfish		3.35
red porgy	gray triggerfish	scamp	vermilion snapper	tomtate	gag	SEDAR 1 Update (2006)	2.93
gray triggerfish	vermilion snapper	gag	lane snapper	red porgy	white grunt		2.46
vermilion snapper	gray triggerfish	tomtate	red porgy	lane snapper	gag	SEDAR 17 (2008)	3.14
red snapper	gag	greater amberjack	vermilion snapper	red porgy	scamp	SEDAR 24 (2010)	3.14
black sea bass	tomtate	knobbed porgy	whitebone porgy	black grouper	vermilion snapper	SEDAR 2 Update (2005)	3.02
red hind	rock hind	jolthead porgy	red grouper	whitebone porgy	tomtate	Potts & Manooch (1995)	3.18
rock hind	red hind	knobbed porgy	jolthead porgy	bar jack	white grunt	Potts & Manooch (1995)	3.23
knobbed porgy	rock hind	jolthead porgy	white grunt	scamp	black sea bass		3.14
whitebone porgy	tomtate	red hind	almaco jack	greater amberjack	banded rudderfish		3.51
jolthead porgy	white grunt	rock hind	red hind	sand tilefish	knobbed porgy		3.18
tomtate	whitebone porgy	vermilion snapper	red hind	black sea bass	gray triggerfish		2.63
white grunt	jolthead porgy	red grouper	gray triggerfish	knobbed porgy	gag		2.78
sand tilefish	jolthead porgy	bar jack	blueline tilefish	yellowtail snapper	knobbed porgy		3.37
bar jack	sand tilefish	jolthead porgy	knobbed porgy	#N/A	nassau grouper		3.33
gray snapper	lane snapper	yellowtail snapper	red porgy	warsaw grouper	silk snapper		3.24
lane snapper	gray snapper	gray triggerfish	yellowtail snapper	vermilion snapper	whitebone porgy		2.92
yellowtail snapper	gray snapper	black grouper	lane snapper	sand tilefish	red porgy	SEDAR 3 (2003)	2.84*

Table A7. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the Alternative 2 species grouping approach

Deep-Water Grouper & Tilefish Complex	Subcomplexes	'Snappers' Complex	Subcomplexes
Yellowedge grouper$_2$	Yellowedge grouper$_2$	Gray snapper$_2$	Gray snapper$_2$
Blueline tilefish	Blueline tilefish	Lane snapper	Lane snapper
Silk Snapper$_2$	Silk Snapper$_2$	Cubera snapper	Cubera snapper
Snowy grouper$_1$	Snowy grouper$_1$	Yellowtail snapper$_1$	Yellowtail snapper$_1$
Golden tilefish$_1$	Golden tilefish$_1$	Mutton snapper$_1$	Mutton snapper$_1$
Shallow Water Grouper Complex	**Subcomplexes**	**Porgies, Grunts & Hinds Complex**	
Scamp	Scamp	Whitebone porgy	
Gag$_{1,2}$	Gag$_{1,2}$	Knobbed porgy	
Red grouper$_1$	Red grouper$_1$	Jolthead porgy	
Black grouper$_1$	Black grouper$_1$	Red hind	
'Jacks' Complex	**Subcomplexes**	Rock hind	
Almaco jack$_2$	Almaco jack$_2$	Tomtate	
Banded rudderfish	Banded rudderfish	White grunt	
Lesser amberjack	Lesser amberjack		
Greater amberjack$_1$	Greater amberjack$_1$		
Individual ACLs Not Affiliated With A Complex			
Red snapper$_1$	Vermilion snapper$_1$	Wreckfish	Warsaw grouper$_3$
Red porgy$_1$	Goliath grouper$_{1,3}$	Hogfish$_1$	Speckled hind$_3$
Blue runner	Atlantic spadefish	Nassau grouper$_3$	Black sea bass$_1$
Gray triggerfish			

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Table A8. Complexes (gray) and individual ACLs (white) for snapper grouper species under the Alternative 4 grouping approach.

Deep-Water Grouper & Tilefish Complex	Individual ACLs
Yellowedge grouper$_{2}$	Atlantic spadefish
Blueline tilefish	Greater amberjack$_{1}$
Silk Snapper$_{2}$	Blue runner
Jacks Complex	Gray triggerfish
Almaco jack$_{2}$	Snowy grouper$_{1}$
Banded rudderfish	Golden tilefish$_{1}$
Lesser amberjack	Warsaw grouper$_{3}$
Snappers Complex	Wreckfish
Gray snapper$_{2}$	Scamp
Lane snapper	Gag$_{1}$
Cubera snapper	Red grouper$_{1}$
Porgies, Grunts & Hinds Complex	Goliath grouper$_{1,3}$
Whitebone porgy$_{2}$	Nassau grouper$_{3}$
Knobbed porgy	Black sea bass$_{1}$
Jolthead porgy	Black grouper$_{1}$
Red hind	Speckled hind$_{3}$
Rock hind	Red porgy$_{1}$
Tomtate	Hogfish$_{1}$
White grunt	Yellowtail snapper$_{1}$
	Mutton snapper$_{1}$
	Red snapper$_{1}$
	Vermilion snapper$_{1}$

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Table A9. References from Table 1.

Ref #	Reference
1	Allen, G.R. 1985. FAO species catalogue. Vol. 6. Snappers of the world. An annotated and illustrated catalogue of lutjanid species known to date. FAO Fish. Synop. 6(125):208 p.
2	Ault, J.S., Smith,S.G., Diaz, G.A., and Franklin, E. 2003. Florida hogfish fishery stock assessment. In SEDAR6 SAR2, 2004.
3	Bauchot, M.-L. and J.C. Hureau. 1990. Sparidae. Pp. 790-812. In J.C. Quero, J.C. Hureau, C. Karrer, A. Post, and L. Saldanha (eds.) Check-list of the fishes of the eastern tropical Atlantic (CLOFETA). JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 2.
4	Bullock, L.H. and M.D. Murphy. 1994. Aspects of the life history of the yellowmouth grouper, Mycteroperca interstitialis, in the eastern Gulf of Mexico. Bull. Mar. Sci. 55(1):30-45.
5	Bullock, L.H., Murphy, M.D., Godcharles, M.F., and Mitchell, M.E. 1992. Age, growth, and reproduction of jewfish Epinephelus itajara in the eastern Gulf of Mexico. Fish. Bull. 90:243-249.
6	Burton, M.L. 2001. Age, growth, and mortality of gray snapper, Lutjanus griseus, from the east coast of Florida. Fish. Bull. 99: 254-265.
7	Cervigón, F. 1993 Los peces marinos de Venezuela. Volume 2. Fundación Científica Los Roques, Caracas,Venezuela. 497 p.
8	Cervigón, F., R. Cipriani, W. Fischer, L. Garibaldi, M. Hendrick, A.J. Lemus, R. Márquez, J.M. Poutiers, G. Robaina and B. Rodriguez. 1992. Fichas FAO de identificación de especies para los fines de la pesca. Guía de campo de las especies comerciales marinas y de aquas salobres de la costa septentrional de Sur América.. FAO, Rome. 513 p. Preparado con el financiamento de la Comisión de Comunidades Europeas y de NORAD.
9	Claro, R. 1994 Características generales de la ictiofauna. p. 55-70. In R. Claro (ed.) Ecología de los peces marinos de Cuba. Instituto de Oceanología Academia de Ciencias de Cuba and Centro de Investigaciones de Quintana Roo.
10	Cook, M. and Hendon, M. 2010. Yellowedge grouper (Epinephelus flavolimbatus) age, growth, and reproduction from the northern Gulf of Mexico. Draft working document for SEDAR 22-DW-08
11	Craig, M.T. and P.A, Hastings 2007 A molecular phylogeny of the groupers of the subfamily Epinephelinae (Serranidae) with revised classification of the epinephelini. Ichthyol. Res. 54:1-17.
12	Daniel, E.A. 2003. Sexual maturity, spawning dynamics, and fecundity in red porgy, Pagrus pagrus, off the southeastern United States. M.S. Thesis, College of Charleston. 78pp.
13	Dooley, J.K. 1978 Systematics and biology of the tilefishes (Perciformes: Branchiostegidae and Malacanthidae) with descriptions of two new species. NOAA Tech. Rep. NMFS Circ. No. 411:1-78

14	Dooley, J.K. 1978. Branchiostegidae. In W. Fischer (ed.) FAO species identification sheets for fishery purposes. West Atlantic (Fishing Area 31). Volume 1. FAO, Rome.
15	Erickson, D. L., and G. D. Grossman. 1986. Reproductive demography of tilefish from the South Atlantic Bight with a test for the presence of protogynous hermaphroditism. Trans. Amer. Fish. Soc. 115:279-285.
16	Figuerola, F.M. and W. Torrez Ruiz. 2000. Reproduccíon en el mero mantequilla
17	(Cephalopholis fulva) y evaluación preliminary de la veda durante las agregaciones de desove del mero cabrilla (Epinephelus guttatus) en el oeste de Puerto Rico. Laboratorio de Investigaciones Pesqueras, Puerto Rico Departamento de Recursos Naturales y Ambientales. Marzo.
18	FL Museum of Natual History; http://www.flmnh.ufl.edu/fish/gallery/Descript/WhiteGrunt/WhiteGrunt.html
19	Froese, R. and D. Pauly, Editors. 2003. FishBase. World Wide Web electronic publication. www.fishbase.org, version 24 September, 2003.
20	Garcia, E.R., Potts, J.C., Rulifson, R.A., and Manooch, III, C.S. 2003. Age and growth of yellowtail snapper, Ocyurus chrysurus, from the southeastern Unites States. Bull. Mar. Sci. 72(3): 909-921.
21	Harris, P.J. and M.R. Collins. 2000. A comparison of the age, growth, and age at maturity for gag, Mycteroperca microlepis, from the southeastern United States during 1976-1982 and 1994-1995. Bull. Mar. Sci. 66:105-117.
22	Harris, J.H. and McGovern, J.C. 1997. Changes in the llife history of red porgy, Pagrus pagrus, from the Southeastern United States, 1972-1994. Fish. Bull. 95:732-747.
23	Harris, P.J., D.M. Wyanski, D. B. White, and J.L. Moore. 2002. Age, growth and reproduction of scamp, Mycteroperca phenax, in the southwestern North Atlantic 1979-1997. Bull. Mar. Sci. 70:113-132.
24	Harris, P.J., Wyanski, D.M., and Powers Mikell, P.T. 2004. Age, growth, and reproductive biology of blueline tilefish along the southeastern coast of the United States, 1982-1999. Trans. Am. Fish. Soc. 133:1190-1204.
25	Harris, P.J., Wyanski, D.M., White, D.B., Mikell, P.P., and Eyo, P.B. 2008? Age, growth, and reproduction of greater amberjack, Seriola dumerili, off the Atlantic coast of the southeastern United States. In SEDAR 15-RD01.
26	Hayse, J.W. 1990 Feeding habits, age, growth, and reproduction of Atlantic spadefish *Chaetodipterus faber* (Pisces: Ephippidae) in South Carolina. Fish. Bull. 88(1):67-83.
27	Heemstra, P.C. and J.E. Randall 1993 FAO species catalogue. Vol. 16. Groupers of the world (family Serranidae, subfamily Epinephelinae). An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date. FAO Fish. Synop. 125(16):382 p.
28	Hoese, H.D. and R.H. Moore. 1977. Fishes of the Gulf of Mexico. Texas, Louisiana, and Adjacent Waters. Texas A&M University Press. 327 pp.

29	Hood, P.B. and A.K. Johnson. 1997. A study of the age structure, growth, maturity schedules and fecundity of gray triggerfish (Balistes capriscus), red porgy (Pagrus pagrus), and vermillion snapper (Rhomboplites aurorubens) from the eastern Gulf of Mexico. MARFIN Final Report.
30	IGFA 2001 Database of IGFA angling records until 2001. IGFA, Fort Lauderdale, USA.
31	Ingram, G.W. 2001. Stock structure of gray triggerfish, Ballistes capriscus, on multiple spatial scales in the Gulf of Mexico. PhD Dissertation, Department of Marine Sciences, University of South Alabama. 229pp.
32	MAFMC 1996. Amendment 8 to the summer flounder fishery management plan; FMP and FEIS for the Scup fishery. 367 pp.
33	Manooch III, C.S. and D.L. Mason. 1987. Age and growth of the warsaw grouper and black grouper from the southeast region of the United States. Northeast Gulf Science, 9(2): 65-75.
34	Manooch, C.S. III. And C.A.Barans. 1982. Distribution, abundance, and age and growth of the tomtate, Haemulon aurolineatum, along the southeastern United States coast. U.S. Fish. Bull. 80(1): 1-20.
35	Manooch, C.S., III, and J.C. Potts. 1997. Age, growth and mortality of greater
36	amberjack from the southeastern United States. Fish. Res. 30: 229-240.
37	MARMAP. 1997. Analytical Report
38	Matheson, R. H., and G. R. Huntsman. 1984. Growth, mortality, and yeild-per-recruit models for
39	speckled hind and snowy grouper from the United States South Atlantic Bight. Trans. Amer.
40	Fish. Soc. 113:607-616.
41	McGovern, J.C., Collins, M.R., Pashuk, O., and Meister, H.S. 2002. Temporal and spatial differences in life history parameters of black sea bass in the southeastern United States. N. Am. J. of Fish. Mngmt. 22:1151-1163.
42	McInerny, S.A. 2007. Age and growth of red snapper, Lutjanus campechanus, from the southeastern United States. M.S. Thesis. UNC Wilmington, NC. 99pp.
43	Mercer, L. P. 1989. Species profile: life histories and environmental requirements of coastal fishes and invertebrates (South Atlantic)-and U.S. Army Corps Engin., TR EL-82-4. 16 pp. Black sea bass. U.S. Fish Wildl. Servo BioI. Rep. 82(11.99);
44	Munro, J.L. and D. McB. Williams, 1985. Assessment and management of coral reef fisheries: biological, environmental and socio-economic aspects. pp. 543-578. In Proceedings of the Fifth International Coral Reef Congress, Tahiti, 27 May-1 June 1985. Vol. 4. Antenne Museum-EPHE, Moonea, French Polynesia.
45	O'Brien, L., J. Burnett, and R.K. Mayo. 1993. Maturation of nineteen species of finfish off the northeast coast of the United States, 1985-1990. NOAA Tech. Rep. NMFS 113. 66 p.

46	Padgett, S.M. 1997. Age, growth, and reproductive biology of the white grunt, Haemulon plumieri, along the southeast Atlantic coast of the United States. M.S. Thesis, University of Charleston. 61 pp.
47	Palmer, S.P., P.H. Harris, and P. Powers. 2004. Age, growth and reproduction of tilefish, Lopholatilus chamaeleonticeps, along the southeast Atlantic coast of the United States, 1980-87 and 1996-1998. SEDAR 4 working paper. SEDAR4-DW-18.
48	Potts, J.C. and C.S. Manooch III 1999 Observations on the age and growth of graysby and coney from the southeastern United States. Trans. Am. Fish. Soc. 128(4):751-757.
49	Potts, J.C. and C.S. Manooch, III. 1995. Age and growth of red hind and rock hind collected from North Carolina through the Dry Tortugas, Florida. Bull. Mar. Sci. 56:784-794.
50	Potts, J.C. and C.S. Manooch, III. 2001. Differences in the age and growth of white grunt (Haemulon plumieri) from North Carolina and South Carolina compared with Southeast Florida. Bull. Mar. Sci. 68:1-12.
51	Reichert, J.C.M and Wyanski, D.M. 2005. SEDAR 10-DW-15. Analytical Report on the age, growth, and reproductive biology of gag, Mycteroperca microlepis from the southeastern United States, 1996-2005.
52	Robins, C.R. and G.C. Ray 1986 A field guide to Atlantic coast fishes of North America. Houghton Mifflin Company, Boston, U.S.A. 354 p.
53	Robins, C.R., Ray, G.C., Douglass, J., and Freund, R. 1986. A field guide to Atlantic coast fishes of North America. Peterson Field Guide Ser. 32, Houghton Mifflin, Boston, 354 p.
54	Ross, J.L. and Huntsman, G.R. 1982. Age, growth, and mortality of blueline tilefish from North Carolina and South Carolina. Trans. Am. Fish. Soc. 111:585-592.
55	Ross, J.L. and Merriner, J.V. 1983. Reproductive biology of the blueline tilefish, Caulolatilus microps, off North Carolina and South Carolina. Fish. Bull. 81(3):553-568.
56	SAFE 2005. Stock Assessment and Fishery Evaluation Report for the Snapper Grouper Fishery of the South Atlantic. Final Report (11/1805). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C.
57	Schwartz, F.J. 1990. Length-weight, age and growth, and landings observations for sheepshead Archosargus probatocephalus from North Carolina. Fish. Bull., U.S. 88:829-832.
58	SEDAR 15A-SAR3. 2008. S. Atlantic and Gulf of Mexico Mutton Snapper. SEDAR, SAFMC, 4055 Faber Place #20, North Charleston, SC 29405
59	SEDAR 17, 2008. Stock Assessment Report. South Atlantic Vermilion Snapper. SEDAR, SAFMC, 4055 Faber Place #20, North Charleston, SC 29405
60	SEDAR 19. 2010. South Atlantic Red Grouper. 4055 Faber place drive, Suite 201, North Charleston, SC 29405
61	SEDAR 3. 2003. Complete stock assessment report of the yellowtail snapper in the southeastern United States. SEDAR 1 Southpark circle #306, Charleston, SC 29414
62	SEDAR 6. 2004. Complete stock assessment report 2 of hogfish snapper. SEDAR/SAFMC, 1 Southpark circle #306, Charleston, SC 29414

63	SEDAR 8. 2005. Caribbean yellowtail snapper stock assessment report. SEDAR, 1 Southpark circle #306, Charleston, SC 29414
64	SEDAR 9. 2006. Gulf of Mexico greater amberjack stock assessment report.
65	SEDAR 23. 2010 (in progress). Gulf of Mexico and South Atlantic Goliath Grouper Stock Assessment.
66	SEDAR24. 2010. Pre-Review Stock Assessment Report, South Atlantic Red Snapper. SEDAR 4055 Faber Place #201 North Charleston, SC 29405
67	SEDAR2-SAR3. 2005. Black sea bass assessment update. 4055 Faber place drive, Suite 201, North Charleston, SC 29405
68	SEDAR4-SAR1. 2004. Stock assessment of the deepwater snapper-grouper complex in the South Atlantic. SEDAR/SAFMC 1 Southpark circle #306, Charleston, SC 29414
69	SEDAR 14. 2007?. Caribbean yellowfin grouper stock assessment report. SEDAR 4055 Faber Place #201 North Charleston, SC 29405
70	Sedberry, G.R., G.F. Ulrich, and A.J. Applegate. 1994. Development and status of the fishery for wreckfish (Polyprion americanus) in the southeastern United States. Proc. Gulf Carib. Fish. Inst. 43:168-192.
71	Sharp, C.C. 2001. Age, growth and reproduction of knobbed porgy, Calamus nodosus, from the continental shelf of the U.S. MARMAP Analytical Report.
72	Smith-Vaniz, W.F. 1984 Carangidae. In W. Fischer and G. Bianchi (eds.) FAO species identification sheets for fishery purposes. Western Indian Ocean fishing area 51. Vol. 1. [pag. var.]. FAO, Rome.
73	Starck, W.A. II, 1971. The biology of the grey snapper, Lutjanus griseus (Linnaeus), in the Florida Keys. p. 11-150. In W.A. Starck, II and R.E. Schroeder. Investigations on the gray snapper, Lutjanus griseus. Studies in Tropical Oceanography No. 10, Rosenstiel School of Marine and Atmospheric Sciences, University of Miami Press, Florida
74	Taylor, R.G. and R.H. McMichael, Jr. 1983. The wire fish-trap fisheries in Monroe and Collier counties, Florida. Fla. Mar. Res. Publ., no. 39, FDNR, St. Petersburg, FL (USA), 19 pp.
75	Vaughan, D.S., M.R. Collins, and D.J. Schmidt. 1995. Population characteristics of the U.S. South Atlantic black sea bass Centropristis striata. Bull. Mar. Sci. 56:250-267.
76	Vaughan, D.S., Manooch III, C.S., and Potts, J.C. 2001. Assessment of the wreckfish fishery on the Blake Plateau. American Fisheries Society Symposium. 25:105-120.
77	Waltz, C.W., W.A. Roumillat and C.A. Wenner. 1982. Biology of the whitebone porgy, Calamus leucosteus, in the South Atlantic Bight. Fish. Bull. 80(3): 863-874.
78	White, D.B. and Palmer, S.M. 2004. Age, growth, and reproduction of the red snapper, Lutjanus campechanus, from the Atlantic waters of the southeastern U.S. Bull. Mar. Sci. 75(3): 335-360.
79	Wilson, C. A., A. L. Stanley, and D. L. Nieland. 2001. Age estimates from annuli in otoliths of red snapper, Lutjanus campechanus, from the northern Gulf of Mexico. Proceedings of the 52nd Gulf and Caribbean Fisheries Institute 52:48-62.

80	Wyanksi, D.M., White, B.D., and Barans, C.A. 2000. Growth, population age structure, and aspects of the reproductive biology of snowy grouper, Epinephelus niveatus, off North Carolina and South Carolina. Fish. Bull. 98:199-218.
81	Zhao, B. and McGovern, J.C. 1997. Temporal variation in sexual maturity and gear-specific sex ratio of the vermilion snapper, Rhomboplites aurorubens, in the South Atlantic Bight. Fish. Bull. 95:837-848.

