Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Update to the ABC Control Rule, ABC, ACL Adjustments to Select Unassessed Species, and Management Measures for Gray Triggerfish

Environmental Assessment **Regulatory Impact Review** **Regulatory Flexibility Act Analysis**

October 14, 2014

Definitions, Abbreviations, and Acronyms Used in the Document

ABC acceptable biological catch

ACL annual catch limits

AM accountability measures

ACT annual catch target

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

CPUE catch per unit effort

DEIS draft environmental impact statement

EA environmental assessment

EEZ exclusive economic zone

EFH essential fish habitat

F a measure of the instantaneous rate of fishing mortality

$F_{30\%SPR}$ fishing mortality that will produce a static SPR = 30%

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

IRFA initial regulatory flexibility act analysis

M natural mortality rate

MARMAP Marine Resources Monitoring Assessment and Prediction Program

MFMT maximum fishing mortality threshold

MMPA Marine Mammal Protection Act

MRFSS Marine Recreational Fisheries Statistics Survey

MRIP Marine Recreational Information Program

MSFCMA Magnuson-Stevens Fishery Conservation and Management Act

MSST minimum stock size threshold

MSY maximum sustainable yield

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

OFL overfishing limit

OY optimum yield

RFA Regulatory Flexibility Act

RIR regulatory impact review

SAFMC South Atlantic Fishery Management Council

SEDAR Southeast Data, Assessment, and Review

SEFSC Southeast Fisheries Science Center

SERO Southeast Regional Office

SIA social impact assessment

SPR spawning potential ratio

SSC Scientific and Statistical Committee

Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Documents:	Amendment 29 Environmental Assessment Regulatory Impact Review Regulatory Flexibility Act Analysis
Proposed actions:	This amendment proposes: updating the acceptable biological catch (ABC) control rule, adjusting ABCs for unassessed snapper grouper species based on the revised ABC control rule, revising annual catch limits for select species, and modifying management measures for gray triggerfish.
Lead agency:	Amendment 29 – South Atlantic Fishery Management Council EA/RIR/FIS – National Marine Fisheries Service (NMFS)
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Summary

What Action Is Being Proposed?

Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Amendment 29) proposes to: (1) update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Stocks" (ORCS); (2) adjust ABCs for select unassessed species; (3) adjust ACLs based on revised ABCs; and (4) revise management measures for gray triggerfish in federal waters of the South Atlantic region.

Why are the South Atlantic Council and National Marine Fisheries Service Considering Action?

Changes to the Acceptable Biological Catch (ABC) Control Rule

The Scientific and Statistical Committee (SSC) has recommended revising the South Atlantic Council's ABC control rule to incorporate the revised methodology for 14 fishery stocks in the Snapper Grouper fishery management unit without assessments for which there are reliable catch data. An initial methodology for estimating the ABC for such stocks was developed at the time the South Atlantic Council approved its ABC control rule through the Comprehensive Annual Catch Limit (ACL) Amendment (SAFMC 2011c). Hence, the South Atlantic Council has chosen to take action to incorporate the revisions that the SSC has recommended.

What is the "ORCS" Approach?

Based on the methodology in *Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* (Berkson et al. 2011), the South Atlantic Council's SSC recommended an approach to calculate the ABC for unassessed stocks for which there is only reliable catch information. The approach involves selection of a "catch statistic", a scalar (number) to denote the risk of overexploitation for the stock, and a scalar to denote the management risk level. The SSC provided the first two criteria for each stock, and the South Atlantic Council specified their risk tolerance level for each stock.

Catch Statistic: The median was considered inadequate to represent the high fluctuation in landings (i.e., the median failed to appropriately capture the range of occasional high landings). Instead, the maximum catch over the period 1999-2007 was chosen. This time period was chosen to (1) be consistent with the period of landings used in the Council's Comprehensive ACL Amendment, and (2) to minimize the impact of recent regulations and the economic downturn on the landings time series.

Risk of Overexploitation: Based on SSC consensus and expert judgment, each stock is assigned to a final risk of exploitation category. See **Appendix H** for a detailed description of the attributes used to assess the level of risk.

A scalar scheme consistent with the Risk of Overexploitation categories is assigned to stocks as follows:

Risk of Overexploitation	Scalar Value
Low	2
Moderate Low	1.75
Moderate	1.5
Moderate High	1.25

Important Note: Given characteristics specific to South Atlantic stocks, the SSC agreed that the "catch statistic × scalar" metric developed in this stage of the process may not represent a reliable proxy for the overfishing limit (OFL) and, therefore, would not be called OFL or used as such.

Risk Tolerance Level: The next step in the process involves multiplying the "catch statistic × scalar" metric by a range of scalar values that reflects the South Atlantic Council's risk tolerance level. For instance, the South Atlantic Council may choose to be more risk-averse in computing the ABC for a stock that exhibits a moderately high risk of overexploitation. As such, the South Atlantic Council may use a scalar of 0.50 for such stocks to specify a more conservative ABC. On the other hand, stocks with low risk of overexploitation and thereby able to tolerate a higher level of management risk, may be assigned a less conservative scalar, such as 0.90.

Application of the updated ABC control rule to select unassessed snapper grouper stocks

To apply the "ORCS" methodology to the target stocks, the South Atlantic Council must first decide on a numerical factor that determines the risk tolerance level. That is, the South Atlantic Council must decide the level of risk they are willing to allow in establishing the ABC for unassessed stocks that only have reliable catch information. Various levels of risk tolerance are considered in **Action 2** that allow the South Atlantic Council to be more or less risk averse depending on whether a stock is deemed to be at a low, moderate, or moderately high risk of overexploitation. The latter classification was determined by the SSC based on an extensive set of criteria (see **Appendix H**).

Management Measures for Gray Triggerfish

A stock assessment for the South Atlantic stock of gray triggerfish was initiated in 2013 (SEDAR 32 2013). Unfortunately, significant discrepancies in ageing led the analysts to postpone completion of the assessment to 2015. Meanwhile, fishermen have approached the South Atlantic Council with requests for management measures due concerns about early closures in the commercial sector and stock status of gray triggerfish. While the South Atlantic Council had intended to wait until after the results of the stock assessment were available to make changes to management measures for this stock, the unforeseen delays in the assessment prompted the South Atlantic Council to be proactive and consider the management measures that fishermen are suggesting at this time.

Purpose & Need for Actions

The purpose of Amendment 29 is to: update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule based on recommendations from the Scientific and Statistical Committee; adjust ABCs for the affected species; revise annual catch limits (ACLs) for select species; and revise management measures for gray triggerfish in federal waters of the South Atlantic region.

The need for Amendment 29 is to: specify ABCs, ACLs, and ACTs for snapper grouper species based on the best available scientific information, diminish and/or prevent derby conditions, and ensure that overfishing does not occur pending a new assessment of the gray triggerfish stock in the South Atlantic region.

Action 1. Update the South Atlantic Council's Acceptable Biological Catch (ABC) Control Rule

Alternative 1 (No Action). Utilize the South Atlantic Council's ABC control rule as adopted in the Comprehensive Annual Catch Limit (ACL) Amendment to specify ABCs for snapper grouper species.

Table S-1. ABC control rule currently in place. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

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 (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%)
Level 2 - Unassessed Stocks. Reliable landings and life history information available	
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.	
Level 3 - Unassessed Stocks. Inadequate data to support DBSRA	
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.	
Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA	

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. 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.

Preferred Alternative 2. Adopt the SSC's recommended approach to determine ABC values for Only Reliable Catch Stocks (ORCS). This approach will become Level 4 of the ABC control rule and the existing Level 4 will be renumbered as Level 5.

Table S-2. ABC control rule proposed under Preferred Alternative 2. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

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

<table>
<tr><td></td><td>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 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 the 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. Only Reliable Catch Stocks.</th></tr>
<tr><td colspan="2">OFL and ABC derived on a case-by-case basis. Apply ORCS approach using a catch statistic, a scalar derived from the risk of overexploitation, and the Council’s risk tolerance level.</td></tr>
<tr><th colspan="2">Level 5 – Unassessed Stocks. No reliable catch.</th></tr>
<tr><td colspan="2">OFL and ABC derived on a case-by-case basis. Stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates. Use “decision tree”:

1. Will catch affect stock?
NO: Ecosystem Species (Council 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.</td></tr>
</table>

The ABC control rule identified in **Alternative 1 (No Action)** was developed by the South Atlantic Council’s SSC, approved by the South Atlantic Council, and implemented through the Comprehensive ACL Amendment (SAFMC 2011c). **Preferred Alternative 2** represents updates to the ABC control rule developed by the South Atlantic Council’s SSC. The SSC has provided no other options or modifications to the ABC control rule for South Atlantic Council consideration. Therefore, the South Atlantic Council and National Marine Fisheries Service determined it is not reasonable to include additional alternatives for modifications to the ABC control rule.

Summary of Effects

Biological

Updating the ABC control rule as proposed in **Preferred Alternative 2** would not have any direct biological effects. This change would; however, have minor indirect effects on the biological environment since an approved scientific methodology would be adopted to establish ABCs and ACLs for snapper grouper species that have not been assessed but for which there are reliable catch statistics (**Actions 2** and **3**).

Economic

Action 1 is an administrative action and has no direct beneficial or adverse economic impacts. **Alternative 1 (No Action)** would retain the current control rule to specify ABCs for snapper grouper species, while **Preferred Alternative 2** would change the ABC control rule used to determine ABCs for the species without assessments for which there are reliable catch data. **Preferred Alternative 2** would allow for subsequent actions (**Actions 2** and **3**) that could have beneficial and/or adverse economic impacts beyond the status quo.

Social

Setting of the biological parameters for harvest thresholds have mostly minor indirect social effects from the implementation of the ABC and any subsequent reduction through other actions to set ACLs, annual catch targets (ACTs), and accountability measures (AMs). Because the ABC control rule already exists under **Alternative 1 (No Action)**, there would be no difference in direct social effects between **Alternative 1 (No Action)** and the proposed change in the ABC control rule under **Preferred Alternative 2**, because the alternatives would not modify the ACLs, ACTs, and AMs that are currently in place.

Administrative

The mechanism for specifying ABCs and ACLs for data poor species addressed by this amendment was put in place with implementation of the Comprehensive ACL Amendment (SAFMC 2011c), and constitutes **Alternative 1** (**No Action**). Therefore, the administrative impacts of **Preferred Alternative 2** would be minimal, and not different from **Alternative 1** (**No Action**). Administrative burdens may result from revising the ABC and ACL values under the preferred alternatives of **Actions 2** and **3**. These administrative activities would take the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

Action 2. Apply the revised ABC Control Rule to select unassessed snapper grouper species

Alternative 1 (No Action). ABCs for select unassessed snapper grouper species are based on the current ABC Control Rule.

Preferred Alternative 2. Assign a risk tolerance scalar to stocks deemed by the SSC to be under low risk of overexploitation (scalar = 2):

Sub-alternative 2a. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.75	51,875	24,780	+27,095

Preferred Sub-alternative 2b. Apply a risk tolerance scalar of 0.90.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.90	62,249	24,780	+37,469

Preferred Alternative 3. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderate risk of overexploitation (scalar = 1.5):

Sub-alternative 3a. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.75	71,992	29,889	+42,103
Red Hind	27,570	1.5	0.75	31,016	24,867	+6,149
Cubera Snapper	52,721	1.5	0.75	59,311	24,680	+34,631
Yellowedge Grouper	46,330	1.5	0.75	52,121	30,221	+21,900
Silk Snapper	75,269	1.5	0.75	84,678	25,104	+59,574
Atlantic Spadefish	677,065	1.5	0.75	761,698	189,460	+572,238
Gray Snapper	1,039,277	1.5	0.75	1,169,187	795,743	+373,444
Lane Snapper	169,572	1.5	0.75	190,769	119,984	+70,785

Preferred Sub-alternative 3b. Apply a risk tolerance scalar of 0.80

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.80	76,792	29,889	+46,903
Red Hind	27,570	1.5	0.80	33,084	24,867	+8,217
Cubera Snapper	52,721	1.5	0.80	63,265	24,680	+38,585

Yellowedge Grouper	46,330	1.5	0.80	55,596	30,221	+25,375
Silk Snapper	75,269	1.5	0.80	90,323	25,104	+65,219
Atlantic Spadefish	677,065	1.5	0.80	812,478	189,460	+623,018
Gray Snapper	1,039,277	1.5	0.80	1,247,132	795,743	+451,389
Lane Snapper	169,572	1.5	0.80	203,486	119,984	+83,502

Preferred Alternative 4. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderately high risk of overexploitation (scalar = 1.25):

Sub-alternative 4a. Apply a risk tolerance scalar of 0.70.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.70	522,269	509,788	+12,481
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

Sub-alternative 4b. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference of ABC
Rock Hind	42,849	1.25	0.75	40,171	37,953	+2,218
Tomtate	105,909	1.25	0.75	99,290	80,056	+19,234
White Grunt	735,873	1.25	0.75	689,881	674,033	+15,848
Scamp	596,879	1.25	0.75	559,574	509,788	+49,786
Gray Triggerfish	819,428	1.25	0.75	768,214	626,518	+141,696

Sub-alternative 4c. Apply a risk tolerance scalar of 0.50.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.50	26,781	37,953	-11,172
Tomtate	105,909	1.25	0.50	66,193	80,056	-13,863
White Grunt	735,873	1.25	0.50	459,921	674,033	-214,112
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.50	512,143	626,518	-114,375

Preferred Sub-alternative 4d. Apply a risk tolerance scalar of 0.70 for rock hind, tomtate, white grunt and gray triggerfish and 0.50 for scamp.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

Summary of Effects

Biological

All of the sub-alternatives under this action were developed by the South Atlantic Council's SSC using the "ORCS" approach and would not directly lead to overfishing or result in negative biological impacts to stocks. Alternatives to revise the ACLs are considered in **Action 3** and are based upon the ABC alternatives in **Action 2**. There is uncertainty associated with the risk of overexploitation scalar (determined by the SSC) and the risk tolerance scalar (which would be selected by the South Atlantic Council under this action). If the South Atlantic Council selects the risk tolerance scalar to achieve the most conservative values of ABC, any biological impacts associated with harvest levels (considered in **Action 3**) would be minimized. However, while conservative ABCs may provide the greatest biological benefit to the species, higher ABCs would not be expected to negatively impact the stock as long as harvest is maintained at sustainable levels and overfishing does not occur.