Appendix P. Economic Models to Analyze Management Actions Proposed for the Commercial and Recreational Dolphin-Wahoo Fisheries in the Comprehensive Annual Catch Limit (ACL) Amendment for the South Atlantic Region

Introduction

The Magnuson-Stevens Reauthorization Act (MSRA) of 2006 mandates the specification of additional safeguard requirements to be applied in federal fisheries. These safeguard requirements include the establishment of overfishing limits (OFLs), annual catch limits (ACLs), annual catch targets (ACTs), and appropriate accountability measures (AMs). The MSRA requires that by 2011 Fishery Management Plans (FMPs) for all fisheries, except fisheries for species with annual life cycles, must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of a Fishery Management Council's Scientific and Statistical Committee's or other established peer review process. These FMPs also are required to establish measures to ensure accountability. AMs are management controls that ensure that the ACLs are not exceeded. The measures are intended to prevent overfishing and maximize optimum yield in the future while minimizing to the extent practicable adverse social and economic effects on fishery participants and their communities.

Although dolphin and wahoo species are not overfished and are not undergoing overfishing the South Atlantic Fishery Management Council (Council) is still required to meet the 2011 MSRA deadline for these species. As a result, the Council prepared the Comprehensive ACL Amendment for the south Atlantic region to specify ACLs and AMs. The Comprehensive ACL Amendment considers a wide range of management actions for a number of commercial and recreational fisheries. Actions 16-25 amend the Dolphin-Wahoo FMP which is the focus of this analysis. This report describes the economic models used to analyze proposed management actions for the commercial and recreational Atlantic dolphin-wahoo fisheries in federal waters from the Florida Keys through Maine[1].

Data

Commercial Sector

Commercial fishers that participate in the south Atlantic dolphin-wahoo fishery are required to submit logbook reports within 7 days of the completion of each trip to either the Southeast Coastal Fisheries (SCF) Logbook Program or the Atlantic Highly Migratory Species (HMS) Logbook Program. The two most prevalent gear types that catch dolphin-wahoo are hook and line (i.e. handlines, rod and reel, and trolling lines) and pelagic longline. Typically, fishers using hook and line gear submit trip reports to the SCF Program which requires respondents to report the weight of all species landed. Fishers employing pelagic longlines tend to submit information about directed dolphin-wahoo trips to the SCF Program; however, when dolphin-wahoo are landed as bycatch on directed HMS trips these fishers usually report to the HMS Program. When reporting to the HMS Program fishers must fill out both trip and set summary forms. Additionally, the HMS Program requires respondents to report the number of fish kept rather than pounds landed.

Trips from the SCF logbook database that landed at least one pound of dolphin-wahoo species in south Atlantic waters from Monroe County, Florida to North Carolina during 2005-2009 were selected as inputs to the economic model. Additionally, sets from the HMS logbook

[1] Although the South Atlantic Council's jurisdiction extends northward only to North Carolina this analysis assumes that the entire Atlantic stock of dolphin and wahoo is of managerial concern to the South Atlantic Council since the majority of landings of these species occur in its jurisdiction.

database that kept at least one dolphin or wahoo caught in Atlantic waters during 2005-2009 were selected for the analysis[2].

The following steps were taken to merge the HMS logbook set-level data with the SCF logbook trip-level data. First, HMS logbook sets were aggregated by a trip schedule number to create a trip-level HMS logbook database. Next, pounds landed of dolphin-wahoo per trip were estimated[3]. We estimated pounds landed of dolphin and wahoo on HMS trips by subtracting the total pounds of each species reported annually to the SCF Program from the total pounds of each species reported annually to the NMFS Accumulated Landings Service (ALS) database in Atlantic waters from the Florida Keys through Maine[4]. The difference was divided by the number of dolphin or wahoo reported to the HMS Program to estimate an average weight per kept fish. The average weight, which was 15.0 pounds ww for dolphin and 47.4 pounds ww for wahoo, was multiplied by the number of dolphin and wahoo kept on HMS trips to derive an estimate of pounds landed per HMS trip. The newly created trip-level HMS logbook database and the original trip-level SCF logbook database were then merged into an aggregated logbook data set and used for the trip-level analysis in the simulation model.

The aggregated logbook data set includes information about landings by species, but does not include information about trip revenues. Therefore, average monthly prices were calculated from the NMFS ALS database and merged with logbook trip reports by year, month, species and

---

[2] HMS trips that reported landings in Puerto Rico or "Unknown State" were dropped from the analysis.

[3] Only pounds landed of dolphin-wahoo were used in the economic model. Other species landed such as swordfish and tunas may contribute significantly to the revenues generated on HMS trips; however, the regulatory analysis for the Comprehensive ACL Amendment only focuses on changes in revenues attributed to landings of dolphin-wahoo.

[4] Landings of dolphin-wahoo in state waters were grouped with HMS landings. State landings were less than 1% of total dolphin and wahoo landings reported to the ALS database and should not bias the estimate of pounds per whole fish by very much.

state. Ex-vessel revenue for each species was calculated as the product of average monthly prices and reported pounds per trip[5]. The analysis for the ACL Amendment focused only on marginal changes in single-species revenue depending on the Action being analyzed. Thus, for this analysis ex-vessel gross revenue for trip *j* in year *t* was calculated as trip revenues from the regulated species *s* (i.e. dolphin or wahoo), $TR_{j,t} = \sum R_{s,j,t}$. Revenues were adjusted to constant 2009 dollars with the consumer price index for all items and all urban consumers.[6]

Recreational Sector

The 2000 Marine Recreational Statistics Survey (MRFSS) southeast intercept data is combined with economic add-on data to characterize anglers and their spatial fishing choices (Hicks et al. 1999). Measures of fishing quality for individual species and aggregate species groups are calculated using the MRFSS creel data. In the dolphin and big game (e.g. wahoo) model, data are derived from dolphin and big game boat trips taken on the Atlantic coast of Florida. Data focus on shore, charter boat and private/rental boat hook-and-line day trip anglers. For a complete description of the data please see Haab et al. (2009).

Simulation Model – Commercial Sector

The general modeling approach was to hypothetically impose the proposed regulations on individual fishing trips as reported to the SCF and HMS logbook databases. Each reported trip was examined with regard to a combination of rules proposed in the Comprehensive ACL Amendment, and the effects of the rules on trip catches and revenues were calculated. A five-

[5] Previous applications of this model calculated changes in net operating revenue to measure the effects of proposed regulations. Cost data was not available for pelagic longline vessels reporting to the HMS logbook, so changes in ex-vessel revenues were used to calculate short-term regulatory impacts.

[6] The consumer price index for all urban consumers can be found at http://data.bls.gov. See series CUUR0000SAO, which was adjusted to a 2009 base period for this study.

year average was used to estimate the expected effects of proposed regulations so that anomalies that may have affected fishing success in any one year would be averaged out. Data for the five year period, 2005-2009, were used to simulate the fishery with the proposed management alternatives associated with dolphin and wahoo for the Comprehensive ACL Amendment.

Short-term economic losses were measured as the resulting reduction in trip gross revenues from landings of dolphin-wahoo species. If a regulatory alternative is predicted to close the dolphin or wahoo commercial fisheries then all revenues that would have been generated from dolphin or wahoo landings on trips after the closing date would be lost. Trips that targeted species other than dolphin-wahoo would continue but still would accumulate short-term economic losses equal to the foregone revenues associated with dolphin-wahoo landings. A shortcoming to this approach is the continuation of regulated trips that mainly land dolphin-wahoo along with a secondary amount of bycatch species. In reality, if the revenue generated from these bycatch species is relatively minor then the trip will likely not be taken. In this case, industry losses could be overstated since cost savings from not taking the trip do not enter into the calculation of short-term economic losses. All trips reported to the HMS logbook are assumed to continue as they are assumed to target dolphin-wahoo as bycatch species only.

Because of data limitations, only changes in ex-vessel revenues will be considered for the evaluation of the proposed regulatory actions. Rather than focusing on a single point estimate, we use a five year average. Ex-vessel gross revenues for the combination of proposed rules denoted by a in regulated year t, $GR_{a,t}$, were totaled for j trips within each logbook year, k, from 2005-2009, with annual totals averaged across all five years.

$$GR_{a,t} = \frac{\sum_{k=2005}^{k=2009} \sum_{j=trips} R_{a,j,k}}{5}$$

The five-year average is interpreted as the expected annual economic effect of the proposed combination of rules on industry gross revenues in management year t, $GR_{a,t}$. Each analysis was conducted for a single management year. In this analysis we assumed t = 2012. This approach can be interpreted as using historical averages over a lengthy time period to smooth out good fishing years and bad ones. We do not know exactly what conditions will prevail in 2012; therefore, we construct an average predicted outcome based on the five most recent years for which data are available.

The predicted outcome for rule-combination a is compared to the predicted outcome for no-action (*i.e.*, no additional management) to determine if the proposed alternatives are expected to generate net benefits or losses to commercial fishers. The fishery without additional management was evaluated by simulating the effects of rules implemented by the original Dolphin-Wahoo FMP which was published on May 27, 2004 with the historical logbook data from 2005-2009. Gross revenues are expected to accrue to the fishery if the predicted outcome for rule combination a exceeds the predicted outcome without additional regulation. Foregone (or lost) revenues would accrue if the predicted outcome for rule combination a is less than the predicted outcome for no additional management. Because the analysis is short-term for management year 2012 only, we expect it to estimate the short-term losses associated with implementation of rules proposed in the Comprehensive ACL Amendment.

Method of Modeling Management Alternatives

Commercial Sector

This section describes the method of modeling the effects of management actions on the commercial dolphin-wahoo fishery. Each type of regulation proposed for dolphin-wahoo species was modeled by restricting the ability to catch and/or keep fish that were reported in the aggregated logbook database. Appendix A presents a brief discussion of the strengths and weaknesses of the model.

Minimum size limits

Larger minimum size limits were modeled by assuming that an additional (when compared to the status quo) percentage, ρ_s^{msl}, of species s on each trip are undersized and must be culled from the catch and discarded.

$$q_{s,j,t} = h_{s,j,t}(1-\rho_s^{msl})$$

Variable $h_{s,j,t}$ represents quantity of species s caught on trip j in year t, and $q_{s,j,t}$ denotes quantity kept after accounting for the effects of the larger minimum size limit. Each trip is assumed to catch the same quantity of species s as without the size limit, but that undersized fish would be discarded and subject to release mortality. Revenues for species s on trip j, $R_{s,j,t} = p_{s,j,t}\, q_{s,j,t}$, are based on quantities kept, $q_{s,j,t}$, and price per pound, $p_{s,j,t}$. The harvest of other species on trip j, $h_{sp,j,t}$ for $sp \neq s$, is assumed not to be affected by the proposed minimum size limit for species s. After accounting for the proposed minimum size limit and other jointly-proposed rules, then the expected losses for trip j due to a minimum size limit were calculated as a reduction in trip revenues for species s, $p_{s,j,t}\,(q_{s,j,t} - h_{s,j,t})$.

The percentages that define the additional undersized fish associated with each proposed minimum size limit were held constant throughout the analysis and regardless of the alternatives proposed for other species in the fishery. When effective biologically, minimum size limits gradually change the age and size distribution of the resource and the percentage of undersized fish landed. However, this analysis does not include a biological component with which to endogenously determine changes in the proportion of undersized fish that would be landed each year.

These percentages refer to numbers of fish smaller than the proposed minimum size limits. However, the simulation model works with quantities of each species landed as reported on logbook trips rather than numbers of fish. Hence, this method of simulating the effect of minimum size limits is an approximation for the preferred method that would use numbers of fish, and is likely to overestimate the effect of the minimum size limit when the average weight per fish for species *s* exceeds 1 pound.

Trip limits

Trip limits for species *s* impose a maximum allowable catch per trip, and trips with catches of species *s* in excess of the trip limit, TL_s, were modeled by restricting their catches to the trip limit.

$$q_{s,j,t} = TL_s \qquad\qquad when\ h_{s,j,t} \geq TL_s$$

Losses attributable to the trip limit were measured as the value of the difference between catches for species *s* that would have occurred with and without the trip limit, $[TL_s - h_{s,j,t}]$. Please note that losses due to the trip limit would be equal to the difference between the trip limit and reported catches only when there were no proposed minimum size limits. The quantity of species s in excess of the trip limit is assumed to have been caught, discarded, and subject to release mortality because the trip would continue in search of other species. In this event, trip costs would not change due to implementation of trip limits.

Trips with catches less than the trip limit, after accounting for the effects of minimum size limits if implemented conjunctively, would not incur additional losses due to the trip limit.

$$q_{s,j,t} = h_{s,j,t}(1-\rho_s^C) \qquad \text{when } h_{s,j,t}(1-\rho_s^C) < TL_s$$

The simulation model includes a behavioral assumption about the effect of trip limits on the duration of trips. Trips are modeled to terminate after the trip limit is filled if the regulated species is the primary source of revenue on the trip. However, if the regulated species is not the primary source of revenue, then the trip is modeled to continue even if the trip limit is filled. In this event, fish caught in excess of the trip limit are presumed to be caught and discarded. Trip costs would not change.

Trip limits create an incentive for fishermen to take shorter, but more frequent fishing trips. However, this behavioral response has not been modeled for this analysis.

Quotas

The regulatory alternatives (other than Action 20) in the Comprehensive ACL Amendment associated with dolphin-wahoo can be viewed as annual quotas since the ACLs and AMs could close the commercial dolphin or wahoo fisheries before the end of the fishing year when compared to past years. Quotas may or may not result in fishery closures though. When quotas are filled, the closure dates vary annually depending on the speed at which the fishery lands its quota for species s. The closure extends through the end of the fishing year once the quota is filled.

The model sets variable $open_s = 0$ to reflect a no-harvest rule resulting from fishery closures after the quota is filled. Otherwise, it sets $open_s = 1$ to indicate that the fishery for species s is open and that trips are unaffected by a quota closure.

$$q_{s,j,t} = h_{s,j,t}\, open_s$$

Variable $h_{s,j,t}$ represents quantity of species s caught on trip j in year t, and $q_{s,j,t}$ denotes quantity kept after accounting for the effects of a fishery closure. Please note that the dolphin and wahoo fisheries are not subject to a combined aggregate quota.

The model compares the accumulated fishery landings of species s with its quota to determine if and when the fishery would be closed. This is accomplished by sorting logbook trip reports by year, month and day landed, and then performing a chronological trip-by-trip accumulation of landings that likely would occur given the selected combination of proposed management alternatives. The model sets $open_s = 1$ at the beginning of each fishing year, and sets $open_s = 0$ as soon as accumulated landings exceed the quota for species s.

Quotas tend to promote a race for fish as fishers compete to maximize their shares of the overall catch before the fishery is closed. The model does not include the possibility that fishers might accelerate their trips in anticipation of a fishery closure, or that dockside prices might fall if market gluts occur due to the accelerated harvesting activity. More work is needed on these issues since they are two of the primary outcomes of quota management.

Recreational Sector

Haab et al. (2009) estimates conditional logit, nested logit, and mixed logit models using the dolphin and big game data described in the previous section to derive welfare estimates. The approach used for the recreational analysis for the ACL Amendment was to use willingness-to-pay values for one additional fish caught and kept to predict the aggregate economic value to the recreational sector from dolphin and wahoo trips under the different proposed regulatory scenarios.

First, estimates of the willingness-to-pay for one additional fish caught and kept were selected from the results of Haab et al. (2009) for dolphin over 20 inches fork length (i.e. big dolphin) and wahoo (i.e. big game). For dolphin, the mixed logit model yielded an estimate of $37 per fish per trip while the nested logit model yielded an estimate of $103 per fish per trip. For wahoo, the conditional logit model yielded an estimate of $40 per fish per trip while the nested logit model yielded an estimate of $81 per fish per trip.

Next, an estimate of the willingness-to-pay for one additional pound of fish caught and kept was derived by dividing the figures above by the average weight of a recreationally caught dolphin and wahoo, which was 8.2 lbs. ww and 22.6 lbs. ww, respectively. The average willingness-to-pay per pound of fish was then multiplied by the different annual harvests of recreationally caught fish that were implied by the various regulatory alternatives in the ACL Amendment to estimate the aggregate economic value to the recreational sector. The No Action Alternative was evaluated by multiplying the per pound willingness-to-pay estimates by the annual average harvest of recreationally caught dolphin and wahoo from 2005-2009.

References

Dumas, C.F., J.C. Whitehead, C.E. Landry, and J.H. Herstine. 2009. "Economic Impacts and Recreation Value of the North Carolina For-Hire Fishing Fleet." North Carolina Sea Grant FRG Grant Report 07-FEG-05.

Haab, T.C., R. Hicks, K. Schnier, and J.C. Whitehead. 2009. "Angler Heterogeneity and the Species-Specific Demand for Recreational Fishing in the Southeastern United States." Draft Final Report Submitted for MARFIN Grant #NA06NMF4330055.

Hicks, Rob, Scott Steinbeck, Amy Gautam, and Eric Thunberg. August 1999. "Volume II: The Economic Value of New England and Mid-Atlantic Sportfishing in 1994." NOAA Technical Memorandum NMFS-F/SPO-38.

Discussion of Model Strengths and Weaknesses

The logbook data used in this analysis reflect the full range of harvesting activities and outcomes for trips in the commercial dolphin-wahoo fishery, from targeted to incidental capture of various species, and included differences in fishing activities by area, gear, duration of trip, crew size, good luck and bad luck, and so forth. In this sense, this analysis is more realistic than conventional bioeconomic models, which specify homogeneous fishing activity within a few discrete fishing classes defined by vessel size, gear type, area fished, or scale of operation.

The use of logbook data to simulate the effects of proposed management actions is most appropriate in the short-term because logbooks report actual fishing behavior during a recent period of time. This type of simulation analysis assumes that fishing conditions in the near-future will be similar to conditions in the recent past, and that annual variations in model outcomes are associated with short-term anomalies rather than long-term trends in economic, biological or environmental conditions.

The use of logbook data becomes less reliable for longer-term analyses because fishing effort and catch rates may change in response to changes in economic, regulatory and environmental conditions. Dockside fish prices, fuel prices and other input costs, the abundance of fish, regulation and other factors may change over time, and all interact to determine the profitability of fishing. Regulation tends to reduce the profitability of fishing, at least initially when first implemented, and fishing effort in the dolphin-wahoo fishery may decline if some boats switch to other gears and species (e.g. rod and reel targeting king mackerel in North Carolina). The simulation model does not account for more complex behavioral responses such as a redirection of fishing effort among different types of fishing as fishers react to minimize the adverse effects of management. This analysis also does not account for potential changes in fishing effort over time, and additional econometric analysis is needed to model this type of behavioral response to changes in resource abundance and regulation.

Appendix Q

Proposed South Atlantic Council ABC Control Rule

Report of the SAFMC SSC September 2009 Revised August 2010

Background

The SAMFC SSC first discussed acceptable biological catch (ABC) control rules in June 2008 in response to publication of a proposed rule addressing National Standards 1 (NS1) guidelines for the Magnuson-Stevens Reauthorization (MSRA). An issue paper outlining various alternative approaches to establishing ABC was provided to the Council in September 2008. The Council supported further developing a control rule approach which specified ABC as a function of yield at maximum sustainable yield (MSY) and assessment uncertainty. The Council further specified that ABC should be set at a level providing a 25% chance of overfishing, with a range of values corresponding to 10 to 50% chance of overfishing. The Council intends to specify ABC control rules in its comprehensive annual catch limit (ACL) amendment.

Although the approach suggested in September 2008 provides guidance for assessed stocks for which the probability of overfishing can be provided in terms of yield, it does not address those stocks that lack assessments. Therefore, the SSC requested a special meeting for March 2009 devoted solely to developing an ABC control rule that could be applied to all managed stocks. During that meeting, the SSC developed the control rule reflected in this document after much deliberation and discussion.

First, the group decided on general characteristics and components of the rule and developed a framework of dimensions and tiers. Dimensions reflect the critical characteristics to evaluate, including data and assessment information availability and life history traits. Tiers are objective levels within dimensions that reflect the range of information available. Each tier is assigned a score which contributes to the overall adjustment factor.

Once the general approach was established, a number of example stocks were put through the framework to ensure that it included adequate tiers to accommodate a variety of circumstances and appropriate dimensions to adequately address uncertainty. This exercise led to considerable further discussion that better defined the concepts and resulted in some tiers being combined to keep the rule as parsimonious as possible. The following sections of this document describe the tiers and summarize critical discussions that occurred during development.

An important caveat must be stated upfront. The approach described here is applicable when the OFL can be stated in weight and some measure of statistical uncertainty about the OFL can be estimated. Future discussions and development will focus on ways to apply this methodology in a consistent manner to stocks for which the OFL or its statistical uncertainty cannot be estimated.

Control Rule Concept

The SSC agreed that the ABC control rule should provide an objective means of determining the buffer, or amount of separation, between the overfishing level (typically MSY) and the ABC. The desired rule should evaluate multiple characteristics, accommodate varying data levels and assessment information, and incorporate productivity and susceptibility measures. Finally, the control rule should provide objective adjustments to the probability of overfishing according to key risk factors, with actual ABCs expressed as yield in mass obtained through a probability density distribution or a "P*" analysis.