Economic

Action 2 is an administrative action and would not have a direct economic impact. However, **Alternatives 2 – 4** would change the ABCs for the 14 species, which would allow for subsequent action (**Action 3**) that could affect annual landings and net economic benefits from those landings. **Alternative 2** would assign the highest scalar value, **Alternative 3** the second highest, and **Alternative 4** the lowest. The higher the scalar value, the higher the ABC, and, potentially, the greater the increase of the ACL, annual landings, and economic benefits that derive from those landings.

Preferred Sub-Alternative 2b would yield a higher ABC for bar jack than **Sub-Alternative 2a**. **Preferred Sub-Alternative 3b** would yield higher ABCs for eight snapper grouper species than **Sub-Alternative 3a**. **Preferred Sub-Alternative 4d** would yield higher ABCs for five species than **Sub-Alternative 4c**, but lower ABCs than **Sub-Alternative 4b** and **4a.**

Social

Because the ACLs (commercial or recreational) for most of the species have not recently been met or exceeded, the increases in the ABC under **Sub-alternatives 2a, Preferred 2b, 3a, Preferred 3b, 4a,** and

4b are not expected to indirectly affect commercial and recreational fishermen harvesting these species. The lower ABCs expected under **Sub-alternative 4c** and **Preferred Sub-alternative 4d** could indirectly impact fishing for some of the snapper grouper species/complexes if harvest were to increase in the future. The decreased ACL for white grunt under **Preferred Sub-alternative 4d** could limit fishing opportunities for this species, particularly for recreational anglers in south Florida and the Florida Keys, where the species is a popular, easy-to-target recreational species. However, there would be a net increase in the ABC for the Grunts Complex, which could reduce that adverse impact.

Administrative

The mechanism for determining ABCs through application of the ABC control rule was put in place with implementation of the Comprehensive ACL Amendment (SAFMC 2011c), and constitutes **Alternative 1** (**No Action**) under **Action 2**. Amendment 29 proposes applying the revised ABC control rule to establish harvest parameters in **Action 3**. However, **Action 2** would not adjust the harvest parameters and is an administrative action. Therefore, the administrative impacts of **Alternative 2, Alternative 3, Alternative 4,** and associated sub-alternatives would be minimal, and not differ much when compared with **Alternative 1** (**No Action**). If the South Atlantic Council selects the risk tolerance scalar to achieve the most conservative values of ABC, harvest levels would decrease for many species or species groups (**Action 3**), and it would be more likely that AMs would be triggered and action would be needed to ensure overfishing did not occur. This would lead to greater administrative impacts. Alternatives that result in higher ABCs and subsequently higher ACLs (in **Action 3**) could slightly reduce administrative burdens because the likelihood of triggering AMs would be reduced. Administrative burdens also may result from revising the values under **Alternative 2, Alternative 3, Alternative 4,** and associated sub-alternatives would take the form of development and dissemination of outreach and education materials for fishery participants and law enforcement.

Action 3. Establish ACLs for select unassessed snapper grouper species

Alternative 1 (No Action). ACL = OY = Current ABC

Alternative 2. ACL=OY=Proposed ABC

- **Preferred Sub-Alternative 2a.** Snappers Complex[a]
- **Preferred Sub-Alternative 2b.** Grunts Complex[b]
- **Preferred Sub-Alternative 2c.** Shallow Water Grouper Complex[c]
- **Preferred Sub-Alternative 2d.** Bar Jack
- **Preferred Sub-Alternative 2e.** Atlantic Spadefish
- **Sub-Alternative 2f.** Scamp
- **Preferred Sub-Alternative 2g.** Gray Triggerfish

Alternative 3. ACL=OY=0.95*Proposed ABC

- **Sub-Alternative 3a.** Snappers Complex[a]
- **Sub-Alternative 3b.** Grunts Complex[b]
- **Sub-Alternative 3c.** Shallow Water Grouper Complex[c]
- **Sub-Alternative 3d.** Bar Jack
- **Sub-Alternative 3e.** Atlantic Spadefish
- **Sub-Alternative 3f.** Scamp
- **Sub-Alternative 3g.** Gray Triggerfish

Alternative 4. ACL=OY=0.90*Proposed ABC

- **Sub-Alternative 4a.** Snappers Complex[a]
- **Sub-Alternative 4b.** Grunts Complex[b]
- **Sub-Alternative 4c.** Shallow Water Grouper Complex[c]
- **Sub-Alternative 4d.** Bar Jack
- **Sub-Alternative 4e.** Atlantic Spadefish
- **Preferred Sub-Alternative 4f.** Scamp
- **Sub-Alternative 4g.** Gray Triggerfish

Alternative 5. ACL=OY=0.80*Proposed ABC

- **Sub-Alternative 5a.** Snappers Complex[a]
- **Sub-Alternative 5b.** Grunts Complex[b]
- **Sub-Alternative 5c.** Shallow Water Grouper Complex[c]
- **Sub-Alternative 5d.** Bar Jack
- **Sub-Alternative 5e.** Atlantic Spadefish
- **Sub-Alternative 5f.** Scamp
- **Sub-Alternative 5g.** Gray Triggerfish

(a) Snappers: **Gray snapper, lane snapper, cubera snapper**, dog snapper, mahogany snapper
(b) Grunts: **White grunt, margate**, sailor's choice, **tomtate**
(c) Shallow Water Grouper: **Red hind, rock hind**, coney, graysby, yellowfin grouper, yellowmouth grouper

Table S-3 describes proposed ACLs based on the preferred alternatives (**Preferred Alternative 2, Preferred Sub-alternative 2b, Preferred Alternative 3, Preferred Sub-alternative 3b, Preferred Alternative 4, Preferred Sub-alternative 4d**) in **Action 2** and alternatives in **Action 3**. Highlighted cells represent the alternatives selected as preferred in **Action 3**.

Table S-3. Proposed commercial and recreational ACLs and recreational ACTs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells indicate South Atlantic Council's preferred ACL change.

Species or Complex	Action 3, Alternative 1			Action 3, Alternative 2 ACL = OY= ABC			Action 3, Alternative 3 ACL = OY = 95%ABC			Action 3, Alternative 4 ACL = OY = 90%ABC			Action 3, Alternative 5 ACL = OY = 80%ABC		
	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT
Snappers Complex (a)	215,662	728,577	624,197	344,884	1,172,832	984,898	327,640	1,114,191	935,653	310,395	1,055,549	886,408	275,907	938,266	787,918
Grunts Complex (b)	218,539	588,113	442,970	217,903	618,122	455,962	794,224	207,008	433,164	752,423	196,113	410,366	174,322	494,498	364,770
SWG Complex (c)	49,776	46,656	23,595	55,542	48,648	20,542	98,981	52,764	19,515	93,771	49,987	18,488	44,434	38,918	16,434
Bar Jack	5,265	19,515	9,758	13,228	49,021	11,912	12,567	46,570	11,912	11,905	44,119	11,317	10,582	39,217	9,530
Atlantic Spadefish	35,108	154,352	96,470	150,552	661,926	413,704	143,025	628,830	393,018	135,497	595,733	372,333	120,442	529,541	330,963
Scamp	333,100	176,688	94,316	243,750	129,299	69,020	231,563	122,834	65,569	219,375	116,369	62,118	195,000	103,439	55,216
Gray Triggerfish	272,880	353,638	284,325	312,325	404,675	325,359	296,709	384,441	309,091	281,093	364,207	292,823	249,860	323,740	260,287

(a) Snappers: **Gray snapper, lane snapper, cubera snapper**, dog snapper, mahogany snapper
(b) Grunts: **White grunt, margate**, sailor's choice, **tomtate**
(c) Shallow Water Grouper: **Red hind, rock hind**, coney, graysby, yellowfin grouper, yellowmouth grouper

Summary of Effects

Biological

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 the spawning stock biomass at MSY (SSB_{MSY}). However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The National Standard 1 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. None of the alternatives of **Action 3** would affect the ACL of the Deepwater Complex or status quo net economic benefits that derive from landings of the Deepwater Complex. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2** because they would create a buffer between the ACL/OY and ABC, with **Alternative 5** setting the most conservative ACL at 80% of the ABC (see **Table S-3**).

Alternatives under **Action 3** would increase the ACL for some species or species complexes or decrease the ACL for species or species complexes. For most species and species complexes, annual landings are not reaching the ACLs. If harvest were less than the proposed ACLs, biological effects would be expected to be minimal.

Economic

Alternative 1 (**No Action**) would not change the ACLs for any snapper grouper species or complexes, whereas **Alternatives 2-5** would change the ACLs for three species complexes and four species. None of the alternatives of **Action 3** would affect the ACL of the Deepwater Complex or status quo net economic benefits that derive from landings of the Deepwater Complex.

Among the action alternatives, **Alternative 2** would allow for the largest increases in the ACLs, followed in turn by **Alternatives 3**, **4,** and **5**. **Preferred Alternatives 2a-2e** and **2g** would generate the largest increases in the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, Grunts Complex, Shallow Water Grouper Complex, and Snappers Complexes. **Alternative 5f** would generate the largest decrease in the total ACL for scamp, followed in turn by **Preferred Alternative 4f**, **Alternative 3f**, **Alternative 2f,** and **Alternative 1 (No Action).** These changes represent potential changes in net economic benefits that derive from landings of the three complexes and four species. Actual economic impacts are dependent on baseline landings relative to the current and revised ACLs.

Table S-4. Comparison of baseline commercial landings and alternative commercial ACLs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells represent where commercial ACL for gray triggerfish would be less than its baseline landings.

Species or Complex	Commercial ACL (lbs ww)					Baseline landings (lbs ww)
	1	2	3	4	5	
Atlantic Spadefish (a)	35,108	150,552	143,025	135,497	120,442	2,747 - 15,284
Bar Jack (d)	5,265	13,228	12,567	11,905	10,582	5,161 - 6,694
Gray Triggerfish (g)	272,880	312,325	296,709	281,093	249,860	295,858 - 307,606
Grunts (b)	218,539	217,903	207,008	196,113	174,322	91,310 - 100,785
Scamp (f)	333,100	243,750	231,563	219,375	195,000	153,253 - 193,412
Shallow Water Grouper (c)	49,776	55,542	52,765	50,823	46,105	18,615 - 35,424
Snappers (e)	215,662	344,884	327,640	310,549	275,907	78,101 - 129,303

As shown in **Table S-4**, none of the alternatives are expected to change annual commercial landings of Atlantic spadefish, Grunts Complex, scamp, Shallow Water Grouper Complex, or Snappers Complex because baseline landings are less than the current and alternative commercial ACLs. **Preferred Sub-Alternative 2g** yield the biggest increase in annual commercial landings of gray triggerfish and associated economic net benefits, followed in turn by **Alternatives 3g** and **4g.** **Alternative 5** would reduce annual commercial landings and associated economic benefits from gray triggerfish. **Preferred Sub-Alternative 2d** and **Sub-Alternatives 3d**, **4d**, and **5d** would generate the same increase in commercial landings of and associated economic benefits from bar jack.

A comparison of baseline recreational landings and the alternative recreational ACLs shows none of the alternatives of **Action 3** would produce a change in annual recreational landings of Atlantic spadefish, bar jack, Grunts Complex, scamp, Shallow Water Grouper Complex, or Snappers Complex (**Table S-5**). **Preferred Sub-Alternative 2g** and **Alternative 3g** would yield the same increases in recreational landings of and associated economic benefits from gray triggerfish. **Sub-alternatives 4g** and **5g** would reduce annual recreational landings of and associated economic benefits from gray triggerfish, with **Sub-alternative 5g** having the largest adverse impact.

Table S-5. Comparison of baseline recreational landings and recreational ACLs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells represent where recreational ACL would be less than baseline landings.

Species or Complex	Recreational ACL (lbs ww)					Baseline landings (lbs ww)
	1	2	3	4	5	
Atlantic Spadefish (a)	154,352	661,926	628,830	595,733	529,541	120,492
Bar Jack (d)	19,515	49,021	46,570	44,119	39,217	2,384
Gray Triggerfish (g)	353,638	404,675	384,441	364,207	323,740	378,725
Grunts (b)	588,113	618,122	588,350	558,577	499,032	383,850
Scamp (f)	176,688	129,299	122,834	116,369	103,439	62,130
Shallow Water Grouper (c)	46,656	48,648	47,478	46,309	43,969	23,256
Snappers (e)	728,577	1,172,832	1,114,190	1,055,549	938,766	616,216

Social

Preferred Alternative 2 would potentially be the most beneficial to fishermen and communities by setting the ACL at the highest level allowed by the ABC specified in **Action 2**, and **Alternative 5** would potentially be the least beneficial. However, actual benefits depend on current landings. Moreover, because the ABCs set in **Action 2** are based on the "ORCS" methodology for stocks with limited available data, a buffer as proposed in **Alternatives 3-5**, could be more beneficial to resource users in the long term, if future data indicate the ABCs should be lower.