Discussion of the general concept and approach led to creation of a system of dimensions composed of multiple tiers that are scored to provide a value that can be used to select the appropriate probability of overfishing for each stock. Each stock evaluated receives a single "adjustment factor", which is the sum of tier scores across dimensions and which ultimately determines the amount of buffer or separation between OFL and ABC. Adjustment factors are subtracted from the "base probability of overfishing" to provide the "critical probability". The base probability of overfishing is the value used to determine OFL. The critical probability is a probability of overfishing that is used to determine ABC in the same manner that the base probability is used to determine MSY and OFL. Through this process, tier scores equate to an adjustment in the probability of overfishing occurring, and do not represent, or necessarily correspond to, a specific poundage or percentage of the OFL. Recommended ABC values are derived from probability density functions that provide the probability of overfishing occurring for any particular yield.

Control Rule Characteristics

The SSC began deliberations by developing a list of desirable characteristics and principles for ABC control rules. These included:

Incorporate a tiered system based on data and assessment information availability

Include objective criteria with numerical scoring that can be applied to all stocks

Incorporate stock status

Reflect the degree to which uncertainty is characterized

Acknowledge the cumulative nature of uncertainty

Provide a means to incorporate vulnerability and life history traits, ideally through inclusion of productivity-susceptibility analyses (PSA) scores

Provide flexibility to accommodate a wide range of biological characteristics, assessment methods and information, data availability, and assessment age

Provide an objective means of incorporating potential changes in data and assessment information availability over time

Control Rule Dimensions

The SSC incorporated these general characteristics and principles into a series of tiers and dimensions that form the foundation of the control rule. Four dimensions are included in the proposed control rule framework: assessment information, characterization of uncertainty, stock status, and productivity/susceptibility of the stock. Each dimension contains multiple levels or tiers that can be evaluated for each stock to determine a numerical score for the dimension. The four dimensions and their tiers are described in detail in the following section and summarized in Table 1. Application to particular stocks is illustrated in Table 2.

Dimension 1. Assessment Information

The assessment information dimension reflects available data and assessment outputs. The five tiers within this dimension range from a full quantitative assessment which provides biomass, exploitation, and MSY-based reference points to the bottom tier for those stocks which lack reliable catch records.

The age or degree of reliability of an assessment can be incorporated when determining the scoring for an individual stock. For example, a stock having a pre-SEDAR assessment may be ranked at a lower tier despite that assessment having the required outputs for a higher tier, because the reliability of an output value cannot be determined or the method by which an output was obtained is not clearly documented. Estimates from an assessment may be considered unreliable or inapplicable when considered at a later date (e.g. assumed equilibrium conditions may have changed). Similarly, an age-aggregated assessment approach may provide an estimate of MSY, but in some instances such estimates may be considered less reliable than estimates from an age-structured approach. The intent is that tier rankings are based on the data and outputs considered reliable at the time the ranking is made. Scores for these tiers increase as the level of available information declines.

Assessment Information Tiers Scoring

1 Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0)

2 Quantitative assessment provides estimates of either exploitation or biomass, but not MSY benchmarks; requires proxy reference points. (-2.5)

3 Quantitative assessment that provides relative measures of exploitation or biomass; absolute measures of status are unavailable; references may be based on proxy. (-5)

4 Reliable catch history available (-7.5)

5 Scarce or unreliable catch records (-10)

Dimension 2. Characterization of Uncertainty

This dimension is considered critical because it specifically addresses language in the MSRA stating that ABC should be reduced from OFL to account for assessment uncertainty. Because accounting for uncertainty tends to be a cumulative process, an incomplete or partial accounting of know uncertainties will tend to underestimate the underlying uncertainty in the results. Tiers for this dimension reflect how well uncertainty is characterized, not the actual magnitude of the uncertainty. The magnitude is incorporated through the assessment and is reflected in the distribution of yield estimates. Adjustment scores for this tier increase as the degree and completeness of uncertainty characterizations decrease..

Uncertainty Tiers, Examples, and Scoring

1. Complete. This tier is for assessments providing a complete statistical (e.g. Bayesian re-sampling approach) treatment of major uncertainties, incorporating both observed data and environmental variability, which are carried forward into reference point calculations and stock projections. A key determinant of this level is that uncertainty in both assessment inputs and environmental conditions are included. (0)

Example: No currently assessed stocks meet this level.

2. High. This tier represents those assessments that include re-sampling (e.g. Bootstrap or Monte Carlo techniques) of important or critical inputs such as natural mortality, landings, discard rates, age and growth parameters. Such re-sampling is also carried forward and combined with recruitment uncertainty for projections and reference point calculations, including reference point distributions. . The key determinant for this level is that reference point estimates distributions reflect more than just uncertainty in future recruitment. (-2.5) Example: SEDAR 4, South Atlantic snowy grouper and tilefish.

3. Medium: This tier represents assessments in which key uncertainties are addressed via statistical techniques and sensitivities, but the full uncertainties are not carried forward into the projections and reference point calculations. Projections may, however, reflect uncertainty in recruitment and population abundance. Although outputs include distributions of F, F_{MSY} as in the 'High' category above, in this category fewer uncertainties are addressed in developing such distributions. One example for this level is a distribution of F_{MSY} which only reflects uncertainty in recruitment. (-5)

Examples: SEDAR 15, South Atlantic red snapper and greater amberjack; SEDAR 17, South Atlantic Spanish mackerel and vermilion snapper

4. Low. This tier represents those assessments lacking any statistical treatment of uncertainty. Sensitivity runs or explorations of multiple assessment models may be available. The key determinant for this level is that distributions for reference points are lacking. (-7.5) Example: SEDAR 2, South Atlantic black sea bass

5. None. This tier represents assessments that only provide single point estimates, with no sensitivities or other evaluation of uncertainties. (-10)

Example: None.

Dimension 3. Stock Status

Stock status is included among the dimensions so that an additional adjustment to ABC can be added for stocks that are overfished or overfishing. Five tiers are included, ranging from a high biomass and low exploitation level where no additional buffer is applied to the situation where either is unknown and the highest buffering is applied. With the exception of distinguishing between the top two tiers which both reflect stocks that are neither overfished nor experiencing overfishing, application of these tiers is straightforward and based directly on the final status determinations, independent of the sensitivity or uncertainty in that final determination. Scores for these tiers increase for decreasing and unknown stock status.

Stock Status Tiers and Scoring.

1 Neither overfished nor overfishing, and stock is at high biomass and low exploitation relative to benchmark values. (0)

2 Neither overfished nor overfishing, but stock may be in close proximity to benchmark values (-2.5)

3 Stock is either overfished or overfishing (-5)

4 Stock is both overfished and overfishing (-7.5)

5 Either status criterion is unknown. (-10)

Dimension 4. Productivity and Susceptibility Considerations

The final dimension addresses biological characteristics of the stock. This includes productivity, which reflects a population's reproductive potential, and susceptibility to overfishing, which reflects a stocks propensity to be harvested by various fishing gears. Efforts to quantify these characteristics, generally termed "PSA analyses", typically incorporate a variety of life history characteristics in a framework that distills many metrics into a single risk score. The two primary approaches currently available, one from NMFS and the other from MRAG, follow similar procedures, but incorporate slight differences in how characteristics are scored and how missing information is addressed. For example, the MRAG formulation incorporates a scoring value for parameter for which values are unknown into the overall score, whereas the NMFS formulation omits from scoring those parameters where the values are unknown.

After presentations on both approaches and considerable discussion on their differences, the SSC decided to incorporate the MRAG formulation of PSA into the SAFMC ABC control rule. The SSC believed this approach to be preferable based on the broad suite of attributes considered in the scoring and the inclusion of unknowns in the scoring. In general, it is believed that including unknowns in the scoring will provide stronger encouragement to address the unknown parameters since doing so will in many cases tend to moderate the buffer contributed by the PSA value. Further, because unknown information contributes to overall uncertainty, accounting for potential unknowns in the scoring is consistent with the underlying control rule framework.

PSA Tiers and Scoring

1 Low Risk. High productivity, low vulnerability and susceptibility, score <2.64[1] (0)

2 Moderate Risk. Moderate productivity, vulnerability, susceptibility, score 2.64-3.18[1] (-5)

3 High Risk. Low productivity, high vulnerability and susceptibility, score >3.18[1] (-10) [1]Scores as described in Hobday *et al.*, 2007

Determining Total Adjustment and Final ABC Recommendations

The uncertainty buffer, or difference between OFL and ABC, is expressed in terms of a reduction in the “probability of overfishing”, or “P*”. The adjustment score provided by the tiers and dimensions represents the amount by which P* is reduced to obtain the critical value for P*.Therefore, the key product of the control rule is the sum the scores for all the dimensions because that is the ABC adjustment factor that is used to calculate the critical value for P* from the base P*. The scoring of tiers within dimensions is designed to provide a maximum P* adjustment of 40% and a minimum of 0%. When applied to the base MSY specified at the 50% level, this range of possible adjustment results in a range of critical values for P* from 10% to 50%. These critical values are then used to determine the actual ABC using projection tables that provide the level of annual yield that corresponds to a particular P*.

The ABC adjustment factor is obtained by summing the scores across dimensions once the data are evaluated and tier assignments are made within each dimension. The scoring system is designed so that low values are assigned for the ‘best’ circumstances and the values increase as circumstances worsen. Considering dimension 1 for example, a stock which has an assessment providing estimates of biomass, exploitation, and MSY-based reference points would have a score of 0, while a stock which is unassessed and has unreliable catch records would receive a score of 10. Each stock will be categorized by tiers before the score is tallied so that categorizations are made independent of the final outcome.

The critical P* is expressed as a probability of overfishing and is derived by subtracting the ABC adjustment factor from 50%. For example, if the adjustment factor (sum of the dimension scores) is 20, the critical value for P* will be 30% (50%-20), and the ABC recommendation will be based on a 30% probability of overfishing occurring in the year for which the recommendation is made. Note that, due to varying shapes in the distribution of estimated yield, it is unlikely that the observed difference between MSY and ABC will equal the difference between the P* that defines MSY and the critical P*, and it is also unlikely the two stocks receiving identical critical P* values will reflect equal differences between ABC and OFL when such differences are compared in weight units.

Setting ABC equal to OFL implies a P* equal to 50%, where 50% represents the chance of overfishing occurring. Reducing P* will reduce ABC and provide a reduction in the probability of overfishing occurring. The relationship between the amount of reduction in P* and the resulting reduction in ABC is determined by the shape of the distribution of yield about the management parameters. For a given reduction in P*, broad distributions (suggesting higher uncertainty) will result in larger reductions in ABC whereas narrower distributions (suggesting lower uncertainty) will result in smaller reductions in ABC.

Using the ABC control rule described here, the range of P* that is considered acceptable is from 50% to 10%. This range was derived after considering Council guidance directing the SSC to consider ABCs based on probabilities of overfishing between 10% and 40%, general guidance under the MSA that management actions must have at least a 50% chance of success, and the common practice of specifying MSY based on the midpoint of a distribution of possible outcomes. The top tier in each dimension does not reduce P*, so the ABC recommendation for a stock receiving the top score across all dimensions would be the same as the OFL recommendation and there would be no buffer applied between ABC and OFL. While this may be perceived as potentially risk-prone, and inconsistent with some interpretations of the language describing ABC with regard to OFL, the only situation in which this would occur in this framework is for a stock with a complete assessment including full, probability-based uncertainty evaluations that is at low exploitation and high biomass, and is considered highly productive with low vulnerability and susceptibility. It should be noted that none of the stocks examined so far meet these criteria, and those stocks that have not been examined lack stock assessments and therefore they too will fail to meet these criteria.

The SSC considered whether each dimension should be equally scored and contribute the same relative weight to the final adjustment factor. After discussing various weighting schemes and approaches, the SSC determined that there was insufficient justification at this time to weight any particular dimension greater than another as all are considered important to objectively evaluating overall uncertainty. However, the SSC also recognizes that this could change and the ABC could be modified in the future if evidence develops that suggests one dimension should be more influential than the others.

The SSC is cognizant that ABCs, and the degree of separation between ABC and OFL, will be compared across stocks when recommendations are reviewed. The SSC also recognizes the importance of being consistent when evaluating the level of information for a wide range of stocks. In discussing ways of promoting consistency when multiple stocks must be evaluated, the SSC decided that tier assignments should be made within a single dimension for all stocks under consideration, as opposed to evaluating single stocks across all dimensions. This will help ensure that the data level for each stock is evaluated relative to and consistent with other stocks being considered. It is anticipated that approaching the process in this order will help avoid situations where stocks with similar conditions receive different tier ratings.

Overfished Stocks and Rebuilding Plan Selection

The adjustment factor can also be used to derive a probability of rebuilding success for selecting rebuilding schedules. The probability of rebuilding success is determined by subtracting the P* critical value from 100%, such that stocks with high P* values could be managed using a rebuilding schedule that approaches the 50% level commonly used now, and those with the lowest P* values will require rebuilding schedules with higher probability of success, up to a maximum of 90%.

The adjustment factor for stocks achieving the lowest scores across all dimension would be 0, resulting in a P* of 50% which would lead to recommendation of a rebuilding schedule with a 50% (100-50) probability of success by the end of the rebuilding period (Tmax), consistent with most current rebuilding schedules. The adjustment factor for stocks receiving the highest scores across all dimensions would be 40%, resulting in a critical P* of 10% (50 baseline

– 40 for buffer adjustment) and compelling a recommendation for rebuilding projections based on 90% probability of success by the end of the rebuilding period.

Values for the rebuilding success probability are provided for all stocks in Table 2 for illustration of the concept, although in application only stocks with status ‘overfished’ would require this parameter. Because the decisions required to develop the rebuilding plan are the same ones required to develop ABC, this framework allows estimation of both the rebuilding schedules and the final yield for a rebuilt stock from a single set of decisions. The only change required once a stock reaches the rebuilt status would be to calculate an updated adjustment factor reflecting the change in stock status from ‘overfished’ to ‘not overfished and not overfishing’. Any such changes can be evaluated efficiently and quickly, and the system is essentially self-adjusting to critical events such as a change in stock status because the criteria and scorings are all determined in advance.

Using red porgy as an example, the total buffer adjustment factor of 15 results in a critical P* of 35% (50% baseline – buffer adjustment of 15) and a rebuilding probability of success of 65% (100% baseline – P* of 35). However, once the stock is rebuilt and the stock is neither overfished nor is overfishing occurring, scoring within the status dimension changes from tier 3 (adjustment value of 5) to tier 2 (adjustment value of 2.5) and the overall adjustment factor decreases by 2.5 to 12.5. The expected critical P* for the rebuilt stock becomes 37.5 and the expected ABC for the rebuilt stock can be determined from the probability distribution table of MSY at equilibrium or rebuilt conditions. In management terms, the resultant recommendations for red porgy would be to select a rebuilding plan with at least a 65% chance of achieving $SSB>SSB_{MSY}$ within the allotted rebuilding time period, followed by a recommendation to manage not to exceed a 37.5% chance of overfishing occurring once the stock is rebuilt.

Depletion Threshold

The NS1 guidelines state that an ‘ABC control rule…may establish a stock abundance level below which fishing would not be allowed.’ Currently the Pacific Fishery Management Council uses a 10% threshold. Specifically, if biomass is estimated below 10% of the virgin condition, then directed fishing is not allowed. The SAFMC SSC supports the concept of a depletion threshold and elimination of directed fishing when SSB falls below the threshold, and recommends that the threshold be established at 10% of unfished conditions. The SSC will recommend that directed fishing not be allowed if there is a reliable indication that current biomass is at or below 10% of the unfished biomass or, in cases where biomass estimates are considered unreliable, if SPR is at or below 10%.

Future Control Rule Modifications

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACL's became available during the period that the SSC discussed the control rule and helped direct this final version. Although the SSC believes the rule described herein is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P* that determines MSY and OFL is considered and incorporated, the Committee recognizes that this rule may require modification in the future as final guidance on MSRA implementation becomes available. The Committee also recognizes that this document provides scientific advice to the Council, which will ultimately adopt the Control Rule and in so doing may make modifications.

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule. Finally, the eight SSCs of the eight Fishery Management Councils are all working along a similar path to develop ABC control rules. These SSCs include many of the top fisheries scientists in the Country and it is expected that many good ideas will emerge from this collective effort. Such ideas will be shared amongst all SSCs through the annual National SSC Meetings initiated in 2008, and the SAFMC SSC intends to take full advantage of the insights, shared experiences, and potential improvements to ABC control rules offered by such national collaboration.

Table 1. Hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

I. Assessment Information (10%)
1 Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)
2 Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%)
3 Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%)
4 Reliable catch history. (7.5%)
5 Scarce or unreliable catch records. (10%)

II. Uncertainty Characterization (10%)
1 **Complete**. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%)
2 **High**. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%)
3 **Medium**. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%)
4 **Low**. Distributions of Fmsy and MSY are lacking. (7.5%)
5 **None**. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)

III. Stock Status (10%)
1 Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%)
2 Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%)
3 Stock is either overfished or overfishing. (5%)
4 Stock is both overfished and overfishing. (7.5%)
5 Either status criterion is unknown. (10%)

IV. Productivity and Susceptibility – Risk Analysis (10%)
1 **Low risk**. High productivity, low vulnerability, low susceptibility. (0%)
2 **Medium risk**. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)
3 **High risk**. Low productivity, high vulnerability, high susceptibility. (10%)

Table 2. Example of tier assignments, scores, adjustment factors, and critical probability values as applied to assessed stocks in the South Atlantic.

Stock		I	Dimension II	III	IV	Adjustment Factor (total score)	Critical P*	P(Successful Rebuild)
Golden Tilefish	Tier Within Dimension Score	1 0.0	2 2.5	3 5.0	3 10.0	17.5	32.5	67.5
Snowy Grouper	Tier Within Dimension Score	1 0.0	2 2.5	4 7.5	3 10.0	20.0	30.0	70.0
Gag Grouper	Tier Within Dimension Score	1 0.0	3 5.0	3 5.0	3 10.0	20.0	30.0	70.0
Red Snapper	Tier Within Dimension Score	2 2.5	3 5.0	4 7.5	2 5.0	20.0	30.0	70.0
Vermilion Snapper	Tier Within Dimension Score	2 2.5	3 5.0	5 10.0	2 5.0	22.5	27.5	72.5
Black Sea Bass	Tier Within Dimension Penalty	1 0.0	3 5.0	3 5.0	2 5.0	15.0	35.0	65.0
Red Porgy	Tier Within Dimension Score	1 0.0	3 5.0	3 5.0	2 5.0	15.0	35.0	65.0
Yellowtail Snapper	Tier Within Dimension Score	1 0.0	3 5.0	2 2.5	2 5.0	12.5	37.5	62.5
Hogfish	Tier Within Dimension Score	4 7.5	5 10.0	5 10.0	3 10.0	37.5	12.5	88.5
Goliath Grouper	Tier Within Dimension Score	4 7.5	5 10.0	5 10.0	3 10.0	37.5	12.5	88.5
Mutton Snapper	Tier Within Dimension Score	1 0.0	3 5.0	2 2.5	3 10.0	17.5	32.5	67.5
Greater Amberjack	Tier Within Dimension Score	1 0.0	3 5.0	2 2.5	2 5.0	12.5	37.5	62.5
King Mackerel	Tier Within Dimension Score	3 5.0	3 5.0	2 2.5	3 10.0	22.5	27.5	72.5
Spanish Mackerel	Tier Within Dimension Score	3 5.0	3 5.0	5 10.0	2 5.0	25.0	25.0	75.0

Addenda.

South Atlantic SSC's Recommended Tiered Approach to Deriving OFL and ABC Values for Fisheries

August 2010

The SSC discussed control rules for unassessed stocks over several meetings in 2010. An initial approach was put forth in April and reviewed by the Council in June. The Council raised some concerns with the April proposal and provided guidance to the SSC along with a request for further consideration. In August 2010 the SSC discussed the Council's guidance and considered progress on this topic made in other regions, along with initial guidance provided through the National SSC workshop ad hoc workgroup on unassessed stocks control rules. These deliberations led to the rule described here.

Level 1 tier – Assessed - Whenever possible, ABC recommendations should conform to an ABC control rule that is based on the probability of overfishing(i.e., P* approach)

-Addressed with current control rule -Provides pdf of OFL. -Approach will be consistent.

Note: This tier is addressed in the preceding section

Level 2 tier - Depletion based stock reduction analysis (DBSRA) – (Dick and MacCall).

-If the information necessary to implement the Council's approved ABC control rule is not available (e.g., MSY reference points, projected stock size, distribution of OFL, etc.), then the basis of the ABC should be explicit about what aspects of the derivation were based on expert judgment.

-Requires full history of landings and other life history info for the stock

- Gives a pdf of OFL. Could apply P* or other risk/p level to derive ABC

Level 3 tier - depletion-corrected average catch (DCAC) (MacCall 2009). If components of the ABC control rule cannot be provided, a provisional ABC should be based on alternative approaches, but deviation from the control rule should be justified..

-Requires less data than 2nd tier

- Provides provisional ABC directly – OFL unknown

Level 4 tier- Catch only. ORCS ad hoc group is currently working on what to do when not enough data to perform DCAC. -Difficult to prescribe. -Requires judgment and careful consideration of all available sources, which may vary greatly between stocks falling in this tier

APPENDIX R.

RESPONSES TO COMMENTS

The following section satisfies National Environmental Policy Act's (NEPA) requirement for responding to comments on the draft environmental impact statement (DEIS). NEPA requires that a federal agency shall respond to comments on the DEIS by one or more of the following means: 1) Modify an existing alternative; 2) develop and analyze a new alternative; 3) supplement, improve, or modify the analyses; 4) make factual corrections; or 5) explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position. In an effort to satisfy the fifth requirement mentioned above, the following section responds to written comments generated during the comment period for the Fishery Management Plan (FMP) and DEIS, in addition to those received as verbal testimony during public hearings.