Administrative

Alternatives that result in higher ACLs for species or species complexes could slightly reduce administrative burdens because the likelihood of triggering accountability measures (AMs) would be reduced. Conversely, alternatives that decrease ACLs could increase the administrative burden because it would be more likely that AMs would be triggered and action would be needed to ensure overfishing did not occur. Administrative burdens also may result from revising the values under the alternatives in the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

Action 4. Modify the minimum size limit for gray triggerfish

Alternative 1 (No Action). The minimum size limit is 12 inches total length (TL) in federal waters off the east coast of Florida and 12 inches fork length (FL) in state waters off the east coast of Florida.

Alternative 2. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off the east coast of Florida.
   Sub-alternative 2a. The minimum size limit applies to the commercial sector.
   Sub-alternative 2b. The minimum size limit applies to the recreational sector.

Preferred Alternative 3. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia.
   Preferred Sub-alternative 3a. The minimum size limit applies to the commercial sector.
   Preferred Sub-alternative 3b. The minimum size limit applies to the recreational sector.

Alternative 4. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off North Carolina, South Carolina, Georgia, and the east coast of Florida.
   Sub-alternative 4a. The minimum size limit applies to the commercial sector.
   Sub-alternative 4b. The minimum size limit applies to the recreational sector.

Preferred Alternative 5. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off the east coast of Florida.
   Preferred Sub-alternative 5a. The minimum size limit applies to the commercial sector.
   Preferred Sub-alternative 5b. The minimum size limit applies to the recreational sector.

Summary of Effects

Biological

There would be little difference in the biological benefits of **Alternative 1 (No Action), Alternative 2,** and **Preferred Alternative 3** since the establishment of a 12-inch fork length (FL) minimum size limit under **Alternative 2** and **Preferred Alternative 3** would do little to restrict commercial or recreational harvest of gray triggerfish in the South Atlantic. A minimum size limit of 12 inches FL for North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** would provide slightly greater spawning opportunities for gray triggerfish, relative to no action (**Alternative 1**). A minimum size limit of 14 inches FL under **Alternative 4** (North Carolina, South Carolina, Georgia, and east Florida), and **Preferred Alternative 5** (east Florida only) would provide the greatest spawning opportunities of the alternatives considered. Therefore, biological benefits would be greatest for **Alternative 4**, followed by **Preferred Alternative 5, Preferred Alternative 3, Alternative 2**, and **Alternative 1** (**No Action**) for the commercial and recreational sectors.

Economic

Alternative 1 (No Action) would have no added adverse or beneficial economic impact. **Alternative 1 (No Action)** and **Sub-alternatives 2a** and **2b** would have the same economic impact on commercial and recreational fishermen of North Carolina, South Carolina, and Georgia. **Preferred Sub-alternatives 3a** and **3b** would have the second smallest adverse economic impact on commercial and recreational fishermen of North Carolina, South Carolina, and Georgia but no added economic impact on commercial or recreational fishermen of Florida. **Sub-alternatives 4a** and **4b** would have the largest adverse economic impact because it would establish the largest minimum size limit in the largest area. **Preferred Sub-alternative 5a** and **5b** would have the same adverse economic impact on commercial and recreational fishermen of Florida as **Sub-alternatives 4a** and **4b**, but no added impact on those of North Carolina, South Carolina, or Georgia.

It is estimated that **Preferred Sub-alternative 3a** would reduce baseline commercial landings of the North Carolina, South Carolina, and Georgia from 1% to 3% and **Preferred Sub-alternative 5a** would reduce baseline commercial landings in Florida from 14% to 22%. The combined impact of **Actions 3** and **4** is expected to be a net increase in annual commercial landings of gray triggerfish by weight and value in the South Atlantic Region; however, there would be a net beneficial impact in North Carolina, South Carolina, and Georgia and a net adverse impact in Florida. The net annual increase of dockside revenues from gray triggerfish landings in North Carolina, South Carolina, and Georgia would range from $22,548 to $27,064 if the states' combined landings represent 76% of the total and from $29,363 to $37,020 if the states' landings represent 86% of the total. The net annual decrease of dockside revenues from gray triggerfish landings in Florida would range from $4,087 to $6,803 if 14% of the landings occur in Florida or from $7,012 to $11,662 if 24% of total landings are in Florida.

It is estimated that **Preferred Sub-alternative 3b** and **Preferred Sub-alternative 5b** would reduce annual recreational landings of gray triggerfish from 12,394 to 16,984 lbs ww and from 22,493 to 27,542 lbs ww, respectively. If North Carolina, South Carolina, and Georgia recreational fishermen harvest gray triggerfish in federal waters north of Florida, their combined losses would be the economic losses from decreases of 12,394 to 16,984 lbs ww. Similarly, if Florida recreational fishermen stay in federal waters off Florida, their annual economic losses would be from the reduction of 22,493 to 27,542 lbs ww of gray triggerfish they could no longer land.

Social

Some social effects of implementing minimum size limits would be associated with the positive and negative biological effects of minimum size limits on the gray triggerfish stock. Positive effects of allowing only fish of a certain size that are caught in the South Atlantic exclusive economic zone to be landed could help maintain sustainability of harvest and the health of the stock, which would be beneficial to recreational and commercial fishermen in the long term. Negative effects of potential increases in discard mortality due to a newly established size limit in North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** and **Alternative 4**, compared to allowing all fish to be landed in those states under **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 5,** could affect the stock and in turn, commercial and recreational fishing opportunities. Florida fishermen would experience increased discards under **Preferred Alternative 5**.

Administrative

Beneficial administrative effects would be expected from **Alternative 2**, **Preferred Alternative 3**, **Alternative 4**, and **Preferred Alternative 5** when compared with **Alternative 1** (**No Action**). Alternatives that allow for consistent minimum size limits in state and federal waters would help avoid confusion with regulations and aid law enforcement. **Alternative 4** and **Preferred Alternative 5** would further avoid confusion with regulations and aid law enforcement by specifying the same minimum size limit (14 inches FL) that is specified in federal waters of the Gulf of Mexico and in state waters of west Florida. Administrative impacts on the agency would be incurred by rule making, outreach, education, and enforcement.

Action 5. Establish a commercial split season for gray triggerfish

Alternative 1 (No Action). The commercial fishing year for gray triggerfish is the calendar year (January 1 – December 31). The commercial ACL is allocated for the entire year.