The first section summarizes and responds to comments on the DEIS from the Environmental Protection Agency (EPA), which received a "Lack of Objections" rating from that agency. The second section responds to comments from non-governmental organizations. The third section summarizes and responds to comments received from the sport-fishing industry and the public, during the DEIS comment period.

I. Environmental Protection Agency (EPA)

EPA comment 1 (Removal of species from the Snapper Grouper Fishery Management Unit (FMU)): *Explain how criteria for removal were developed. Clarification regarding data collection for removed species.*

Response: Currently, there are 73 species in the Snapper Grouper FMU. A total of 39 species were identified for removal from the FMU in the DEIS. At their August 9, 2011, meeting, the South Atlantic Fishery Management Council (South Atlantic Council) changed their preferred alternatives, which results in the removal of 13 species from the snapper grouper FMU. Criteria for retention or removal of species from the FMU are provided by NMFS guidelines, which specify that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 CFR §600.320(d)(1)). NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)): The importance of the fishery to the Nation and the regional economy; whether an FMP can improve the condition of the stock; the extent to which the fishery could be or already is adequately managed by states; whether an FMP can further the resolution of competing interests and conflicts; whether an FMP can produce more efficient utilization of the fishery; whether an FMP can foster orderly growth of a developing fishery; and costs of the FMP balanced against benefits. Ten of the 13 species chosen for removal from the snapper grouper FMU are almost entirely taken in state waters, and three of the species are managed under the Florida Marine Life Species Rule, which requires the use of non-lethal methods of harvest and that the fish, invertebrates, and plants so harvested, be maintained alive for the maximum possible conservation and economic benefits. Additionally, two of the 13 species have zero landings. The South Atlantic Council concluded these 13 species are not in need of federal management since they could be or are already effectively managed by the states. Furthermore, the South Atlantic Council concluded that management of two species that have no commercial or recreational landings would have little importance to the Nation and regional economy. Therefore, federal management of the 13 species identified for removal from the FMU would not likely affect the condition of these stocks.

The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (e.g., SAFE reports) to determine whether they should be added back into the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU.

EPA comment 2 (organization of the document)*: Multiple preferred alternatives should be combined into one preferred alternative for that specific action. A clear description is needed in the summary section for all alternatives considered, the preferred alternatives, and an analysis of the potential impacts to the biological, social, economic, and administrative environments as outlined in Amendment 10 to the Spiny Lobster FMP. Labels are missing for snapper grouper complex 2 and 4 in the summary section.*

<u>Response</u>: The Comprehensive Annual Catch Limit (ACL) Amendment, which amends four fishery management plans (FMPs), contains 33 actions and multiple alternatives for each action. The South Atlantic Council decided to choose multiple preferred alternatives because of the complex and comprehensive nature of this amendment. Due to the large number of actions and alternatives in the document, the summary section focuses on the preferred alternatives. NEPA guidelines encourage agencies not to exceed 15 pages in the summary of a document. To maintain a summary that is as concise as possible, the reader of the summary section is referred to Section 2 of the document, which provides a comparison of the effects for all alternatives for the actions considered.

Labels for snapper grouper complex 2 and 4 are now present in the summary in the final environmental impact statement (FEIS) and integrated Comprehensive ACL Amendment.

EPA comment 3 (Demographics/Social Vulnerability/Environmental Justice (EJ))*: Social impacts need to be adequately quantified regarding EJ fishers and communities. Real impact of regulatory change on fishing communities, especially the low-income/minority fishing communities, needs to be fully captured and explained.*

<u>Response</u>: The Council has attempted to place fishing communities within the context of social vulnerability, at present data have not been refined to the individual or vessel level within communities to allow analysis of the direct impacts upon minorities or low-

income communities. Because demographic data on fishermen that would allow the Council to identify those who live below the poverty level, or even those who are Hispanic (the only count would have to be those with Hispanic names) are not available, it is difficult to judge how those populations would be affected by actions within this amendment. While it is true that minorities and those below the poverty line do suffer more negative impacts from social disruption, it cannot be stated with certainty that they will be affected negatively from these actions. Therefore, an attempt was made to identify where vulnerable populations may be and it was hoped that through public comment, any specific issues that may be related to that vulnerability would have been identified and then could be addressed through South Atlantic Council action by way of bringing attention to where these populations may reside. The Council will continue to revise and refine analyses to address EJ populations in the future to ensure a more complete social impact assessment.

EPA comment 4 (Public Participation)*: There is no discussion in the scoping report related to EJ communities or strategies used to engage or provide outreach to minorities. The South Atlantic Council should target Hispanic communities with Spanish materials/translators. Appendix K needs to show how many public meetings were held and if EJ communities were present at the public meetings.*

Response: An effort to target EJ populations has been part of outreach for recent amendments. In the future, this kind of outreach will be continued further through translation of summary documents into Spanish where needed. With the recent addition of a social scientist to South Atlantic Council staff and NOAA Fisheries Service Southeast Regional Office, more attention to EJ populations will be possible and outreach to them will be an integral part of future plan development.

Appendix K has been revised to address the above concerns to the extent possible.

II. Comments from Non-Governmental Organizations

Comment 1*: The South Atlantic Council must demonstrate how the P* distribution for the scientific and statistical committee's (SSC) acceptable biological catch (ABC) control rule for assessed species is applied to each species. The amendment should call for a future performance evaluation of the ABC control rule to determine when and how it needs to be modified to achieve its goals.*

Response: The SSC's P* approach has been used in recent Southeast Data Assessment and Review (SEDAR) stock assessments for snapper grouper species that have been determined to not be overfished. For overfished species, the SSC stated at their April 2010 meeting that "… a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan." The SSC's ABC control rule has four dimensions included in the control rule framework: Assessment information; characterization of uncertainty; stock status; and productivity/susceptibility of the stock. Each dimension contains tiers that can be evaluated for each stock to determine a numerical score. The uncertainty buffer, or difference between OFL and ABC, is expressed in terms of a reduction in the "probability of overfishing", or "P*". The adjustment score provided by the tiers and dimensions represents the amount by which P* is reduced to obtain the critical value for P*. The scoring provides a maximum P* adjustment of 40% and a minimum of 0% that results in critical values for P* ranging from 10% to 50%. These critical values are then used to determine the actual ABC from projection tables that provide the level of annual yield that corresponds to a particular P*. **Table 2** on page 13 of **Appendix Q** in the DEIS lists the P* distribution values applied as per the South Atlantic Council SSC's ABC control rule for most of the assessed species. The methodology used to compute the P* value is described in the appendix as well as the text of the document. Additionally, the South Atlantic Council SSC's reports from April 2010 and November 2010 address P* values to remaining assessed species. The South Atlantic Council and their SSC will be evaluating the performance of the ABC control rule and determining whether it needs to be modified.

Comment 2*: Discard mortality should be incorporated into the ABC for all assessed species, and provide ABC for landings and discards separately. Bycatch should be included in the ACL setting mechanism and associated accountability measures (AMs). The monitoring needs to provide for a full account for monitoring all bycatch should be specified. An update on the current status of the standard bycatch monitoring methodology and any efforts to improve bycatch reporting and minimization in the South Atlantic should be provided.*

Response: SEDAR assessments provide ABCs that incorporate discards as well as ABCs based on landed catch. However, the South Atlantic Council's SSC has recommended ACLs not include bycatch and be based on landings only. Choosing an ACL based on total mortality rather than landed catch would require the Southeast Fisheries Science Center (SEFSC) to monitor discarded species in the commercial and recreational sectors. The South Atlantic Council's SSC expressed concerns about monitoring discards when discussing ACLs for speckled hind and warsaw grouper at their March 2009 meeting. The SSC was not only concerned about the accuracy of discard data from the recreational and commercial sector but also the possibility that some members of the fishing community might under-report discarded fish if they believed further restrictions might be imposed if levels of dead discards became elevated.

ACLs are based upon the ABCs determined by the SSC's ABC control rule. For assessed species, the SSC's ABC control rule includes four dimensions, one of which is a characterization of uncertainty from factors such as bycatch. For unassessed species, Level 4 of the South Atlantic Council's ABC control rule for un-assessed species (**Table 4-17** in the DEIS) includes bycatch issues in its ABC recommendation.

Bycatch of species addressed in the Comprehensive ACL Amendment is provided by the logbooks from commercial fishermen, the NMFS headboat survey, and the Marine Recreational Fisheries Statistics Survey. Amendment 18A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region includes actions, which could improve reporting of bycatch data for snapper grouper species.

Comment 3: *The ABC for gray snapper and gray triggerfish is too high because it is above the landings level in 1991 when the stock was believed to be undergoing overfishing.*

Response: The overfishing and overfished status of gray snapper and gray triggerfish is unknown according to the 2010 U.S. Report to Congress on the Status of Stocks. Since there is no assessment information available for these species, the SSC's ABC control rule takes into consideration trends in landings to determine ABC (**Table 4-17** in the DEIS).. Both species were assigned an ABC value based on the 3rd highest landings from 1999-2008. For gray snapper, the SSC noted in their April 2011 report, which provided ABC recommendations, that the landings trend is relatively stable. For gray triggerfish, the SSC indicated in their April 2011 report that catch per unit effort trend in the fishery-independent index is relatively flat and mean length had been increasing since 1999, suggesting the catch rate is stable and the stock is not being negatively impacted by fishing pressure.

Comment 4: *The decision to remove species is based on desire to lessen administrative burden of dealing with ACLs.*

Response: A total of 39 species were identified for removal from the FMU in the DEIS. At their August 9, 2011, meeting, the South Atlantic Fishery Management Council (South Atlantic Council) changed their preferred alternatives, which results in removal of fewer species (13) from the snapper grouper FMU. NOAA Fisheries Service guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)):

1. The importance of the fishery to the Nation and the regional economy;
2. Whether an FMP can improve the condition of the stock;
3. The extent to which the fishery could be or already is adequately managed by states;
4. Whether an FMP can further the resolution of competing interests and conflicts;
5. Whether an FMP can produce more efficient utilization of the fishery;
6. Whether an FMP can foster orderly growth of a developing fishery; and
7. Costs of the FMP balanced against benefits.

This decision to retain or remove species from the FMU considers these factors in evaluating whether all species currently included in the snapper grouper FMU are currently in need of federal conservation and management. The South Atlantic Council intends to review whether species meet these factors every five years (SAFE reports) to determine whether species should be added or removed from the FMU and take action as appropriate.

Comment 5: *The DEIS does not explain how overfishing would be prevented for species removed from FMU.*

Response: The South Atlantic Council has evaluated whether all species currently included in the snapper grouper FMU are in need of federal conservation and management according to the seven factors identified in 50 CFR §600.340(b)(2), and has determined 13 species should be removed from the FMU. Greater than 95% of the landings of ten species of these 13 species occur in state waters; three species are already subject to management by the Florida Marine Life Rule, and two of the 13 species have zero landings. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE reports) to determine whether they should be added back into the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU.

Comment 6: *The DEIS presumes species proposed for removal would be effectively managed by the states. An evaluation of gaps in management should be provided once federal regulations no longer apply to species. A discussion of the specific state regulations is needed that would apply to removed species. The state's conservation measures are weak when compared to federal law. Allowing the states to manage the species could provide inadequate protection.*

Response: The Comprehensive ACL Amendment proposes to remove 13 snapper grouper species from the FMU rather than 39 originally identified in the DEIS. The South Atlantic Council concluded these species are not in need of federal management because these species are either predominantly (>95%) landed in state waters, or are already effectively managed by the states. Furthermore, two species have no commercial or recreational landings in either state or federal waters. Any species removed from the FMU would no longer be subject to federal regulations. Alternatives that remove species would not affect state regulations for these species, with the exception of South Carolina. Regulations in state waters of South Carolina (http://www.dnr.sc.gov/regulations.html) are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. Therefore, any species that is no longer subject to federal regulations would no longer be subject to state regulations in South Carolina waters unless that state acted to re-institute such regulations. However, only two of the species identified for removal (sheepshead and crevalle jack) are taken from South Carolina state waters. Additionally, while federal-state compatibility is often desirable from a management standpoint, managing state fisheries is not and was never an intended goal of the Snapper Grouper FMP. The stated intent of the FMP was to manage snapper grouper species within its "area of authority" (SAFMC 1983), which includes federal waters from the North Carolina/Virginia border to the Atlantic side of the Florida Keys.

Comment 7: *Removal of species from the FMU should be reconsidered. For many species with landings below 20,000 lbs, unregulated catch in federal waters could push* *them above their overfishing limit. Removal criteria needs to be other than just landings. The South Atlantic Council should take a more comprehensive look at each species' circumstances before they are removed from the management unit, and that these species should be retained as ecosystem component species until this evaluation is taken. The potential for bycatch of major species as a result of removal must be analyzed.*

Response: On August 9, 2011, the South Atlantic Council took a more comprehensive look at the species and determined whether or not they were in need of federal conservation. The South Atlantic Council concluded that 13 species, rather than 39, were not in need of federal management, and could be removed from the snapper grouper FMU. Furthermore, the South Atlantic Council chose a different preferred alternative and recommended six species be designated as ecosystem component species based on criteria specified in the NS1 guidelines. Criteria for retention or removal of species from the FMU are provided by NMFS guidelines, which specifies that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 CFR §600.320(d)(1)). NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)):

1. The importance of the fishery to the Nation and the regional economy;
2. Whether an FMP can improve the condition of the stock;
3. The extent to which the fishery could be or already is adequately managed by states;
4. Whether an FMP can further the resolution of competing interests and conflicts;
5. Whether an FMP can produce more efficient utilization of the fishery;
6. Whether an FMP can foster orderly growth of a developing fishery; and
7. Costs of the FMP balanced against benefits.

Based on these criteria, the South Atlantic Council determined at their August 2011 meeting that 13 species currently in the FMU were not in need of federal management in the FMP. The potential for bycatch resulting from the removal of the 13 species from the FMU has been analyzed.

Comment 8: *The South Atlantic Council needs to take a hard look at the environmental consequences of removal of species.*

Response: The South Atlantic Council changed their preferred alternatives for removal of species at their August 2011 meeting. The Comprehensive ACL Amendment now proposes to remove 13 species from the FMU rather than the 39 proposed in the DEIS. The environmental consequences of removing these species from the FMU are discussed in the Summary of Effects, Comparison of Alternatives (Section 2), and Environmental Impacts (Section 4). These sections discuss the pros and cons of choosing each alternative for all actions from biological, economic, social, and administrative perspectives. Furthermore, the Cumulative Effects section addresses the effects of this amendment, in conjunction with past and future actions in other amendments.

Comment 9*: A commercial ACT is needed that would give NMFS the authority to reduce trip limits when the ACT is projected to be met. AMs should be triggered when the ACTs (not the ACLs) are exceeded.*

Response: The performance standard that NMFS provided in the proposed rule for revisions to the NS1 Guidelines (73 FR 32526) stated that: "if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness." The updated framework procedure included in Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NOAA Fisheries Service determine they are necessary. The South Atlantic Council will monitor how often ACLs are exceeded. If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. In addition to adjustment of ACTs and ACLs, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. It is anticipated that this performance standard will be applied to all species and all systems of ACLs and AMs established in the Comprehensive ACL Amendment in accordance with NMFS guidelines.

Comment 10: *The system of three year averages of determining an ACL overage is overly complicated and could allow overfishing to occur.*

Response: At their June 2011 meeting, the South Atlantic Council changed their preferred alternative from monitoring the three year averages in determining an ACL overage to the following, "If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator (RA) will publish a notice to reduce the length of the fishing season as necessary." This change in post-season AM, in combination with the other preferred alternatives (in the action regarding recreational AMs), such as a conservative recreational ACT and an in-season AM trigger, all work in conjunction to prevent overfishing.

Comment 11: *Include an alternative in which species in stock complexes will be evaluated if landings composition of stock complex members changes significantly. Stock complexes should be re-evaluated periodically to ensure species groupings are still appropriate.*

Response: The SEFSC collects information for all species caught by commercial and recreational fishermen. The South Atlantic Council will use these data to monitor landings of individual species within a complex. If landings of any species within a complex change significantly, the South Atlantic Council would establish more appropriate species groupings.

Comment 12: *Set the ACL below the ABC in order to account for management uncertainty and comply with NS1 guidelines.*

Response: The ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicate an ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The Comprehensive ACL Amendment would establish an ACT for the recreational sector for species in the FMPs for snapper grouper and dolphin and wahoo. The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. The updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify ACLs, ACTs, and management measures. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. This performance standard would be applied to all species and all systems of ACLs and AMs established in the Comprehensive ACL Amendment in accordance with NS1 guidelines.

Comment 13: *The South Atlantic Council should analyze management uncertainty in the commercial fishery. A new alternative should be analyzed giving the RA the authority to close the commercial fishery in-season if the ACL is exceeded.*

Response: The NS1 guidelines state that setting ACTs is left at the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial snapper grouper fishery landings are monitored through the SEFSC's quota monitoring system. The SEFSC is moving towards weekly monitoring and computer entry of data by dealers. Therefore, with an enhanced quota monitoring program, the South Atlantic Council concluded there was not a need to establish a commercial ACT. Quota monitoring in the commercial fishery and the AMs that the South Atlantic Council is proposing to implement through this amendment are sufficient to account for management uncertainty. Furthermore, it is important to note that the new framework procedure for setting ACLs in the snapper grouper fishery in Amendment 17B (SAFMC 2010b), would allow for timely adjustments to be made to AMs, ACLs, and ACTs if the South Atlantic Council and NOAA Fisheries Service determine a change is needed. The preferred alternatives in the Comprehensive ACL Amendment provides that the RA shall close the commercial sector in-season if the ACL was projected to be met and if the stock was overfished.

III Sportfishing Industry and Public

Comment 1: *Document is difficult to read and understand. Socio-economic content is voluminous.*

<u>Response</u>: In order to comply with the Magnuson-Stevens Act with its ten national standards, NEPA, and the Administrative Procedures Act, a DEIS needs to fully analyze the "human" environment, which includes biological, economic, social, and administrative impacts of each action. Actions in the Comprehensive ACL Amendment include establishing ABC control rules, jurisdictional allocations involving the Gulf of Mexico Fishery Management Council and South Atlantic Council, sector allocations, establishing ACLs and AMs, and management measures. Each action has multiple alternatives. Hence, it is not possible to present the analysis in a short document. However, a concise Summary is provided in the beginning of the Comprehensive ACL Amendment, which guides the reader through all the actions in the comprehensive document.

Comment 2: *Removal of species that will allow for state management of species is supported as long as another entity has agreed to take over management.*

<u>Response</u>: The South Atlantic Council has evaluated whether all species originally included in the snapper grouper FMU are currently in need of federal conservation and management according to the seven factors identified in 50 CFR §600.340(b)(2), and has determined 13 species should be removed from the FMU. Greater than 95% of the landings of ten species of these 13 species occur in state waters; three species are already subject to management by the Florida Marine Life Rule, and two of the 13 species have zero landings. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE reports) to determine whether they should be added back into the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU.

Comment 3: *The South Atlantic Council should consider lane snapper, gray snapper, rock hind, and white grunt as individual species.*

<u>Response</u>: The South Atlantic Council indicated in their action for species groupings that single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on data associated with life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. The South Atlantic Council concluded that lane snapper, gray snapper, rock hind, and

white grunt did not meet the criteria for designation as species with individual ACLs. Rather, they met the criteria for species that could be managed better in complexes since they meet the following criteria: Stocks may be grouped into complexes if they cannot be targeted independently of one another in a multispecies fishery; there are not sufficient data to measure their status relative to established status determination criteria; or when it is feasible for fishermen to distinguish individual stocks among their catch (50 CFR 600.310 (b) (8) in 74 FR 3178).

Comment 4: *OFL and ABC are precautionary numbers and not strict values that should not be exceeded. The interpretation of the NS1 guidelines and Magnuson-Stevens Act is too strict.*

<u>Response</u>: According to the NS1 Guidelines, OFL is an annual amount of catch that would provide another method for measuring overfishing by allowing the comparison of a stock or stock complexes' annual catch to its OFL; if catch exceeds OFL, overfishing is occurring. The ABC is "a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and should be specified based on the ABC control rule." NOAA Fisheries Service and the South Atlantic Council must follow the guidance closely in order to comply with new ACL and AM requirements specified in the Magnuson-Stevens Act for ending overfishing of fisheries managed by federal FMPs.

Comment 5: *Allocations based on historic landings is not an acceptable approach. There should not be a separate allocation for the for-hire sector. Sector allocations should not be based solely on landings without taking into account the economic factors associated with the industries.*

<u>Response</u>: The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries, but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, modeling economic value and economic impacts is more difficult. The South Atlantic Council concluded that the approach of balancing long-term catch history with recent catch history, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources, and has chosen to apply it to many of its managed fisheries. Furthermore, the South Atlantic Council stated an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. The Snapper Grouper Advisory Panel supported the South Atlantic Council's preferred allocation alternative.

The current preferred alternative for sector allocations in the Comprehensive ACL Amendment does not consider a "for-hire" sector. The only two sectors considered are commercial and recreational.

Comment 6: *The ACLs for dolphin and wahoo could be too restrictive and it is anticipated that it will be easy for the recreational sector to exceed the specified values.*

Response: The South Atlantic Council's SSC recommended ABCs for dolphin and wahoo based on the 3rd highest landings from 1999-2008, which took into consideration that landings in the most recent time period are lower for both species. The South Atlantic Council set ACL equal to the ABC for dolphin and wahoo, which is less conservative than other alternatives in the respective actions. However, the South Atlantic Council concluded it was appropriate to set the ACL equal to the ABC for dolphin and wahoo, because the ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicate ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The Comprehensive ACL Amendment would establish an ACT for the recreational sector. The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. The updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify ACLs, ACTs, and management measures. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. This performance standard would be applied to all species and all systems of ACLs and AMs established in the Comprehensive ACL Amendment in accordance with NS1 guidelines.