Preferred Alternative 2. Allocate the directed commercial gray triggerfish ACL into two quotas: 50% to the period January 1 through June 30 and 50% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

Alternative 3. Allocate the directed commercial gray triggerfish ACL into two quotas; 40% to the period January 1 through June 30 and 60% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

Summary of Effects

Biological

The biological impacts of a split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** are likely to be neutral since overall harvest would be limited to the sector ACL and split-season quotas and AMs would be triggered if the ACL or quotas were exceeded. Dividing the ACL into two time periods could result in early closures, and possibly encourage derby conditions to a greater extent than **Alternative 1 (No Action)**. Derby conditions would be expected to be more pronounced in season 1 under **Alternative 3** because season 1 would be much shorter than season 2. As a result, there could be increased targeting of gray triggerfish under season 1 in an effort to harvest some gray triggerfish before the season closed. Discards of gray triggerfish would be expected after quotas are met under **Preferred Alternative 2** and **Alternative 3** due to fishermen targeting co-occurring species. However, the magnitude of discards would be expected to be similar under the two alternatives. Furthermore, survival of discarded gray triggerfish is estimated to be very high (about 88%). Thus, any negative effects from alternatives that might result in an increase in regulatory discards would be expected to be minor. **Preferred Alternative 2** and **3** would establish fishing seasons that have opening and closing dates similar to vermilion snapper. Since gray triggerfish and vermilion snapper are co-occurring species that are caught together, **Preferred Alternative 2** and **Alternative 3** could reduce bycatch of both species. Split season quotas would allow fishermen in different regions to target gray triggerfish when weather is good in their area. Therefore, alternatives that divide the ACL into two time period quotas would allow for a greater opportunity among all areas to catch gray triggerfish. Furthermore, dividing the ACL into two seasons would allow fishermen to target gray triggerfish in summer when historical catches have been the best.

Economic

There would be no difference in annual economic impacts among **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Alternative 3** because there would be no change in annual total landings and dockside revenues, assuming all of the ACL is caught each year and the price of gray triggerfish remains relatively constant. **Preferred Alternative 2** and **Alternative 3** redistribute when fishing and landings of gray triggerfish can occur throughout the year. The degree of economic effects depends primarily on the timing of the closures in relationship to other seasonal closures. For the first six months of the fishing year, **Alternative 1 (No Action)** would be the status quo as no closure would be expected; however, in 2014, the season for gray triggerfish closed on May 12th. **Preferred Alternative 2** is expected to have minor in-season direct negative economic effects; however, **Alternative 3** is expected to have greater direct negative economic effects due to the predicted timing of seasonal closures, potentially leaving at least some snapper grouper commercial fishermen with no species to target. The second six months of the fishing year is expected to close prior to the end of the calendar year. **Alternative 1 (No Action)** would result in the season closing sooner than either **Preferred Alternative 2** or **Alternative 3** and would result in greater direct negative economic effects. Because **Alternative 3** would extend the second season longer than **Preferred Alternative 2**, it is expected to have a greater direct economic benefit for the last six months of the fishing year.

Social

A split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** would likely increase access to the commercial ACL for North Carolina and South Carolina, which would be beneficial to commercial businesses in these areas. Additionally, a split season under **Preferred Alternative 2** or **Alternative 3** could reduce discards of vermilion snapper because the two species are commonly caught together. This could improve trip efficiency and help reduce regulatory discards for vessels catching vermilion snapper. When compared to **Alternative 1 (No Action)** minor social benefits are expected from **Preferred Alternative 2** or **Alternative 3**. The proposed 40%-60% split in the commercial ACL under **Alternative 3** reflects recent harvest patterns for gray triggerfish, and would be expected to result in fewer changes for the commercial fleet than under **Preferred Alternative 2**, which could limit access to the commercial ACL during the second part of the fishing year.

Administrative

Alternative 1 (**No Action)** would have fewer administrative impacts than **Preferred Alternative 2** or **Alternative 3**. Administrative impacts associated with **Preferred Alternative 2** and **Alternative 3** would be incurred through rulemaking, outreach, education, monitoring, and enforcement. NMFS has implemented split season quotas for vermilion snapper and the administrative impacts have been minor. Therefore, any administrative impacts associated with **Preferred Alternative 2** or **Alternative 3** are also expected to be minor.

Action 6. Establish a commercial trip limit for gray triggerfish

Alternative 1 (No Action). There is no commercial trip limit for gray triggerfish in the South Atlantic region.

Preferred Alternative 2. Establish a commercial trip limit for gray triggerfish in the South Atlantic region.

Sub-alternative 2a. 500 pounds whole weight (lbs ww)
Preferred Sub-alternative 2b. 1,000 lbs ww
Sub-alternative 2c. 1,500 lbs ww

Alternative 3. When 75% of the gray triggerfish commercial seasonal quota is met or is projected to be met, the trip limit is reduced to:

Sub-alternative 3a. 200 lbs ww
Sub-alternative 3b. 500 lbs ww
Sub-alternative 3c. 750 lbs ww

Summary of Effects

Biological

The biological effects of **Alternative 1 (No Action)**, **Preferred Alternative 2** (and associated sub-alternatives), and **Alternative 3** (and associated sub-alternatives) would be expected to be neutral because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded. **Alternative 1 (No Action)** could present a greater biological risk to gray triggerfish in terms of exceeding the ACL than **Preferred Alternative 2** and **Alternative 3** since no trip limit would be in place to slow the rate of harvest and help ensure the ACL is not exceeded. However, improvements have been made to the quota monitoring system, and the South Atlantic Council has approved a Dealer Reporting Amendment (effective August 7, 2014), which should enhance data reporting. Therefore, any biological benefits associated with trip limits would be expected to be small. Larger trip limits would not constrain catch and would result in the ACL being met earlier in the year than smaller trip limits. Early closures of gray triggerfish could result in increased bycatch of gray triggerfish when fishermen target co-occurring species such as vermilion snapper and black sea bass. However, release mortality of gray triggerfish is considered to be low. Thus, no negative effects on the health of the gray triggerfish stock are expected from trip limits due to bycatch as the harvest is constrained by the ACL.

Economic

Commercial trip limits in general, are not economically efficient. Although lower trip limits can lengthen an open fishing season, trip limits can also economically disadvantage larger vessels and vessels that have to travel farther to reach their fishing grounds. Depending on vessel characteristics and the distance required to travel to fish, a trip limit that is too low could result in targeted trips that are cancelled, if the vessel cannot target other species on the same trip.

In 2012, 8.4% of commercial trips, which landed gray triggerfish, landed more than 500 lbs ww per trip, 2.3% landed more than 1,000 lbs ww per trip, and 0.8% landed more than 1,500 lbs ww per trip. **Alternative 1 (No Action)** would have no additional economic impact, while **Sub-alternatives 2a**, **2b (Preferred),** and **2c** are expected to have decreasing additional adverse economic effects from reduced average landings of gray triggerfish per trip. It is reasonable to expect that larger vessels which make longer trips could have landings greater than 500, 1,000, or 1,500 lbs ww. If so, **Sub-alternative 2a** would have the largest adverse economic effect on commercial fishermen with historically larger landings per trip, followed in turn by **Sub-alternatives 2b (Preferred)** and **2c**. Since **Preferred Sub-Alternative 2b** would only extend the fishing season by 7 to 16 days, the economic effect of this alternative when compared to **Alternative 1 (No Action)** would not be significant.