Comment 7: *The ACL and ACT should be equal. Multi-year averages should be used in determining if an ACL has been exceeded.*

Response: The South Atlantic Council chose not to establish an ACT for the commercial sector. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial sector fishery landings are monitored through the SEFSC's quota monitoring system. The SEFSC is moving towards weekly monitoring and computer entry of data by dealers. Therefore, with an enhanced quota monitoring program, the South Atlantic Council concluded there was no need to establish a commercial ACT. Quota monitoring in the commercial fishery and the AMs that the South Atlantic Council is proposing to implement through this amendment are sufficient to account for management uncertainty.

Unlike the commercial sector, where the quota is subject to regular monitoring through dealer reporting, recreational data are survey based and subject to delays in reporting. The South Atlantic Council reasoned that the level of management uncertainty for the recreational component of the snapper grouper fishery is currently high enough to warrant specification of an ACT. Therefore, the South Atlantic Council chose to specify a recreational ACT set below the ACL for snapper grouper species and dolphin and wahoo, which would act as a precautionary signal; the ACT would not trigger an AM.

The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in a particular fishery.

The South Atlantic Council did not choose multi-year averages as the preferred alternative that specifies the AM trigger. While this approach might help address any anomalous highs and lows reflected in the landings data, if one of the multiple years was associated with an extremely large spike in landings, that spike would greatly influence the multi-year average for several years in the future. The large spike may or may not be attributable to an actual increase (or decrease) in harvest, or could be a result of some variability in sampling. Therefore, the multi-year average could create a lag, mask what is actually happening with the harvest, and could potentially result in the unnecessary triggering of harvest restrictions.

Comment 8: *Goliath grouper is responsible for many reef fish being listed as overfishing, not human population.*

<u>Response</u>: Revisions to the Magnuson-Stevens Act in 2006 require that by 2011, with few exceptions, FMPs must establish a mechanism for specifying ACLs for all managed species at a level that prevents overfishing and does not exceed the fishing level recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. The intent of the Comprehensive ACL Amendment is to specify ACLs and AMs to ensure overfishing of managed species does not occur, as required by the Magnuson-Stevens Act. Species identified as experiencing overfishing in the South Atlantic include vermilion snapper, red snapper, red grouper, gag, black sea bass, golden tilefish, speckled hind, snowy grouper, and warsaw grouper. There is no evidence goliath grouper is responsible for species listed as undergoing overfishing.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

2011 AUG -4 PM 1:29

August 1, 2011

8/25/11 PA NEPA DRA OMI SRA SDRA Copy/ Orig/ Route F/SER1 F/SER2 F/SER3 F/SER4 M&B IT GRANTS CS/PERMITS Action FYI Date Return to FILE RECYCLE

Dr. Roy E. Crabtree
Regional Administrator
Southeast Regional Office
National Oceanic and Atmospheric Administration
263 13th Avenue South
St. Petersburg, Florida 33701

Subject: EPA NEPA Review Comments on NOAA's DEIS for "Comprehensive Annual Catch Limit (ACL) Amendment for the South Atlantic Regions: Amendment 2 to the Fishery Management Plan for the Dolphin Wahoo Fishery; Amendment 2 to the Fishery Management Plan for Pelagic Sargassum Habitat; Amendment 5 to the Fishery Management Plan for the Golden Crab Fishery and Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery, South Atlantic Region"; CEQ #20110187

Dear Dr. Crabtree:

The U.S. Environmental Protection Agency (EPA) has reviewed the subject National Oceanic and Atmospheric Administration (NOAA) Draft Environmental Impact Statement (DEIS) in accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. EPA understands that the purpose for the Comprehensive Annual Catch Limit Amendment (Comprehensive ACL) for the South Atlantic Region is to implement measures expected to prevent overfishing and achieve Optimum Yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. Long-term measures include the implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species and the development of species groups; 2) establish acceptable biological catch (ABC) control rules; 3) ACLs and annual catch targets (ACTs); 4) sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets. In addition, EPA understands that the need for this action is to specify overfishing limits (OFLs), ACLs, and AMs, where needed to comply with Magnuson-Stevens Act requirements (MSA).[1]

EPA has responsibility to review and comment on major Federal actions significantly affecting the quality of the human environment, including Fishery Management Plans (FMPs) and FMP Amendments (Amendments) as developed, approved, and implemented under the MSA where those Plans and Amendments are subject to the EIS requirement of

[1] p. IV

NEPA, but it should be clear that we defer to NOAA and the Councils as to the development of fishery statistics and the relative importance of the commercial and recreational fisheries for each species.

EPA appreciates that several alternatives for proposed actions were presented and that preferred alternatives were identified in the DEIS. In an effort to simplify our review we have organized our comments based on major actions being proposed, organization of the document, and Environmental Justice (EJ). Based on our review, we offer the following comments for the proposed actions covered within the DEIS.

Actions Being Proposed:

Removal of Species from the Snapper Grouper Fishery Management Unit (FMU)
Under the preferred alternative for Action 1 the Council proposes to remove species from the Snapper Grouper FMU. Currently, the Council manages 73 species in the Snapper Grouper FMU. Under the proposed action the Council would remove (39 or 40)[2] total species from this FMU. Multiple preferred alternatives are identified under Action 1. The preferred alternative would remove species based on certain criteria (Example – Criteria 1 - if 80% or greater of the landings are in state waters). First, it is somewhat unclear how these thresholds for removal of the species from the FMU were derived. EPA recommends that the FEIS better explain how these criteria for removal were developed. Second, EPA has expressed concern in past NEPA comment letters regarding the removal of species from FMUs, specifically by removing these species from the FMU, federal regulations and protections would no longer apply. It is EPA's understanding that once a species is removed from the FMU, data would no longer be collected on these species, yet the Council states that "Data collection would not be altered from current levels if species were removed from the FMU.[3]" EPA request clarification in the FEIS regarding data collection for species proposed for removal from the FMU. EPA also recommends that the Council include a discussion in the FEIS regarding the pros and cons of listing species proposed for removal from the FMU as ecosystem component species.

Reorganization of the Snapper Grouper Complex
EPA understands that under Action 2 the Council proposes to group species into four complexes. These groupings would be based on similarities in life history, catch statistics from commercial logbooks and observed data, recreational headboat logbooks and private/charter surveys, and fishery-independent MARMAP data. Complex ACLs would be developed for the grouped species and individual ACLs would be established for the remaining un-grouped species. EPA defers to the Council on organizing the Snapper Grouper complex into groupings for management.

Establishment of ABC, Allocations, ACLs, ACTs, and AMs for Snapper Grouper, Dolphin Wahoo, and Golden Crab

[2] In the summary table provided on page S-5 it appears that 39 species are being proposed for removal from the FMU, but the text on (p. 20) indicates that 40 species will be removed from the Snapper Grouper FMU. Please clarify in the FEIS.
[3] p. 20

EPA defers to the Council for setting the ABCs, Allocations, ACL, ACTs, and Accountability Measures for the Snapper Grouper Complex, Dolphin Wahoo, and the Golden Crab. As stated earlier, EPA generally defers to NOAA and the Councils as to the development of fishery statistics and the relative importance of the commercial and recreational fisheries for each species.

Organization of the Document:

EPA notes that the Council has selected multiple preferred alternatives for several of the proposed actions and several of the alternatives have multiple sub-alternatives. This structure, when used to describe the potential impact of alternatives, proves to be very difficult to decipher and understand what the Council is proposing and what has been identified as the preferred alternative. As EPA has noted in past NEPA comment letters, we recommend that when multiple preferred alternatives are being proposed and it is the intention of the Council that all of them will be selected, then the multiple preferred alternatives should be combined into one preferred alternative for that specific action.

The DEIS main document discusses 31 actions associated with the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs, yet the summary section (p. S-1 thru S-22) is structured around the preferred alternatives and proposed changes to Species Compositions, Acceptable Biological Catch, Allocations, Annual Catch Limits, Annual Catch Targets, and Accountability Measures. EPA understands that both the main document and summary section are conveying the same information, but we are concerned that not using a consistent format is confusing to the reader. EPA recommends that either the summary section or main document be restructured in the FEIS following a consistent format (example: summary addressing each action individually). In a recent NOAA DEIS which EPA Region 4 reviewed, Amendment 10 Spiny Lobster FMP, the Council provided a clear description (in the summary section) of all proposed actions, all alternatives considered, the preferred alternatives, and an analysis of the potential impacts to the biological, social, economic, and administrative environments. This level of information is missing in the summary for the Comprehensive ACL DEIS. In addition, EPA notes that the Snapper Grouper complex 2 and 4 are not are not labeled in the summary section.

Demographics/Social Vulnerability:

EPA appreciates the Council's efforts to evaluate potential environmental justice issues posed by the actions presented under the Comprehensive ACL. The Council calculated a Social Vulnerability Index (SoVI) to better understand how places that are susceptible to coastal hazards might also exhibit vulnerabilities to social change or disruptions. EPA understands that the SoVI relies on census data from 2000.[4] Although it is stated that the SoVI can "be interpreted as a general measure of vulnerability to other social disruptions, such as adverse regulatory change or manamade hazards,"[5] EPA request clarification in the FEIS regarding how confident the Council is with respect to SoVI's ability to

[4] p. 241
[5] p. 241

measure the impact of regulatory change on impacted fishing communities. EPA continues to be concerned that the real impact of regulatory change on fishing communities, especially the low-income/minority fishing communities, is not being fully captured and explained. EPA applauds the Council's efforts to expand the SoVI to include fishing communities in the Southeast region, which may address our concerns.

Environmental Justice:

Even though the proposed Comprehensive ACL is being implemented for the sake of recovering the fishery, these actions can have societal effect on fishers. These affects can be equally or unequally distributed among fishers. It is stated in Section 3.8.8. that, "it is anticipated that the impacts of this amendment may affect communities with environmental justice concerns..."[6] It is then stated that the impacts "should not discriminate against any group."[7] While this may be true, EPA continues to be concerned that EJ fishers and communities may be impacted by these proposed actions and these impacts are not being adequately quantified. The Council has provided a process through the SoVI to identify vulnerable communities and potential EJ communities, but has not taken the analysis to the next step of identifying how the actions proposed under the Comprehensive ACL DEIS will impact these communities. EPA recommends future discussion and analysis be provided in the FEIS to discuss our concerns.

Public Participation:

It is important to incorporate and discuss the public participation activities related to EJ in the context of the proposed actions. There is no discussion in the scoping report related to EJ communities. Given that several coastal counties were identified as low-income and minority, the DEIS should include some discussion about the strategies used to meaningfully engage or provide outreach to these communities in the decision-making and assessment process. For example, EPA has recommended in past comment letters that the Council should target Hispanic communities with Spanish materials/translators during the public involvement process. In addition, it is unclear from the scoping report provided in Appendix K how many public meetings were held and if EJ communities were present at these public participation meetings. EPA recommends more EJ specific outreach efforts for these public participation opportunities

EPA DEIS Rating:

In summary, EPA's primary concerns are the proposed removal of species from the Snapper Grouper FMU, specifically how this will impact data collection for the removed species, and the Comprehensive ACL impact on EJ and low-income fishers. EPA generally supports NOAA and the Council on the Comprehensive ACL and gives deference to their fishery expertise. Therefore, EPA rates this DEIS as "LO" (Lack of Objections). Nevertheless, we request that NOAA and the Council directly respond to our comments in a dedicated section of the FEIS.

---

[6] p. 293
[7] p. 293

EPA appreciates the opportunity to review the DEIS. Should NOAA have questions regarding our comments on this DEIS, please feel free to contact Dan Holliman at 404/562-9531 or holliman.daniel@epa.gov and for EJ comments please contact Ntale Kajumba at 404/562-9620 or kajumba.ntale@epa.gov of my staff.

Sincerely,

Heinz J. Mueller
Chief, NEPA Program Office
Office of Policy and Management

NRDC
THE EARTH'S BEST DEFENSE

Natural Resources Defense Council
40 West 20th Street
New York, NY 10011
Tel: (212) 727-2700
Fax: (212) 727-1773

Via Email and U.S. Mail

August 1, 2011

NOAA Fisheries
Southeast Regional Office
Sustainable Fisheries Division
263 13th Avenue South
St. Petersburg, FL 33701-5505

Re: Comments on the Comprehensive ACL Amendment DEIS (NOAA-NMFS-2011-0087)

To Whom It May Concern:

Please accept the following comments by the Natural Resources Defense Council (NRDC) on the Draft Environmental Impact Statement (DEIS) for the Comprehensive Annual Catch Limit (ACL) Amendment currently under consideration by the South Atlantic Fishery Management Council (SAFMC or Council) and NOAA Fisheries. NRDC is a national environmental advocacy organization that represents more than 1.3 million members and online activists across the country, including more than 130,000 people in Florida, Georgia, North Carolina, and South Carolina. NRDC's previous comments on the February and June 2011 drafts of the ACL Amendment are hereby incorporated by reference (Attachments A and B, respectively).

The current design of the ACL Amendment and DEIS fails to comply with the statutory requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), 16 U.S.C. § 1801, *et seq.*, the Administrative Procedure Act (APA), 5 U.S.C. § 706, and the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, *et seq.* We are particularly concerned that the Council's proposed approach removes, rather than adds, protections for dozens of vulnerable species. The following comments focus on this issue, although we continue to be concerned about various other aspects of the draft.

As discussed in our previous comments, the ABC control rule, while a step in the right direction, still has many significant shortcomings. The ACL Amendment claims to have applied the Level 1 control rule to all assessed stocks, however there is no indication in the record that this has actually occurred. The Council must demonstrate how the risk policy (P*) and overfishing limit (OFL) probability distribution function (PDF) were calculated and applied to compute the ABCs for each species for which it claims this has been done.

The decision tree approach for unassessed species shows promise, but we believe the criteria for moving from one decision to the next should be more comprehensive and specific. As we demonstrated, the recommended ABCs for gray snapper and gray triggerfish – two species that were found to be in a documented state of overfishing in 1991 – are both at or above the landings level from 1991, while discards and landings have both increased significantly since that time. These and other factors must be taken into account when the scientific advisers are recommending ABCs for unassessed species.

We also remain troubled by the failure to include bycatch in the ACL-setting mechanism and associated AMs. We repeat our request for an update on the current status of the SBRM and any efforts to improve bycatch reporting and minimization in the South Atlantic, especially in light of the recent decision in *Oceana, Inc. v. Locke*, No. 10-5299 (D.C. Cir. July 19, 2011).

We appreciate the opportunity to participate in this important Fishery Management Plan (FMP) Amendment and hope that our input assists in constructing an ACL-setting mechanism that complies with legal requirements, including ending overfishing and attaining optimum yield.

DISCUSSION

Species Removal Violates the MSA, APA, and NEPA

The primary goal of the MSA is "...to conserve and manage the fishery resources found off the coasts of the United States...for the purposes of exploring, exploiting, conserving, and managing *all* fish within the exclusive economic zone..."[1] This goal requires adherence to the 10 National Standards found in the Act, as well as the statutorily-defined requirements for Fishery Management Plans (FMPs).[2] National Standard 1 requires that FMPs prevent overfishing and achieve optimum yield on a continuing basis, and National Standard 2 requires conservation and management measures be based on the best scientific information available.[3] For the reasons below, the Council's proposed action to remove 40[4] of 73 species from the Snapper-Grouper Fishery Management Unit (FMU) violates the abovementioned National Standards and fails to articulate a "rational connection between the facts found and the choice made," as required by the Administrative Procedure Act (APA).[5] The DEIS also violates NEPA for failing to take a "hard look" at whether the state regulatory regimes would adequately conserve and protect the removed species, among other things.

---

[1] 16 U.S.C. § 1801(b)(1).
[2] 16 U.S.C. § 1851(a).
[3] 16 U.S.C. § 1851(a)(1), (2).
[4] The Council voted in June not to remove mutton snapper from the FMU, although the species remains on the list to be removed under the preferred alternatives of the DEIS. If mutton snapper is kept in the FMU, that would leave 39 species proposed for removal.
[5] *See Bowen v. Am. Hosp. Ass'n*, 476 U.S. 610, 626 (1986) (interpreting the standard of review under the APA, 5 U.S.C. § 706(2)(A)); *see also* 16 U.S.C. § 1855(f) (providing for judicial review of MSA regulations pursuant to the APA).

1. Removing Required Protections for Vulnerable Species Violates NS1 and the APA

National Standard 1 requires that FMPs must contain conservation and management measures that are "necessary and appropriate" to prevent overfishing, including by setting ACLs and AMs for all stocks in the fishery.[6] Each FMP must also provide a description of the fishery, including a description of the species of fish involved in the fishery.[7] According to the National Standard 1 Guidelines, "all stocks in an FMP are considered to be 'in the fishery,'" unless they are identified as ecosystem component (EC) species.[8] ACLs and AMs are required for all stocks in the fishery, including "target" stocks and "non-target" stocks, the latter of which are caught incidentally while pursuing target stocks.[9] The MSA's requirement to set ACLs and AMs for all stocks in the fishery is designed to end overfishing and thus satisfy National Standard 1.[10]

The South Atlantic ACL Amendment's stated objective is "to implement measures expected to prevent overfishing and achieve OY."[11] The adoption of ACLs and AMs is at the heart of these measures.[12] However, rather than fulfill this statutorily prescribed purpose, the Council is attempting to evade compliance by simply dropping the species in question from federal management.[13] The record is quite clear that the decision to remove protections is based on a desire to "lessen the administrative burden [of]...implementing, monitoring, and enforcing ACLs and AMs for these species," and out of concern "that the requirement for ACLs and AMs could trigger common overages."[14] In other words, the FMP Amendment intended to implement ACLs and AMs and prevent overfishing is being used to achieve the opposite effect – obviating

[6] 16 U.S.C. §§ 1853(a)(1)(A), (a)(2), (a)(15).

[7] 16 U.S.C. § 1853(a)(2). A "fishery" is defined to include "stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics." 16 U.S.C. § 1802(13). A "stock of fish" is comprised of "a species, subspecies, geographical grouping, or other category of fish capable of management as a unit." *Id.* § 1802(42). A fishery management unit (FMU) is defined as "a fishery or that portion of a fishery identified in an FMP relevant to the FMP's management objectives." 50 C.F.R. § 600.310.

[8] 50 C.F.R. § 600.310(d)(1); *see also* "Preamble to NS1 Guidelines," 74 Fed. Reg. 3178, 3179 (Jan. 16, 2009) ("NMFS presumes that stocks or stock complexes currently listed in an FMP are "stocks in the fishery," unless the FMP is amended to explicitly indicate that the EC species category is being used.").

[9] 50 C.F.R. §§ 600.310(d)(3), (4); 600.310(h). The exceptions to the ACL requirement include species with annual life cycles less than one year and not subject to overfishing, as well as species subject to management under an international agreement. 50 C.F.R. § 600.310(h)(2).

[10] 16 U.S.C. §§ 1853(a)(15); 1851(a)(1).

[11] *See* SAFMC, *Comprehensive Annual Catch Limit (ACL) Amendment for the South Atlantic Region and Draft Environmental Impact Statement (ACL DEIS)*, at IV (June 2011) ("The purpose of this Comprehensive Annual Catch Limit Amendment (Comprehensive ACL Amendment) for the South Atlantic Region is to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects.").

[12] *See id.*, at 3 (stating that ACLs and AMs are measures "which act to prevent overfishing.").

[13] *See id.*, at 310 ("If species are not removed from federal management, as would be the case under Alternative 1 (No Action), ACLs, AMs, and ACTs would need to be implemented and enforced for all 73 species within the FMU and their landings would need to be monitored on a regular basis.").

[14] *Id.*, at S5, 21.

the need for ACLs and AMs for these species, and all other federal protections in the process, by simply removing them from federal oversight.

According to the Council, the action to remove 40 species currently managed under the Snapper-Grouper FMP would have "the greatest negative biological effect...and pose the greatest risk of bycatch."[15] The proposed action "would enable fishermen to catch these species unrestricted and...be expected to have negative long-term economic impacts in that fish might be caught in volumes that endanger the sustainability of the stock and therefore future profitability."[16] Selecting a path with the greatest negative biological effects and negative long-term economic impacts that endanger the sustainability of the stock is contrary to NOAA's legal obligations to prevent overfishing.[17]

According to the Council's own evaluation, only 7 of the 40 species slated for removal are "*not* likely to become subject to overfishing or overfished."[18] This conclusion is based on the Council's interpretation of a Productivity and Susceptibility Analysis (PSA) conducted by MRAG Americas in 2009 (Attachment C).[19] According to MRAG's evaluation, 22 of the species proposed for removal are highly vulnerable to overfishing, 18 have medium vulnerability, and only two are considered to have low vulnerability (Attachment D).[20] In addition, eight of the 40 species slated for removal were "thought to be overfished" as far back as 1991.[21] (See Table 1 for a complete list of the species proposed for removal, their vulnerabilities, and the Council's determination as to their likelihoods for becoming overfished and subjected to overfishing). These vulnerabilities call for enhancing conservation measures, not eliminating them, yet they are not included in the ACL Amendment's discussion of which species to remove from federal management.

Removing management protections for species that are known to be vulnerable to overfishing, including some with a history of overfishing, in response to a mandate to strengthen conservation measures, conflicts with the Council's legal obligations to implement measures "necessary and appropriate...to prevent overfishing...and to protect, restore, and promote the long-term health and stability of the fishery."[22] The DEIS fails to explain how removing protections for species that are vulnerable to overfishing and/or thought to be overfished is "necessary or appropriate" to prevent overfishing or otherwise protective of the resource. As described in detail below, the lack of adequate state fishery management regulations for these species, and the Council's failure to analyze the same, demonstrates that the decision to

[15] SAFMC, *Draft ACL Amendment*, at 251 (February 2011).
[16] *Id.*
[17] 16 U.S.C. §§ 1851(a)(1), (8), (9).
[18] *Draft ACL Amendment*, at 255 (February 2011) (emphasis added).
[19] MRAG AMERICAS, "Use of Productivity-Susceptibility Analysis (PSA) in Setting Annual Catch Limits for U.S. Fisheries: A Workshop Report" (May 2009).
[20] MRAG AMERICAS, "South Atlantic PSA Results" (March 2009).
[21] The eight species believed to be overfished in 1991 include: blackfin snapper, dog snapper, mahogany snapper, misty grouper, queen snapper, yellowmouth grouper, schoolmaster snapper, and yellowfin grouper. SAFMC, *Snapper-Grouper FMP, Amendment 4,* at 4 (1991).
[22] 16 U.S.C. § 1853(a)(1)(A).

remove these species from federal management would leave them even more vulnerable to overfishing and becoming overfished.

Table 1: Species Proposed for Removal, Average Landings, and Vulnerability

Species	Basis for Removal[23]	Avg. Landings '05-'09 (lbs.)	Likely to Become Overfished/ Overfishing[24]	Vulnerability to Overfishing[25]	Likely Overfished[26]
bank sea bass	<20k	5,567	yes	Medium	unknown
bar jack	<20k	10,726	yes	high	unknown
black margate	80%	86,428	yes	high	unknown
black snapper	<20k	141	yes	high	unknown
blackfin snapper	<20k	2,087	yes	high	yes (no SSR)
blue striped grunt	80%	44,873	no	low	unknown
coney	<20k	2,453	yes	medium	unknown
cottonwick	<20k	6	no	medium	unknown
crevalle jack	80%	759,671	yes	medium	unknown
dog snapper	<20k	6,458	yes	high	yes (no SSR)
French grunt	<20k; 80%	1,142	no	medium	unknown
grass porgy	<20k; 80%	791	yes	high	unknown
graysby	<20k; 80%	14,648	no	medium	unknown
jolthead porgy	Alt8	40,966	yes	high	unknown
knobbed porgy	Alt8	37,618	yes	medium	unknown
longspine porgy	<20k	372	yes	high	unknown
mahogany snapper	<20k	467	yes	high	yes (no SSR)
margate	80%	22,342	yes	medium	unknown
misty grouper	<20k	1,834	yes	high	yes (no SSR)
mutton snapper	80%	561,549	yes	high	unknown
ocean triggerfish	<20k	10,962	yes	medium	unknown
porkfish	80%; ML	20,756	yes	high	unknown
puddingwife (wrasse)	<20k; 80%; ML	418	yes	medium	unknown
queen snapper	<20k	5,086	yes	medium	yes (no SSR)
queen triggerfish	<20k; ML	3,503	yes	medium	unknown
rock sea bass	<20k	2,325	yes	high	unknown
sailors choice	80%	19,239	yes	high	unknown
sand tilefish	<20k	11,168	yes	high	unknown
saucereye porgy	<20k; 80%	1,975	yes	high	unknown
schoolmaster snapper	<20k; 80%	5,423	yes	high	yes (no SSR)
scup	<20k	8,511	no	medium	unknown
sheepshead	80%	1,994,924	yes	medium	unknown
smallmouth grunt	<20k	0	no	medium	unknown
Spanish grunt	<20k; 80%	138	yes	high	unknown
tiger grouper	<20k	0	yes	high	unknown
tomtate	Alt8	66,671	no	low	unknown
whitebone porgy	Alt8	21,064	yes	high	unknown
yellow jack	80%	35,217	yes	medium	unknown
yellowfin grouper	20k	12,930	yes	high	yes (no SSR)
yellowmouth grouper	20k	3,504	yes	high	yes (no SSR)

[23] *ACL DEIS*, at 13-14.
[24] *Draft ACL Amendment*, 255 (February, 2011).
[25] MRAG AMERICAS, "South Atlantic PSA Results" (March 2009).
[26] *Snapper-Grouper FMP, Amendment 4* (1991).

Notwithstanding the Council's previous warnings about the long-term negative impacts of species removal cited above, and absent any evaluation of the state fishery management laws and regulations, the DEIS simply declares that removing federal regulations "would not be expected to decrease protection."[27] As discussed further below, this summary conclusion is based on a number of flawed and unexamined assumptions, including:

- That the species are mainly caught in state waters and state regulations would continue to apply;
- That landings in federal waters are relatively low compared to total landings of snapper grouper species; and
- That the 20 fish bag limit is not likely restricting current harvest for the species to which it applies.[28]

1.1 State Regulations are Inadequate to Fill Void Left by Removal from Federal Management

The DEIS asserts that "[t]he states currently manage species identified for removal..." and that management by the states is "likely more appropriate" and "more efficient" for these species than federal management.[29] The DEIS itself, however, omits any meaningful analysis of the current state regulations, including an evaluation of what gaps in management would occur once federal regulations no longer apply.[30] Nor, as explained below, is the DEIS' assertion supported by the reality of current state fisheries management programs and fisheries laws.

NRDC's review of the applicable state fishery laws and regulations demonstrates serious gaps in management if species are removed from the federal FMU (*see* Attachment E for a chart of currently applicable federal and state regulations that pertain to the species proposed for removal). These gaps could jeopardize the sustainability of the fishery resources off the South Atlantic coast, including by permitting unrestricted fishing mortality, as the Council concedes. For example:

- Florida:

---

[27] *ACL DEIS*, at 295.
[28] *ACL DEIS*, at 295.
[29] *ACL DEIS*, at 308, 310.
[30] Although the DEIS claims that Table 4-1 includes a listing of applicable state regulations for species proposed for removal, no such information is actually included in that table or anywhere else in the document. *Compare ACL DEIS*, at 295 (stating that "Table 4-1 shows the management measures currently in place by the states of North Carolina, South Carolina, Georgia, and Florida for species in Alternative 4 (Preferred)"), *with ACL DEIS*, at Table 4-1 (including only the Federal regulations and the State of Florida's bag and size limits for sheepshead and which species fall under the State's Marine Life Species Rule). There is no mention whatsoever of any regulations for Georgia, South Carolina, or North Carolina. Table 4-1 also inexplicably excludes three species being proposed for removal: black margate, whitebone porgy, and yellow jack, and mistakenly reports that misty and tiger grouper are subject to a minimum size limit, and that misty grouper is subject to a seasonal closure. *See* 50 C.F.R. § 622.35 (listing tiger grouper, but not misty grouper, as subject to the seasonal closure); *see also* 50 C.F.R. § 622.37 (listing neither misty or tiger grouper as being subject to a minimum size requirement).

  - Currently regulates only 19 of the 40 species proposed for removal and the state's regulations pertaining to marine fishing do not extend beyond state waters.[31]
  - Fourteen of the 20 species being proposed for removal under Alternative 4 (species with greater than 80% of landings in state waters) and Alternative 8 (tomtate, knobbed porgy, jolthead porgy, and whitebone porgy) lack any species-specific regulations in Florida.[32]
  - Eleven of these 14 species lacking state protections have either a medium or high vulnerability, according to the MRAG PSA analysis discussed above.[33]
  - Thirteen of 27 species proposed for removal due to landings below 20,000 pounds lack any specific regulation in Florida, and 12 of the 13 have either medium or high vulnerability.
- Georgia:
  - Currently regulates only one of the 40 species proposed for removal: sheepshead.[34]
- South Carolina:
  - Currently adopts all federal fisheries management regulations in state waters via legislation. Once federal protections are removed for these 40 species, they will simultaneously lapse in state waters, meaning a complete gap in protections for all 40 species from the shores of South Carolina to the 200-mile limit.
  - Because the state's legislature has not vested rulemaking authority in the South Carolina Department of Natural Resources, the legislature must enact laws every time it wants to change the state's fisheries management.[35]
- North Carolina
  - State fisheries regulations (issued via "Proclamation" by the Director of the Marine Fisheries Commission) do not extend into federal waters.[36]
  - Nine of the 20 species being proposed for removal pursuant to Alternatives 4 and 8 lack species-specific protections in the state, and five of the nine have a medium or high vulnerability to overfishing.[37]

---

[31] FLA. ADMIN. CODE ANN. r. 68B-14.001, r. 68B-42.001, r. 68B-48.003; *see* Florida Fish and Wildlife Conservation Commission, *Basic recreational saltwater fishing regulations*, http://myfwc.com/media/1349466/2011_jan_sw-chart.pdf (explaining that that state regulations apply to the state waters of Florida and that "Federal rules apply beyond state waters"); *see also* FLA. ADMIN. CODE ANN. r. 68B-14.0035 (directing that state size limit provisions reef fish apply to "species harvested in or from state waters"); FLA. ADMIN. CODE ANN. r. 68B-14.0036 (directing that state recreational bag limits, recreational seasons, commercial harvest, and allowable gear apply exclusively to harvest or possession in state waters or specific portions thereof).

[32] FL. ADMIN. CODE ANN. R. 68B-14.

[33] Attachment E to these comments.

[34] GA. COMP. R. & REGS. 391-2-4.04.

[35] S.C. CODE ANN. § 50-5-2730.

[36] *See* N.C. GEN. STAT. ANN. § 113-134.1 (The N.C. Marine Fisheries Commission has statutory authority for "the conservation of marine fisheries resources in the Atlantic Ocean to the seaward extent of the State jurisdiction…").

[37] N.C. DIV. OF MARINE FISHERIES PROCLAMATIONS FF-49-2011 (effective April 5, 2011) and FF-58-2011 (effective June 22, 2011).

- Of the 27 species proposed for removal with landings less than 20,000 pounds, 10 lack any specific regulations in North Carolina, all of which have either medium or high vulnerability to overfishing.

In addition, current federal regulations apply a 225-pound commercial trip limit to all snapper-grouper species unless a species-specific trip limit is set.[38] None of the South Atlantic states have similar measures. For example, in Florida, only one of the 40 species – mutton snapper – contains any limit on the quantities that can be taken by commercial fishermen, and even that limit only applies for two months out of the year.[39]

Another significant difference between federal and the relevant states' fishery regulations is the relative weakness and ambiguity of the states' conservation standards when compared with federal law. Among other important mandates, the MSA prohibits overfishing, requires rebuilding overfished species in as short a time period as possible, and requires the use of the best available science to set ACLs and AMs.[40] Florida's fisheries management framework, by contrast, contains no such specific conservation goals or requirements. Instead of preventing overfishing and obtaining optimum yield, the stated "paramount objective" of Florida's fisheries regulations is the "long-term well-being" of fish resources "for the benefit of all the people."[41] Instead of the mandate to prevent overfishing and achieve optimum yield, based on specific status determination criteria and well-defined limits for overfishing, Florida standards merely advise that "rulemaking should permit reasonable means and quantities of harvest, consistent with optimum sustainable populations."[42] The DEIS remains silent on the impacts of the different conservation standards required by federal and state fisheries laws – a difference that could result in inadequate protections even in cases where State regulations cover specific species.

The recent debate between the SAFMC and the Florida Fish and Wildlife Conservation Commission (FWCC) over the management of mutton snapper, one of the species proposed for removal, illustrates the states' inability to adequately replace federal management.[43] In the case of mutton snapper, the FWCC retracted its initial request to take over management of the species after determining that "Florida could not adequately manage fishing effort and harvest by out-of-state vessels if management of mutton snapper in federal waters is transferred to the state."[44] The FWCC explained that removal of the species from federal management would

[38] 50 C.F.R. § 622.44.
[39] FLA. ADMIN. CODE ANN. R. 68B-14.0045 (2011).
[40] 16 U.S.C. §§ 1851(a)(1); 1854(e)(4); 1851(a)(2); 1853(a)(15).
[41] FLA. ADMIN. CODE ANN. R. 68-1.004(2).
[42] *Compare* 16 U.S.C. § 1851(a)(1), *with* FLA. ADMIN. CODE ANN. R. 68-1.004(4) ("Optimum sustainable populations shall mean the highest degree of population productivity within available habitat to sustain fish and wildlife for the long term use or enjoyment of all the people.")
[43] As mentioned in a footnote above, the Council voted to keep mutton snapper in the FMU at the June, 2011 Council meeting, but that change has not been updated in the DEIS, so we are assuming that mutton snapper will still be removed.
[44] Letter from Mark Robson, Director, Florida Fish and Wildlife Conservation Commission, to Dr. Roy Crabtree, Regional Administrator, NMFS (June 3, 2011) (Attachment B, Exhibit A to the instant comment letter).

mean that commercial vessels would no longer require permits in federal waters, which "would result in an increase in mutton snapper fishing effort." The FWCC also expressed concern that the state "may not be able to regulate harvest of mutton snapper by out-of-state vessels fishing in Federal waters off Florida and landing in other states." Although the focus in this case was on mutton snapper, the same valid concerns by the FWCC would apply to other species being proposed for removal. The DEIS is silent on the matters of effort shift resulting from removing permitting requirements and the ability of one state to regulate catch in its waters when landed in another state. This latter issue could become a particular problem due to the lack of alignment among state regulations, creating incentives for fishermen to dock at out-of-state ports with more lenient regulations.

1.2 Unregulated Catch in Federal Waters Could Significantly Impact Removed Species

The DEIS acknowledges that state regulations for any of the removed species "would not apply in federal waters unless states extend their jurisdiction into federal waters."[45] The Council downplays the significance of this regulatory gap by asserting that "landings of the vast majority of species to be removed (99%) in the preferred alternatives occur in state waters..."[46] However, just two pages after announcing that 99% of the landings from removed species are caught in state waters, the DEIS estimates that "the effective landings" from federal waters is approximately 425,000 pounds out of the total combined landings of 3,823,000 pounds.[47] That equates to 89%, not 99%.

For many species with landings below 20,000 pounds, especially those found in deeper waters, unregulated catch in federal waters could push them well above their overfishing limit, possibly without any indication that has occurred. The unregulated catch of even a small portion of removed species in federal waters could mean the difference between overfishing for some of the individual species affected, as well as others indirectly affected by increased bycatch. By removing federal protections for these species, including the need for federal permits to catch them, some removed species that are already caught in deeper, federal waters – such as sheepshead, crevalle jack, queen snapper, and bank sea bass – "could once again be targeted by fishermen with state licenses..."[48] If fishing effort in federal waters is unregulated and increases accordingly, as the DEIS indicates is quite possible, this could not only lead to increased fishing mortality for the removed species, but also for co-occurring target stocks that remain in the FMU, such as gag grouper, yellowtail snapper, and red grouper.[49]

2. The Lack of Analysis of State Fisheries Regulations Violates NS2 and the APA

---

[45] *ACL DEIS*, at 295.
[46] *Id.*, at 308.
[47] *Id.*, at 310.
[48] *Id.*, at 308.
[49] *Id.*, at 308.

National Standard 2 requires that "conservation and management measures shall be based upon the best scientific information available."[50] Scientific information "includes, but is not limited to, information of a biological, ecological, economic, or social nature."[51] Management decisions must be based on a thorough review of all the relevant information available at the time the decision was made.[52] This requires that fishery regulations be diligently researched, based on sound science, and supported in the record.[53] The failure to conduct a review of the applicable state regulations and an analysis of whether they are adequate to meet the conservation and management needs of species proposed for removal is a violation of NS2 and the APA.

The criteria for removal are based narrowly on landings volumes and percentages in state versus federal waters, but fail to consider other critical scientific information, including:

- vulnerability analyses,
- misidentification of the species with other targeted fish,
- bycatch,
- life history characteristics,
- ecosystem impacts,
- landings and effort trends,
- prior scientific status determinations (at least 8 species previously identified as believed overfished are proposed for removal)

This information is vital to the decision regarding whether to remove these species from federal management and essential to clarifying the risks of reducing protections for these species.

3. The DEIS Violates NEPA for Failing to Take a Hard Look at the Environmental Consequences of Species Removal

The DEIS fails to analyze adequately the direct, indirect, and cumulative effects of removing species from the FMU, as required by NEPA.[54] Among other things, NEPA requires that federal agencies take a "hard look" at the direct, indirect, and cumulative environmental impacts of proposed actions.[55] As discussed above, the DEIS presumes – absent analysis of the potentially applicable state regulations – that the species proposed for removal are "effectively managed by the states."[56]

---

[50] 16 U.S.C. § 1851(a)(2).
[51] 50 C.F.R. § 600.315(b)(1).
[52] *Hall v Evans*, 165 F. Supp.2d 114, 128 (D.R.I. 2002); *Parravano v. Babbitt*, 837 F. Supp 1034, 1047 (N.D. Cal. 1993).
[53] *Id.*
[54] 42 U.S.C. § 4321 *et seq.*
[55] *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989); *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519, 558 (1978).
[56] *ACL DEIS*, at 310.

The document contains no evaluation of the specific state regulations that would pertain to the removed species, including whether such regulations would be more or less protective than the federal regulations that would otherwise apply. In particular, there is little to no analysis of whether the state regulations are sufficient to prevent overfishing, account for and reduce bycatch, and provide other conservation protections currently afforded these species under the MSA. There is no discussion of what additional measures would be required of the states in the absence of federal management. There is also no discussion of the implications of removal for many of the 40 species that have a medium or high vulnerability to overfishing.

One of the rationales provided for removing the species contained in Alternative 7 and 8 is that "they are not retained by commercial fishermen due to low economic value, are not generally sought after as a food fish, and have relatively small landings."[57] These bases conflict with the Council's own analysis that describes 18 of the 32 species proposed for removal under Alternatives 7 and 8 as retained for sale or personal use, and nine of the 32 species as targeted by fishermen.[58] The four species contained in Alternative 8 – tomtate, knobbed porgy, jolthead porgy, and whitebone porgy – are all listed as both targeted and retained, and all but tomtate are listed as vulnerable to overfishing.[59] Additionally, all four species have recent landings in excess of the 20,000 pound limit used as the basis for removal in Alternative 7. The DEIS fails to provide a rationale for removal of these species and fails to consider the direct, indirect, and cumulative impacts of their removal from management.

The Council and NOAA Must Reconsider Species Removal

We see no permissible basis for removing any species from the FMU at this time and call upon the Council to reconsider this action prior to submitting the Amendment for Secretarial approval. While we are not categorically opposed to potentially removing some species from federal management or designating some as ecosystem component species, such actions must comply with the requirements of the MSA, APA, and NEPA, be consistent with the National Standard Guidelines, and satisfy the objectives of the applicable FMP. At a minimum, before deciding to take such actions, the Council must evaluate the alternative management regime(s) that would be responsible for ongoing management of removed species to determine whether these alternative regimes are adequate to provide sufficient protection to prevent overfishing and achieve the other substantive requirements of the MSA.

If species are removed from the FMU at some point in the future, the Council must also adopt a specific mechanism in the FMP for tracking the vulnerability of any removed stocks or designated EC species and triggering actions to resume management or reclassify species as stocks in the fishery if they cross certain biological thresholds or reasonable proxies when no such thresholds are available. Ongoing monitoring and data collection is crucial to assessing whether a species, once removed, becomes subject to overfishing or overfished, or surpasses

[57] *ACL DEIS*, at 299-300.
[58] *Draft ACL Amendment*, Table 4-9 (February 2011).
[59] *Id.*

some other biological threshold, such as declining landings in the face of consistent or rising fishing effort.

On this point, the DEIS provides contradictory information as to the type of monitoring that would continue if these species are removed from management. In one place, the DEIS states that "data collection would not be altered from current levels if species are removed..."[60] However, just a dozen pages later, the DEIS cautions that "[i]f species are not removed from federal management...landings would need to be monitored on a regular basis."[61] In other words, if species are removed, then landings would not need to be monitored on a regular basis. The DEIS must clarify whether and precisely how any removed species would continue to be monitored to ensure appropriate conservation actions can be taken.

We appreciate the opportunity to comment on this important component of the amendment development process.

Very Truly Yours,

David Newman, Oceans Program Attorney
Brad Sewell, Senior Attorney
Natural Resources Defense Council
40 West 20th Street, 11th Floor
New York, NY 10011
212-727-4557
dnewman@nrdc.org

cc: SAFMC Members

---

[60] *ACL DEIS*, at 297.
[61] *Id*, at 310.

449 Central Avenue
Suite 200
St. Petersburg FL 33701

Ocean Conservancy
Start a Sea Change

727.895.2188 Telephone
727.895.8652 Facsimilie
www.oceanconservancy.org

August 1, 2011

Dr. Roy E. Crabtree, Regional Administrator
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701

Re: Comments on the Draft Environmental Impact Statement for Comprehensive ACL Amendment

Dear Dr. Crabtree:

Ocean Conservancy provides the following comments on the Draft Environmental Impact Statement (DEIS) to analyze the impacts of the South Atlantic Fishery Management Council's (SAFMC) Comprehensive Annual Catch Limit Fishery Management Plan Amendment for the South Atlantic region (ACL Amendment). The current draft of the proposed ACL Amendment includes important provisions to comply with the legal requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to end and prevent overfishing and to implement the National Standard 1 (NS1) guidelines. It is imperative that the SAFMC take final action at its August meeting to put measures in place as soon as possible, as it is already unlikely that the amendment will be approved and implemented by the 2011 Annual Catch Limit/Accountability Measures deadline under the MSA.