Because none of the sub-alternatives of **Alternative 3** are expected to have significant impacts on extending the length of the fishing season, economic effects relative to **Alternative 1 (No Action)** are expected to be minimal, however, the lower the trip limit, the greater the likelihood larger fishing vessels would be negatively impacted. A trip limit of 750 lbs ww after 75% of the ACL has been taken, as proposed in **Sub-alternative 3c,** would provide the greatest direct positive economic effect especially for larger vessels that would not be impacted the entire fishing season, followed by **Sub-alternatives 3b** (500 lbs ww) and **3a** (200 lbs ww), respectively. In general, the lower the trip limit, the greater the direct negative economic effects are likely for larger vessels.

Social

Communities in the South Atlantic Region would be expected to experience a combination of positive or negative effects if a commercial trip limit is established. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Relative to **Alternative 1 (No Action)**, **Alternatives 2 (Preferred)** and **3** could reduce the risk of derby conditions and associated negative impacts that can occur due to an in-season closure or payback provision if the ACL is exceeded. A more restrictive trip limit is more likely to slow the rate of harvest and lengthen the season than a less restrictive trip limit, unless vessels do not currently harvest over a proposed limit. The 500 lbs ww limit proposed under **Sub-alternative 2a** is the most restrictive under **Alternative 2 (Preferred)**, but a low percentage of trips exceed 500 lbs ww of gray triggerfish at this time. Very few trips exceed 1,000 lbs ww (**Preferred Sub-alternative 2b**) and less than 1% exceed 1,500 lbs ww (**Sub-alternative 2c**). Since **Preferred Sub-Alternative 2b** would only extend the fishing season by 7 to 16 days, the social effect of this alternative when compared to **Alternative 1 (No Action)** would not be significant. The step-down trip limit when 75% of the commercial ACL is met under **Alternative 3** would allow commercial fishermen to continue fishing for other species, but with bycatch allowance for any gray triggerfish caught on the trips. **Sub-alternatives 3a-3c** would help to reduce discards of gray triggerfish and could help extend the season. Overall, the social benefits to the commercial fleet, associated businesses, and communities would likely be maximized as a result of some trade-off between season length and economic changes.

Administrative

Alternative 1 (No Action) would have less administrative impacts than **Alternatives 2 (Preferred)** and **3**. Administrative impacts associated with **Alternatives 2 (Preferred)** and **3** would come in the form of rulemaking, outreach, education, monitoring, and enforcement. NMFS has implemented trip limits for other snapper grouper species and the impacts associated with **Alternative 2 (Preferred)** and **3** are expected to be minor.

Chapter 1. Introduction

1.1 What Action Is Being Proposed?

Amendment 29 would amend the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). The amendment would: (1) update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Species" (ORCS); (2) adjust ABCs for the affected unassessed species; (3) adjust ACLs based on revised ABCs; and (4) revise management measures for gray triggerfish in federal waters of the South Atlantic region.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks
- Consists of 13 voting members: 8 appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Director of NMFS; and 4 non-voting members
- Responsible for developing fishery management plans and amendments under the Magnuson-Stevens Act; and recommends actions to NMFS for implementation
- Management area is from 3 to 200 miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West with the exception of Mackerel which is from New York to Florida, and Dolphin-Wahoo which is from Maine to Florida

1.2 Who is Proposing the Action?

The South Atlantic Council is proposing the action. The South Atlantic Council recommends management measures to the National Marine Fisheries Service (NMFS) who ultimately approves, disapproves, or partially approves, and implements the actions through the development of regulations on behalf of the Secretary of Commerce. NMFS is a component of the National Oceanic and Atmospheric Administration within the Department of Commerce.

1.3 Where is the Project Located?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone is conducted under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP, SAFMC 1983) (**Figure 1.3.1**).

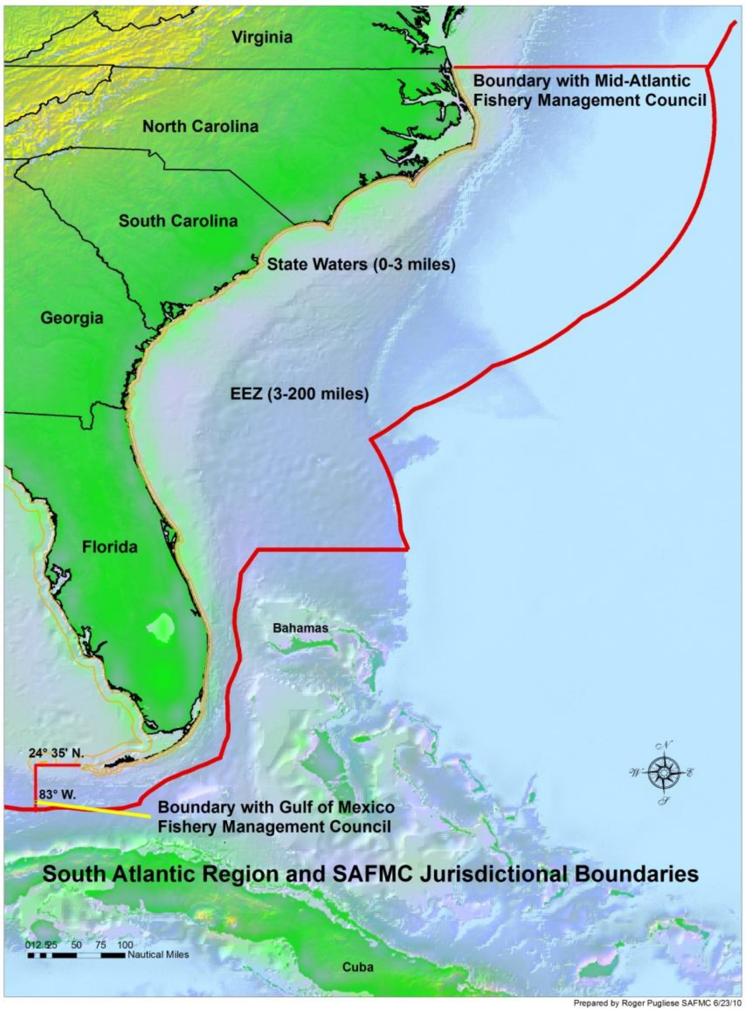

Figure 1.3.1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

1.4 Purpose and Need

The purpose of Amendment 29 is to: update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule based on recommendations from the Scientific and Statistical Committee; adjust ABCs for the affected species; revise annual catch limits (ACLs) for select species; and revise management measures for gray triggerfish in federal waters of the South Atlantic region.

The need for Amendment 29 is to: specify ABCs, ACLs, and ACTs for snapper grouper species based on the best available scientific information, diminish and/or prevent derby conditions, and ensure that overfishing does not occur pending a new assessment of the gray triggerfish stock in the South Atlantic region.