The DEIS evaluates a range of alternatives, as required under the National Environmental Policy Act (NEPA), for over 30 actions developed to meet the MSA legal requirements to set annual catch limits (ACLs) and accountability measures (AMs) for multiple fisheries in the South Atlantic region. This DEIS is crucial to inform the National Marine Fisheries Service's (NMFS) decision to approve or disapprove the amendment once it is approved by the SAFMC and submitted to the agency. In addition, due to the unique nature of fisheries management under which the agency can only approve, disapprove or partially approve a councils' recommended FMP amendment, it also provides critical analyses that the SAFMC should use to inform its decision making process. The DEIS includes some comprehensive analyses of a range of alternatives, but is still missing some important analyses. We appreciate that a draft EIS has been completed prior to the SAFMC's final decision, but it has been made available so close to the decision that there is little time for the council to consider public comments and no opportunity for the council to benefit from the agency's responses to comments.

We offer the following top-line recommendations on the DEIS to help ensure the agency conducts a sufficient analysis as required under NEPA and ultimately, with the SAFMC, develops an amendment that meets the requirements of the MSA. We urge you to incorporate our recommendations, which are primarily focused on the actions regarding the snapper grouper fishery management plan (FMP), before taking final action on the amendment.

In summary, we offer the following recommendations for the snapper grouper fishery:

- To remove species from the snapper-grouper fishery management unit (FMU), the agency must analyze alternatives including implications of removing species using criteria in addition to magnitude of landings and establish thresholds and triggers for determining whether species that are not currently under federal management should be added to the FMU.
- Analyze the potential for bycatch of major species as a result of species removals from the FMU and add language describing how the agency and the council intend to track and account for this change in bycatch of snapper-grouper species from fishing on species that are removed under Action 1.
- Include an alternative in which species in stock complexes will be evaluated if landings composition of stock complex members changes significantly.
- Require a future performance evaluation of the ABC control rule to determine when and how it needs to be modified to achieve its goals.
- Describe how discard mortality is incorporated into the ABC for all assessed species and explicitly state whether ABCs for assessed species provided in the document represent landings-only or total catch.
- Provide ABCs for landings and discards separately, where available.
- As often as possible, and at a minimum every time the stock assessment for a species is updated, compare previously projected dead discards to actual dead discards for that period.
- Include an update on the implementation of the standardized bycatch reporting methodology (SBRM), the Atlantic Coastal Cooperative Statistics Program (ACCSP), in the ACL Amendment and describe why it is or is not suitable for monitoring current bycatch and dead discards in the fishery in its current state of implementation.
- Specify the monitoring needs in order to move toward full bycatch accounting.
- Explicitly analyze the level of management uncertainty for each sector and account for management uncertainty in the setting of ACLs or ACTs.

MAGNUSON-STEVENS REAUTHORIZATION ACT AND NATIONAL ENVIRONMENTAL POLICY ACT

As amended in 2007, the MSA requires all FMPs to establish a mechanism for specifying ACLs "such that overfishing does not occur in the fishery," and AMs to help ensure those ACLs are not exceeded.[1] Under the law, ACLs and AMs must be in place for all stocks by 2011. In order to provide guidance to fishery managers on implementing the ACL and AM requirements, NMFS revised the NS1 guidelines, setting forth key biological reference points and status determination criteria that must be included in FMPs, and procedures for setting ACLs and AMs that should be followed in order to ensure the intent of Congress to end overfishing is truly met. While the ACL Amendment makes progress toward meeting the requirements of the MSA and the NS1

[1] 16 U.S.C. §303(a)(15).

guidelines, it still lacks some key components, and changes will need to be made in order to ensure full compliance with the MSA.

In addition, under NEPA, the agency is required, for any major action significantly affecting the quality of the human environment, to prepare a detailed statement of, among other things, the environmental impacts of the proposed action, the adverse environmental effects that cannot be avoided, and alternatives to the action.[2] Fishery management plans and amendments are major federal actions requiring the preparation of environmental impacts statements (EIS). The SAFMC's ACL Amendment has the potential to transform the way fisheries are managed in the South Atlantic region and warrants a thorough environmental analysis. The draft EIS accompanying the amendment falls short of NEPA requirements in several respects. Specifically, in some instances, the DEIS does not present a full and fair discussion of the environmental impacts of the proposed actions. Throughout the DEIS, only cursory analyses of the potential direct, indirect and cumulative effects on the physical, biological, and ecological environment from the proposed actions – including the alternatives and preferred alternatives – are offered.

Additionally, for some actions, important viable alternatives have not been considered, as required under NEPA and established case law. The consideration and analysis of alternative actions is the "heart of the environmental impact statement."[3] The analysis should "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public."[4] In this case, there are alternatives that the council and the agency have failed to consider that could result in less detrimental effects on the marine environment. In order to comply with NEPA, the final EIS will need to consider additional alternatives and conduct significantly more thorough analyses of the environmental impacts of the range of alternatives.

SPECIFIC RECOMMENDATIONS

1. Removing Species from the Snapper Grouper Fishery Management Unit

There are currently 73 species in the snapper grouper fishery management unit (FMU), many of which are of minor importance to the fishery and are data-poor. Many of these species were added for data collection purposes in an effort to be all-inclusive, long before federal law required ACLs for all stocks in the fishery. In action 1 of the ACL Amendment, the Council proposes to use state-federal landings proportions, total landings thresholds, and the Florida Marine Life Rule as a basis for removing a number of species from the FMU, in addition to removing four species based on no specific criteria.

a. Additional criteria needed for species removal

We understand the desire to remove species from the FMP that are not in need of federal management and thereby streamline management, and are not opposed to removing species from management. We have some concerns, however, with how the SAFMC is proposing to go about this. Specifically, with the exception of alternative 5 and 8, all alternatives use only criteria

[2] 42 U.S.C. §4332(2)(c).
[3] 40 C.F.R. §1502.14 (CEQ NEPA guidelines).
[4] Id.

related to the magnitude of landings; but landings alone are not sufficient information to determine whether a stock is in need of management. As stated in our previous letters, magnitude of landings alone is not a sufficient criterion for species removal from the FMU. The SAFMC needs to include and the agency needs to analyze species removal using additional fishery information such as species vulnerability, species distribution, species misidentification issues (e.g., species whose identity could be confused with that of another federally managed stock), and information on the targeting behavior of the fleet. **To remove species from the FMU, the SAFMC should select and the agency must analyze alternatives including implications of removing species utilizing criteria in addition to magnitude of landings such as species vulnerability, species misidentification issues, trends in landings, and/or species distribution.**

An additional consideration, which is implicit in the alternatives, is "desirability," or a change in targeting behavior of the fishery. The desirability of some species is used informally to justify exceptions to the landings criteria on the basis that those species would get fished heavily if removed from the FMU. Unrestricted landings of the species that would be removed could lead to these species being caught in such high volumes that the sustainability of the stock and future profitability of the fishery could be jeopardized. **The document should formally incorporate and the agency should consider the concept of desirability under Action 1 to prevent removing species that would be fished unsustainably if not under federal management.** The document also fails to consider the full potential cumulative impact of these removals. These include the difficulty states may have to manage these species and the potential for the misreporting of species landed in state waters (where regulations apply) as species landed in federal waters (where no regulations apply).

b. Criteria for adding species to the FMP should be included

Under the current proposal for removing species, once species are removed from the FMU there will be no mechanism in place by which to add them back into the FMP if it becomes necessary. If, for example, the average combined state and federal landings of a species increases significantly above the 20,000 lbs threshold established in Alternative 7, the SAFMC should determine whether to add the species back into the FMP. **The DEIS should include an alternative for establishing thresholds and triggers for determining whether species that are not currently under federal management should be added to the FMU.** At its June meeting, the SAFMC approved a motion that staff provide an update to the SAFMC every three years on the landings and trends of stocks that have been removed from the snapper-grouper FMU. This alternative should be analyzed in the EIS, and expanded to include thresholds and triggers for species that have never been under council management. An analysis should be conducted as a response to the potentially adverse biological and socioeconomic impacts that the ACL Amendment identifies under this action.

c. The agency must analyze the potential for bycatch of major species as a result of removal

We are concerned about the potential for increased bycatch of major species in the snapper grouper FMU (such as gag and red grouper) that would likely result from vessels that are state, but not federally, permitted fishing for species newly removed from federal management. The document acknowledges that, "by removing species from the FMU in Alternatives 2-8, species such as sheepshead, crevalle jack, queen snapper, schoolmaster, bank sea bass, and dog snapper could once again be targeted by fishermen with state licenses, but no federal snapper grouper commercial permit, which could result in some increased bycatch of co-occurring species such as gag, yellowtail snapper, and red grouper."[5] If this increase in bycatch-related mortality is significant, the model assumptions used to project dead discards for the major species will be inaccurate and overfishing could occur by exceeding the maximum fishing mortality threshold, even if the landings ACL is not exceeded. **The ACL Amendment must include provisions for tracking and accounting for this change in bycatch.**

d. The agency must perform more thorough environmental analysis on this amendment overall

The decision to remove such a significant number of species from federal management could substantially affect the long-term sustainability of snapper grouper fisheries and associated marine ecosystems. Such a decision should not be made without a comprehensive analysis of the long-term environmental and socioeconomic effects. The analysis currently accompanying this action is insufficient. The SAFMC has previously made the deliberate decision that these species are in need of conservation and management under the MSA.[6] Both the SAFMC and NMFS must conduct a comprehensive review before deciding that the species are no longer in such need.[7]

2. Species Groupings for Snapper Grouper Species

We support the use of species groupings as described in preferred Alternative 4 of the ACL Amendment. The complexes identified in alternative 4 are based on robust, peer-reviewed analyses that considered a number of factors related to fishery and life history characteristics, and management information is not currently sufficient to manage these species individually. The DEIS should, however, analyze and describe the potential negative aspects of managing stocks in complexes and how those aspects can be addressed. Monitoring catches only at the stock complex level could result in overfishing on individual species within the complex going undetected and changes in targeting behavior of the fleet being overlooked. **The EIS should include an alternative in which species in stock complexes will be evaluated if landings composition of stock complex members changes significantly. Ultimately, the ACL Amendment should specify that stock complexes will be re-evaluated periodically to ensure species groupings are still appropriate.**

3. ABC Control Rule for Snapper Grouper Species

At its June, 2011, meeting, the SAFMC identified alternative 7 under Action 3 as its preferred alternative for developing an acceptable biological catch (ABC) control rule, though the DEIS does not currently reflect this. Based on that recent action, we support alternative 7 for

[5] ACL Amendment, p. 308.

[6] *See* 16 U.S.C. § 302(h), 303(a).

[7] NMFS recently rejected a proposal from the Pacific Fishery Management Council (PFMC) to remove two species from the Pacific Coast Groundfish Fishery Management Plan because there was not sufficient analysis to support such a significant change. *See* Letter from William W. Stelle, Jr., Regional Administrator, NMFS, to Mark Cedargreen, Chair, PFMC, (Dec. 27, 2010).

establishing a control rule for determining ABC for snapper grouper species, with the understanding that some improvements will need to be made to this approach as soon as possible. For assessed species, the control rule developed by the SAFMC's Scientific and Statistical Committee (SSC) will be applied. The SSC's approach reduces ABC from the overfishing limit (OFL) based on the P^* method. Briefly, this means the ABC is obtained by applying the probability of overfishing (termed the P^* value) determined for each stock to the "probability density function" (pdf, which reflects scientific uncertainty around the OFL estimate) produced in the stock assessment. The range of the P^* value itself was given by the SAFMC, and the exact value within that range is obtained by the SSC evaluating each stock in four areas: assessment information, characterization of uncertainty, stock status, and productivity/susceptibility of the stock.

We are concerned that the control rule for assessed species does not account for all sources of scientific uncertainty, and that, therefore, if an assessment significantly underestimates the uncertainty in the probability density function, the ABC buffer will be too small even if a very low probability of overfishing (P^*) is calculated. Nevertheless, the control rule does account for some major sources of uncertainty and we support applying it. **The amendment should call for a future performance evaluation of the control rule to determine when and how it needs to be modified to achieve its goals.**

For unassessed species, until the SSC has completed its ABC control rule, ABCs will be based on a decision tree identified in the DEIS. We support the use of the decision tree in the absence of a more developed methodology. The SSC plans to incorporate into its ABC control rule the methodology developed by the NMFS *ad hoc* working group to address management of species that have only reliable catch data available ("only reliable catch stocks," or "ORCS"). The report by the working group reviews existing methods for setting catch limits for ORCS and presents its own approach, "designed to build on existing approaches, while strengthening the biological and population dynamics underpinnings. The method provides additional flexibility and allows policymakers to set risk levels, as required under the NS1 guidelines."[8] The findings and recommendations of the ORCS working group provide the basis for more effective alternatives for setting ABCs for data-poor species, and it is critical that NMFS examine the ORCS recommendations and analyze additional alternatives for ORCS.

4. Accounting for and Managing Total Mortality

The NS1 guidelines define catch as "fish that are retained for any purpose, as well as mortality of fish that are discarded."[9] The guidelines further state that "ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC."[10] Even though the ACL Amendment states explicitly that the SAFMC intends to account for bycatch and manage total mortality,[11] the document is currently lacking any discussion on

[8] Calculating Acceptable Biological Catch for stocks that have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS) NOAA Technical Memorandum NMFS-SEFSC-616, p. iii
[9] 50 C.F.R. § 600.310(f)(2)(i).
[10] Id. § 600.310(f)(3)(i).
[11] ACL Amendment, p. 10.

how discard mortality is taken into account in setting ABCs. In order to set meaningful ACLs and AMs that truly hold catch to the specified ACL, as intended by Congress, it is imperative that ABC and ACLs account for all sources of mortality, both directed catch and discard mortality.

For assessed species, dead discards are estimated as part of the stock assessment process and are projected into the future based on certain assumptions about the future operation of the fishery. Uncertainty in dead discard estimates should be incorporated into the probability density function used in the ABC control rule. Currently, the only species in the ACL amendment that has ABCs listed for landings and discards is black grouper. **The ACL Amendment must describe how discard mortality is incorporated into the ABC for all assessed species and explicitly state whether ABCs for assessed species provided in the document represent landings-only or total catch. In addition, the document must provide ABCs for landings and discards separately, where available.**

We recognize that it currently may not be possible for the SAFMC to monitor in-season bycatch and dead discards. Nevertheless, there is value in being explicit about what portion of the total ABC is landings and what portion is dead discards, to provide a form of bycatch-related accountability. The document should include an alternative that requires, as **often as possible and at a minimum every time the stock assessment for a species is updated, that previously projected dead discards are compared to actual dead discards for that period. If a stock assessment shows that catch limits were exceeded because dead discards were higher than allowed, an extra buffer should be applied to future ABCs to account for that.** This would provide consistency with the NS1 guidelines.

For unassessed species, the ACL Amendment must clarify if the intent of the ABC control rule is to specify a landings-only ABC. If that is the case, the document must specify how discard mortality is accounted for in the case of unassessed species. If the intent is to allow discard mortality to continue at the same rate at which it is has been occurring or at a rate slightly higher, the document needs to build the argument for why that is acceptable and how the SAFMC and the agency intend to monitor future bycatch and dead discards to assure discarding does not increase undetected and overfishing does not occur. **The DEIS should include an update on the implementation of the SAFMC's standardized bycatch reporting methodology (SBRM), the Atlantic Coastal Cooperative Statistics Program (ACCSP), and describe why it is not suitable for monitoring current bycatch and dead discards in the fishery in the current state of implementation. The DEIS should assess monitoring needs in order to move toward full bycatch accounting.**

5. Annual Catch Limits for the Snapper Grouper Fishery

The ACL Amendment preferred alternative under action 5 for setting ACLs in the snapper grouper fishery is to set ACL equal to ABC. We are not opposed to that as long as management uncertainty is then accounted for in setting an ACT below the ABC/ACL. The NS1 guidelines specify that councils must account for scientific and management uncertainty in setting catch limits and targets.[12] In Action 6, however, the Council's preferred alternative for commercial accountability measures (AMs) does not require the use of an ACT. If the SAFMC moves forward with that decision, it would have to show that management uncertainty in the commercial fishery is negligible in order to comply with the NS1 guidelines. **If the management uncertainty for the commercial sector is not demonstrably negligible and no ACT is employed as an AM, in Action 5 the ACL Amendment must set the ACL below the ABC in order to account for management uncertainty and comply with the NS1 guidelines.**

6. AMs and ACTs for Species in the Snapper Grouper FMU

The ACL amendment offers three alternatives for commercial and three alternatives for recreational accountability measures under actions 6 and 7 respectively. The preferred alternatives for commercial AMs would not use an ACT, would use a prohibition on purchase and sale of a stock as an in-season AM, and use a full overage deduction as a post-season AM. The preferred alternatives for recreational AMs would use an ACT set at ACL*[(1-PSE) or 0.5, whichever is greater], no in-season AM, and reduce the length of the recreational season in the year following an ACL overage to keep the fishery within its ACL as a post-season AM.

We support applying different AMs to each sector because each sector has unique data availability, timeliness, and quality issues affecting the appropriateness of certain management measures. The SAFMC's current intent for the commercial fishery is to set ACL equal to ABC and use no ACT, thereby implying that there is no management uncertainty in the commercial fishery and that management measures will constrain catch within the ACL with the in-season AMs proposed in the amendment. The in-season AM the SAFMC proposes in the ACL Amendment is to prohibit purchase and sale and limit harvest and/or possession to the bag limit after the commercial ACL is projected to be met. This AM would be insufficient to prevent quota overages. While the Council does propose to use full overage payback for the commercial fishery, it is crucial to prevent ACL overages in addition to correcting them after they occur.

The SAFMC should analyze the level of management uncertainty present in the commercial fishery. If the analysis shows that management uncertainty in the commercial sector is not negligible, the Council should change its preferred alternative from Subalternative 2a (do not establish a commercial sector ACT) to Subalternative 2b (sector ACT equals 90% of the sector ACL) or 2c (sector ACT equals 80% of the sector ACL), depending on the level of management uncertainty present in the fishery. In addition, the EIS should include and analyze a new alternative that would give the regional administrator the authority to close the fishery in-season if the ACL is exceeded in order to prevent large ACL overages from occurring and having to be paid back the following year.

We support the use of ACTs in the recreational fishery and the use of the percent standard error (PSE) to determine what that ACT should be. This links the ACT directly to variability in landings data, which is not the only source of management uncertainty in the recreational fishery but a large part of it. Managing for the ACT and not the ACL provides a higher certainty that the ACL will not be exceeded. However, there will probably be situations where, in spite of

---

[12] 50 C.F.R. § 600.310(b)(3).

managing toward an appropriately set target, the recreational ACL is projected to be exceeded in a fishing year. Therefore, alternative 4b (the regional administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met) is the optimal alternative to help ensure large recreational overages do not occur. We support the post-season AM to adjust the fishing season in order to keep the sector within its catch limit (subalternative 5f), and additionally recommend that the ACL be explicitly reduced in the following season by the amount of the ACL overage.

Conclusion

We appreciate the opportunity to provide comments on the Comprehensive ACL Amendment DEIS and look forward to continued work with you on our shared goal of ensuring the long-term health of South Atlantic fisheries.

Sincerely,

Samantha Port-Minner
Policy Analyst, Fish Conservation Program
Ocean Conservancy
449 Central Avenue, Suite 200
St. Petersburg, FL 33701

July 25, 2011

Dr. Roy Crabtree
Regional Administrator
Southeast Regional Office, NOAA Fisheries Service
263 13th Avenue South
St. Petersburg, Florida 33701-5505

RE: Public Comment on DEIS for the South Atlantic Fishery Management Council's Comprehensive Annual Catch Limits (ACLs) and Accountability Measures (AMs) Amendment (NOAA-NMFS-2011-0087)

Dear Dr. Crabtree,

On behalf of the Pew Environment Group's South Atlantic Fish Conservation Campaign, we are writing to offer comments on the Comprehensive Annual Catch Limit Amendment (Amendment) currently under review by the South Atlantic Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS). The Comprehensive ACL Amendment makes significant improvements to the system of fishery management used by the South Atlantic Council.

In the 2006-2007 fishing year, only six species out of seventy-three in the snapper and grouper fishery management unit had catch limits, and none of these six fisheries were closed in-season when those limits were met[1]. In the 2012-2013 fishing year, twenty-four snapper and grouper species will have catch limits, and the commercial fisheries will be subject to in-season closure when they meet that limit. The Council has also carefully heeded the advice of its scientists, and incorporated their recommendation for a control rule for setting allowable biological catch (ABC). This Amendment, in conjunction with Amendment 17b, sets up several strong accountability measures for species undergoing overfishing, like paying back overages in the next fishing year. The Amendment also appropriately establishes species complexes so that vulnerable species within each grouping are not put at risk of overfishing. Finally, we are pleased to see that the ACL Amendment includes the use of annual catch targets (ACTs) to

[1] NMFS Stock Status Report to the South Atlantic Fishery Management Council, December, 2006. http://www.safmc.net/Portals/6/Meetings/Council/BriefingBook/Dec2006/NMFS%20Status.pdf

address the inability to constrain catch exactly to the limit in nearly every fishery in the region, although we are concerned that these ACTs as designed are ineffectual.

Though we recognize the substantial improvements in pro-actively managing fish populations in a way that should prevent overfishing that this Amendment represents, we do have serious concerns that weak accountability measures (AM) and the removal of species from management may both allow overfishing to continue in the future. Thus, we have two sets of recommended changes to the ACL Amendment before it is finalized: strengthening AMs, and further evaluating species removals.

Strengthen Accountability Measures

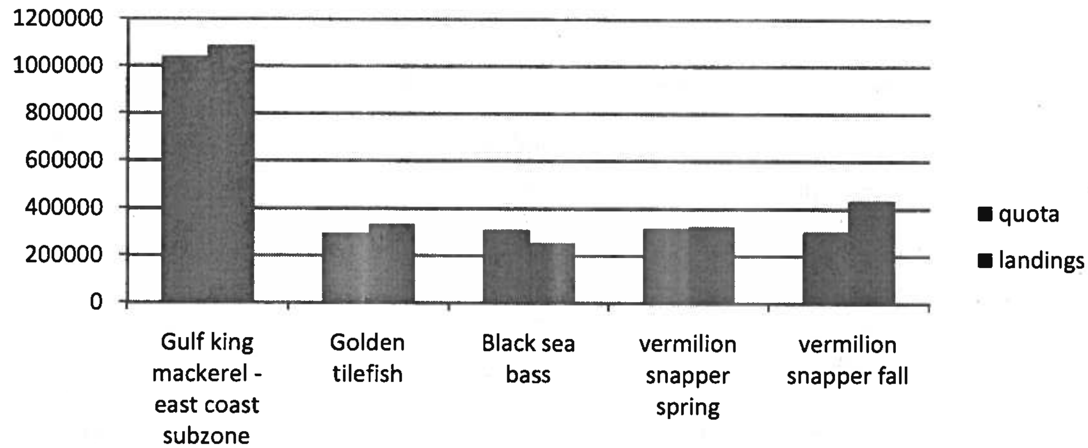
The actions proposed in the Amendment set appropriate science-based catch limits, but good catch limits are often not enough to ensure healthy, sustainable fisheries. The failed rebuilding plans for black sea bass are good examples of the importance of accountability measures. Black sea bass was found to be overfished and to be undergoing overfishing in 1991, and catch limits were set in order to achieve the necessary improvements in the status of the population by the end of the ten-year rebuilding plan. Even if the catch limits had been sufficient to recover the stock, they were routinely exceeded, and the rebuilding plan failed.

Ten years later, in 2001, the stock had not recovered and another rebuilding plan was developed and approved. The fishery routinely exceeded these catch limits as well. This year marks the midway point of yet a third attempt to rebuild the black sea bass population. Although we, and many others, hope that the stock assessment currently underway will find that the population has finally rebounded, it has been twenty years since the Council was first notified that the stock was in trouble. In 2010, for the first time in two decades of trying to rebuild this population, the black sea bass fishery closed two and a half months early when the limit was projected to have been exceeded. Catch limits are only effective if they truly limit mortality on the water, and this is the purpose of AMs.

Action 6 in the document deals with commercial AMs, and the current preferred AM for the commercial fishery is to limit the fishery to the recreational bag limit when the ACL is met.[2] Figure 1 below shows that in-season closures were not able to control commercial fisheries well in 2010, and most exceeded their quotas.

[2] Comprehensive ACL Amendment, South Atlantic Fishery Management Council, June, 2011 version. Page 51.

Figure 1



4 fisheries with a total of 5 quotas were closed in-season during the 2010 fishing year. This graph shows that there is management uncertainty associated with even these relatively well-controlled fisheries.

In Action 6, we recommend choosing Alternative 2c as the preferred alternative (which would set a commercial sector ACT), and adding language to the preferred alternative 3 that would give the NMFS authority to reduce trip limits when the ACT is projected to be met. This would help to keep the fishery within its limit, and could extend the season for commercial fishermen.

The AMs for the recreational fishery are more difficult, but are no less important, as it is difficult both to track recreational landings, and to hold the recreational fishery to its catch limit. In June, 2011, the Council devised a new AM system for recreational fisheries. In this system an overage in year one would trigger a possible in-season closure in year two. If there are overages in each of the first two years, then the third season would be shortened to ensure that the ACL is not reached. In order to see how recreational ACLs and AMs might play out, an example using catch data for a species where there were quotas in the past helps to visualize how the system will work. If we apply these rules hypothetically to the most recent rebuilding plan for black sea bass, and landings since 2006 (Figure 2), we can see how this system could allow large overages and chronic overfishing in the recreational fishery. In addition, the example shows the system to be overly complicated and not at all transparent to the public.

Figure 2 – Black Sea Bass Recreational Landings[3]

Fishing Year	Rec. Allocation (lbs.)	Rec. Catch (lbs.)	Rec. Overage (lbs.)	% Rec. Overage
2006/07	633,000	702,426	69,426	11%
2007/08	560,000	555,638	(4,362)	-1%
2008/09	409,000	440,992	31,992	8%
2009/10	409,000	486,722	77,722	19%

[3] NMFS report on black sea bass catches to SAFMC, June 2011.

2010/11	409,000	633,000[4]	224,000	54%

Figure 3 – Black Sea Bass Catch from the Marine Recreational Fishing Survey Statistics[5]

Year	Data Wave	Months in Wave	Catch (lbs.)	Total Catch in 2009-10 fishing year (lbs.)
2009	Wave 4	July – August	105,325	105,325
2009	Wave 5	September – October	35,479	140,804
2009	Wave 6	November – December	44,983	185,787
2010	Wave 1	January – February	63,801	249,588
2010	Wave 2	March – April	144,842	394,430
2010	Wave 3	May - June	165,740	560,170

In the black sea bass example, the recreational fishery has gone over its quota four of the last five years, by as much as twenty percent.[6] Although black sea bass is not addressed by this Amendment, the example is illustrative because the only recreational fisheries with any kind of quota in the past have been those in rebuilding plans.

- In year one (2006/07), an 11% overage has no immediate consequences, but would trigger monitoring in year two.
- In year two (2007/08), the recreational catch was 1% under the quota, so there are no AMs triggered.
- The clock now starts over, so in year three (2008/09) an 8% overage triggers monitoring in year four. If the fishery reaches its ACL in year four, the fishery should be closed.

In reality, this is not so straight forward. Figure 3 shows the recreational catch data in the fishing year 2009-2010 (year 4). The data is analyzed in 2-month "waves". Up through February of 2010, with four months left in the fishing year, the total catch was 249,588 pounds, well below the quota. March and April, 2010 (wave 2) information reveals that the total catch is 394,430 pounds, very close to the quota. It might be assumed that at this point the NMFS would prepare to close the recreational fishery. However, because there is a 45 – 60 day delay before the Wave 2 information is available, this information would not be available for use in management until after the fishing year ended, making an in-season closure impossible. Under the proposed system, with overages in years three and four, the season for year five would be shortened to ensure that the ACL is not exceeded once again. In the example here, however, a shortened season would likely not prevent the recreational fishery from exceeding its quota in year five, when the fishery appears to be more than fifty percent over its limit. The final result is that the fishery exceeded its limit in 4 out of 5 years, sometimes dramatically, under the proposed system of AMs that are the Council's current preferred alternatives in the Amendment.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) states that councils must enact "implementing regulations, or annual specifications, at a level such that overfishing

[4] Value taken from NMFS online recreational landings database on 7/12/2011.
[5] Ibid
[6] http://www.safmc.net/LinkClick.aspx?fileticket=B2M%2b%2fYRfMlk%3d&tabid=666

does not occur in the fishery, including measures to ensure accountability."[7] Although it is difficult to know at what level overfishing "does not occur," NMFS has offered further guidance in its National Standard 1.

> "If catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness."[8]

Clearly, having overages in four out of five years is an inappropriate method of managing a fishery both because it is not consistent with the law, and because it is likely to allow overfishing to occur. **In order to remedy the AM system, we recommend that both the recreational and commercial ACTs have real management function.** The ACT could provide tangible management benefit in lengthening recreational seasons and in reducing the effect of data lags on the fishery if it were used to reduce effort as the fishery approaches its ACL. The new Alternative 5e added in June says:

> "*Monitor following year and reduce bag limit as necessary. If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.*"

A change in the preceding Alternative 5e to read "ACT" instead of "ACL" would achieve the goals of the AM without allowing chronic overfishing to occur. In Action 7, we recommend that the Council choose 3b, 3c, or 3d as the preferred AM trigger (using annual landings or a running average or 3 or 5 years) and 5f as the preferred AM (shortening the following season). The multi-year averages represented in these options are discussed and recommended by NMFS in its National Standard 1 guidance:

> A "multiyear plan" as referenced in section 303(a)(15) of the Magnuson-Stevens Act is a plan that establishes harvest specifications or harvest guidelines for each year of a time period greater than 1 year. A multiyear plan must include a mechanism for specifying ACLs for each year with appropriate AMs to prevent overfishing and maintain an appropriate rate of rebuilding if the stock or stock complex is in a rebuilding plan. A multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are triggered for the next year consistent with paragraph (g)(3) of this section. [9]

Accountability measures are critical to ending and preventing overfishing, and we believe that these recommended changes to the document will result in a much more effective management system capable of ensuring more vibrant and sustainable fisheries in the future.

Evaluating Species Removals

---

[7] 16 U.S.C. 1853 MSA § 303.109-479(15)
[8] 16 U.S.C. 1801 Section 600.310(g)(3)
[9] Ibid.

In addition to the strengthening of accountability measures, we also offer a recommendation regarding the removal of species from the fishery management units. NMFS' own guidance on MSA says that "As a default, all stocks in an FMP are considered to be 'in the fishery,' unless they are identified as EC species (see §600.310(d)(5)) through an FMP amendment process."[10] Thus far, the Council has rejected use of the EC species classification and is instead proposing the removal of 39 species from management. The guidance goes on to say that "a Council should monitor the catch resulting from a fishery on a regular basis to determine if the stocks and species are appropriately classified in the FMP. If the criteria previously used to classify a stock or species is no longer valid, the Council should reclassify it through an FMP amendment, which documents the rationale for the decision."[11]

The Council has chosen to use landings as its only formal criterion for removing species from the management unit. The landings level chosen by the Council is a fairly low 20,000 pounds, and most of these species were not being actively managed by the Council. However, we consider this to be an incomplete rationale for species removals. The Council itself used additional criteria for some species and not for others on an ad hoc basis. For instance, mutton snapper is not proposed for removal despite its low landings level because of landings trends and state management concerns. This is the right decision, and **we recommend that this more comprehensive look at each species' circumstances be extended to the rest of the management unit before they are removed from federal management and that these species be retained as ecosystem components until such an evaluation can be undertaken.** Important additional criteria include:

1. The co-occurrence with other targeted fish of the species in question
2. Misidentification of the species with other targeted fish
3. Bycatch concerns
4. Life history characteristics such as long lifespan, aggregate spawning and sequential hermaphroditism that make species especially vulnerable to fishing pressure
5. Ability of states to adequately manage those species with significant landings in their state waters
6. General ecosystem impacts of a species removal
7. Landings and effort trends over time that may indicate a growing or crashing fishery
8. Prior scientific status determinations (at least 8 species previously identified as probably overfished are proposed for removal)

The NMFS lists "developing science-based approaches to regional ecosystem-level management" as one of its highest priority in the South Atlantic region.[12] The Council has expressed a similar goal, and we believe that this goal is both desirable and necessary in order to sustainably manage ocean resources in the future. In addition to criteria for removals on a species by species basis, we are concerned that the large-scale removal of ecosystem component species is directly contrary to the expressed goals of both the regional Council and the NMFS.

---

[10] 16 U.S.C. 1801 Section 600.310(d)(1)
[11] 16 U.S.C. 1801 Section 600.310(d)(6)
[12] http://www.regions.noaa.gov/secar/pdfs/SECARRegionOverview_042407.pdf

Conclusion

Although the Council proposes to make significant advances in its fisheries management practices though this Amendment, we are concerned that it may not be sufficient to entirely end and prevent overfishing. We have recommended changes that can be made before final approval of the document that will significantly address the weaknesses in the Amendment, and that we do not believe would require further analysis or the drafting of a supplemental draft environmental impact statement, as they are either alternatives currently in the document or within the range of alternatives that the Council has already considered. We thank the NMFS and its staff for their hard work on this Amendment, and we look forward to continuing to work with you to ensure vibrant South Atlantic fisheries for the future.

Sincerely,

Sera Drevenak

Sera Harold Drevenak
Sr. Associate, Science and Policy Analyst
South Atlantic Fish Conservation Campaign
Pew Environment Group

Holly J. Binns

Holly Binns
Director
Southeast Fish Conservation Campaigns
Pew Environment Group

NOAA Fisheries
South Atlantic Fisheries Management Council
July 31, 2011

Re: Generic Annual Catch Limit/Accountability Measures Amendment

To NOAA Fisheries and SAMFC Council:

The American Sportfishing Association is pleased to provide the following comments on the Generic Annual Catch Limit (ACL) and Accountability Measures (AM) amendment currently under development by the South Atlantic Fishery Management Council. As the sportfishing industry's trade association, the American Sportfishing Association (ASA) has been closely following and providing input to the Councils throughout the ACL/AM development process, which stands to have a significant impact on the thousands of saltwater recreational fishing-dependent businesses in the Southeast and the broader sportfishing community at large.

After review of the latest version of the amendment we offer the following comments. It remains our opinion that Generic ACL/AM Amendment is simply not viable as a management tool, particularly as related to the control rules. This document is virtually impossible to read and comprehend and there is no possible way that the industries and people being managed can comprehend the implications of enacting this amendment. More importantly the document still abrogates the socio-economic impacts of the proposed actions, having not included any methodology to include those factors. This, we believe, tests the Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates and less importantly does not follow the spirit of the National Standard 1 guidelines. Passage of this amendment with these rules would be a disservice to the fisheries management process.

General Comments

ASA believes the amendment contains the potential for numerous unintended consequences as a result of the network of complexity built into the control rules being developed in order to try to accommodate the interpretation of MSA in the National Standard 1 Guidelines. ASA wishes to remind the Council that that they are guidelines and in our view provide some misinterpretations of MSA and remain overly conservative. In essence the overfishing level is a precautionary number, then the acceptable biological catch precautionary to overfishing level, then the annual catch limit is precautionary to the acceptable biological catch and finally the annual catch target is then set precautionary to the annual catch limit. This approach, with all of the various iterations and interactions, is simply not understandable to the lay fisher and thus doomed to conflict and poor implementation.

Another general view ASA has on this amendment is very well expressed in Action 1 where as many species are proposed to be removed from federal management. This is being done because of the difficultly in providing an ACL and includes a discussion on the savings to the fishery management process by not having to include these species. ASA can only conclude that if

AMERICAN SPORTFISHING ASSOCIATION
225 Reinekers Lane, Suite 420, Alexandria, VA 22314 • 703-519-9691 • Fax: 703-519-1872
Web: www.asafishing.org • E-mail: info@asafishing.org

Councils are forced to develop "work around" solutions to developing ACLs, then it is abundantly clear that the MSA is flawed and must be modified as opposed to just finding a way to get around the challenge.

We also observe that even though socio-economic information in the amendment is voluminous within the document there is no serious attempt to include economics and absolutely no guidelines or prescriptions on how and when it will be used in the decision making process. This is contrasted by an overly quantitative approach to setting ACLs and ACTs. Further we could not find in the volumes of often rote economic and social information any kind of summary that makes any sense for the lay reader. We ask that the Council specifically summarize the economic and social impacts of this amendment somewhere in this document. We contend that the lack of treatment in this amendment of socio-economics is a serious flaw and fails to meet MSA intent.

We also observe that it does not appear that the issue of allocation is well thought out, defined and implemented as part of this amendment. Use of landings as the method of allocation is not longer an acceptable approach. We believe that allocations based on new approaches suggested by NOAA must be an addition to all ACL developments.

We are very concerned on the approach taken for dolphin and wahoo. Although the Council Actions appear on the surface to be using an approach to best benefit the fishers it is really a set up for potential disaster economically if AMs are enacted. This is particularly disturbing to the industry when it is clear that there is no data to suggest MSY is being exceeded or even approached. It will be very easy for the recreational sector to exceed the values being set in the preferred alternatives especially given the fact that shifting fishing effort is extremely likely to occur due to MSA enactment.

And finally we remain very concerned that this amendment and others with ACLs continue to be passed with the knowledge that new assessment values for most species and complexes will be made available in the near future. To move forward on ACL determinations with the knowledge that time and effort will have to be re-spent on the same species and complexes in the very near-term is the type of bureaucracy failure that this country is so concerned about in these tough economic times.

Action 1
ASA supports any species removal that will result in state management of that species or another federal fisheries management council. We do not support removal of species when another entity has not agreed to take over full management. We are not supportive of removing species from management plans as a work around to MSA and thus we propose that Council declare that data are so poor for many species that the requirements of MSA cannot be met and take no action. Then take additional time, data, and deliberation to develop a better data collection and analysis effort to manage these species under MSA.

Action 2
ASA does not support the preferred alternative and believe the council should consider lane snapper, grey snapper and rock hind and white grunt as individual species.

Action 3
ASA recognizes that this Action provides the Council with a more defined role is setting ABCs based on risk and other factors. We believe the high end of risk should be 50% as opposed to 45% in all alternatives. We continue to ask that the Council retain as much discretionary decision making as possible. With that said ASA feels that the MSA did not contemplate managed species having inadequate data and we recommend that the Council delay any actions on data poor species unless there is compelling information for rule making. We would like to see the Council do this in spite of the deadlines found in MSA and have a much more deliberate and informed process than has been accomplished to date.

Action 4
ASA does not support any alternative that divides the recreational sector. We remain disappointed that the SAFMC allocation process remains tied to only landings even when NOAA has provided guidance to broaden the scope of the allocation process. We request that alternatives in this action be given a deadline for revisiting allocations rather than what appears to be rules that give the Council no timeframe for revisiting allocations. This would leave the fishermen with no commitment by the Council to adjust allocations and past and current history would suggest that this means allocations will not be changed even when needed.

Action 5
Alternative 2 is the better of the proposed alternatives. We believe that ABC and ACT should be equal and do not support any overly conservative approach that will further harm the industry and fishers when it has not proven necessary. We continue to have an overall concern that the enactment of rules for ABC and ACT remain too complex and cannot support this action.

Action 7
Any selected alternative should use a multi-year average for determining overages that may trigger an AM and should minimize short-term economic impact.

Action 13
ASA continues to oppose setting sector allocations that are based solely on landings and do not take into account the economic factors associated with the industries.

Action 18
For dolphin, which will have no OFL and thus a cascading lack of data to make sound decisions, and with no indications of problems in the fishery ASA cannot support an action that simply uses landings to determine an ABC or ACL or ACT. This action should set an ABC above current landings to insure that AMs are not enacted under any condition until data with an acceptable confidence levels are available to set a true ABC.

Action 19
ASA does not support any alternative that separates the recreational sector to create a for hire sector. We remain concerned for all allocations that economics are not part of the allocation process.

Action 20
Again for a species that has no OFL and an estimated MSY of between 14.1 and 34.9 million pounds to set an ABC, ACL, OY or ACT below the lower estimate of MSY is simply not justified. We do not consider this to be sound scientific decision making and it remain too conservative even for guesswork. We ask the Council to re-evaluate this Action and set justifiably higher limits before considering AMs.

Action 22
We believe that this remains part of a process that is fundamentally too conservative and thus any AMs based on this process would likely result in direct and serious impacts to the recreational industry and economics of recreational fishing.

Action 23
ASA supports Alternative 2

Action 24-29
Please refer to comments on dolphin as they remain the same for Wahoo.

Conclusion
ASA supports good fisheries management and is highly concerned that this ACL/AM amendment as drafted will not achieve that result. The generic amendment is over-complex, nearly impossible to fully comprehend and will not be understood nor appreciated by the industry or fishers. Poor understanding and complexity lead to poor compliance and acceptance. Unfortunately the burden placed on the Council by Congress and NOAA is leading to a staff driven document that simply will be a policy nightmare of ill will and unnecessary regulation. While we understand that the Council feels obligated under MSA to pass this amendment we philosophically and practically feel is mistake to procede on its current path given the likely consequences and negative impacts to the recreational fishing community.

Thank you for your consideration.

Sincerely,

Kenneth Haddad

Kenneth Haddad
Marine Fisheries Advisor

Cc: Gulf of Mexico Fishery Management

As of: August 01, 2011
Received: June 25, 2011
Status: Pending_Post
Tracking No. 80eb3748
Comments Due: August 01, 2011
Submission Type: Web

PUBLIC SUBMISSION

Docket: NOAA-NMFS-2011-0087
Comprehensive Annual Catch Limit (ACL) Amendment for the South Atlantic Region.

Comment On: NOAA-NMFS-2011-0087-0018
Notice of Availability of DEIS

Document: NOAA-NMFS-2011-0087-DRAFT-0021
Comment from Robert Kinchen

Submitter Information

Name: Robert Lee Kinchen
Address:
134 NW Curry St.
Port Saint Lucie, Florida, 34983
Email: bert_K@comcast.net
Phone: 772-323-9945
Organization: Self

General Comment

The best way to stop "Over Fishing" in the South Atlantic region is to open season on the North Atlantic Vacumme Cleaner AKA (Golith Grouper/Jew Fish). I realize that the data ya'll are going by is well over three years old. These fish move from reef to reef cleaning them out, yet you insist that it is the Human population that is doing the damage. I don't think it is. The second week of June I was off the Fort pierce Inlet. I had a nice fish on, then I was dragged to the bottom and my line broke off. I knew what happened. A Golith Grouper stole my fish. I was useing 60 lb. test and it snapped like a twig.