1.5 What is the History of Management for the species considered in this amendment?

Snapper grouper regulations in the South Atlantic where first implemented in 1983. See **Appendix D** of this document for a detailed history of management for the snapper grouper fishery.

1.6 What is the ORCS Approach?

Based on methodology in *Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* (Berkson et al. 2011), the South Atlantic Council's SSC recommended an approach to compute the ABC for unassessed stocks with only reliable catch data. The approach involved selection of a "catch statistic", a scalar to denote the risk of overexploitation for the stock, and a scalar to denote the management risk level. The SSC provided the first two criteria for each stock, and the South Atlantic Council specified their risk tolerance level for each stock.

<u>*Catch Statistic:*</u> The median was considered inadequate to represent the high fluctuation in landings—i.e., to appropriately capture the range of occasional high landings—therefore, the maximum catch over the period 1999-2007 was chosen instead. This time period was chosen to (1) be consistent with the period of landings used in the South Atlantic Council's Comprehensive ACL Amendment (SAFMC 2011c), and (2) to minimize the impact of recent regulations and the economic downturn on the landings time series.

<u>*Risk of Overexploitation:*</u> Based on SSC consensus and expert judgment each stock was assigned to a final risk of exploitation category. See **Appendix H** for a detailed description of the attributes used to assess the level of risk.

A scalar scheme consistent with the Risk of Overexploitation categories is assigned to stocks as follows:

Risk of Overexploitation	**Scalar Value**
Low	2
Moderate Low	1.75
Moderate	1.5
Moderate High	1.25

Important Note: Given characteristics specific to South Atlantic stocks, the SSC agreed that the “catch statistic × scalar” metric developed in this stage of the process may not represent a reliable proxy for the overfishing limit (OFL) and, therefore, would not be called OFL or used as such.

Risk Tolerance Level: The next step in the process involves multiplying the “catch statistic x scalar” metric by a range of scalar values that reflects the South Atlantic Council’s risk tolerance level. For instance, the South Atlantic Council may choose to be more risk-averse in computing the ABC for a stock that exhibits a moderately high risk of overexploitation. As such, the South Atlantic Council may use a scalar of 0.50 for such stocks to specify a more conservative ABC. On the other hand, stocks with low risk of overexploitation, and thus able to tolerate a higher level of management risk, may be assigned a less conservative scalar, such as 0.90.

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1. Update the South Atlantic Council's Acceptable Biological Catch (ABC) Control Rule

Alternative 1 (No Action). Utilize the South Atlantic Council's ABC control rule as adopted in the Comprehensive Annual Catch Limit (ACL) Amendment to specify ABCs for snapper grouper species.

Table 2.1.1. ABC control rule currently in place. Parenthetical values indicate (1) the maximum adjustment value for a dimension and (2) the adjustment values for each tier within a dimension.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. Assessment Information (10%)	6. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%) 7. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%) 8. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%) 9. Reliable catch history. (7.5%) 10. Scarce or unreliable catch records. (10%)
2. Uncertainty Characterization (10%)	6. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%) 7. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%) 8. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%) 9. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%) 10. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Stock Status (10%)	6. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%) 7. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%) 8. Stock is either overfished or overfishing. (5%) 9. Stock is both overfished and overfishing. (7.5%) 10. Either status criterion is unknown. (10%)
4. Productivity and Susceptibility –	4. Low risk. High productivity, low vulnerability, low susceptibility. (0%) 5. Medium risk. Moderate productivity, moderate vulnerability, moderate

Risk Analysis (10%)	susceptibility. (5%) 6. High risk. Low productivity, high vulnerability, high susceptibility. (10%)
Level 2 - Unassessed Stocks. Reliable landings and life history information available	
	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.
Level 3 - Unassessed Stocks. Inadequate data to support DBSRA	
	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.
Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA	
	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. 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.

Preferred Alternative 2. Adopt the SSC's recommended approach to determine ABC values for Only Reliable Catch Stocks (ORCS). This approach will become Level 4 of the ABC control rule and the existing Level 4 will be renumbered as Level 5.

Table 2.1.2. ABC control rule proposed under Preferred Alternative 2. Parenthetical values indicate (1) the maximum adjustment value for a dimension and (2) the adjustment values for each tier within a dimension.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. Assessment Information (10%)	6. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%) 7. Reliable measures of exploitation or biomass, no MSY benchmarks, proxy reference points. (2.5%) 8. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%) 9. Reliable catch history. (7.5%) 10. Scarce or unreliable catch records. (10%)
2. Uncertainty Characterization (10%)	6. Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%) 7. High. Key determinant – reflects more than just uncertainty in future recruitment. (2.5%) 8. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%) 9. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%) 10. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Stock Status (10%)	6. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%) 7. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%) 8. Stock is either overfished or overfishing. (5%) 9. Stock is both overfished and overfishing. (7.5%) 10. Either status criterion is unknown. (10%)
4. Productivity and Susceptibility Analysis (10%)	4. Low risk. High productivity, low vulnerability, low susceptibility. (0%) 5. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%) 6. High risk. Low productivity, high vulnerability, high susceptibility. (10%)
Level 2 – Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine the adjustment factor if possible, or from expert judgment if not possible.	
Level 3 – Unassessed Stocks. Inadequate data to support DBSRA	
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.	
Level 4 – Unassessed Stocks. Only Reliable Catch Stocks.	
OFL and ABC derived on a case-by-case basis. Apply ORCS approach using a catch statistic, a scalar derived from the risk of overexploitation, and the Council's risk tolerance level.	
Level 5 – Unassessed Stocks.	

OFL and ABC derived on a case-by-case basis. Stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates. Use "decision tree":

5. Will catch affect stock?
   NO: Ecosystem Species (Council done this already, ACL Amend)
   YES: Go to 2

6. 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

7. 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.

8. 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.

Two Alternatives Considered

Section 1502.14(a) of the National Environmental Policy Act (NEPA) states that "agencies shall: rigorously explore and objectively evaluate all reasonable alternatives…." Two reasonable alternatives for this action, including the no action alternative, have been identified by NMFS and the South Atlantic Fishery Management Council (South Atlantic Council). The Magnuson-Stevens Fishery Conservation and Management Act national standard 1 guidelines, at 50 C.F.R. section 600.305, states that for stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its Scientific and Statistical Committee (SSC). The ABC control rule identified in **Alternative 1 (No Action)** was developed by the South Atlantic Council's SSC and approved by the South Atlantic Council and implemented through the Comprehensive ACL Amendment (SAFMC 2011c). **Preferred Alternative 2** represents an update to the ABC control rule developed and recommended by the South Atlantic Council's SSC. The SSC has provided no other options, modifications, or recommendations to the ABC control rule for the South Atlantic Council's consideration. Therefore, the South Atlantic Council and NMFS have determined it is not reasonable to include additional alternatives for modifications to the ABC control rule.

2.1.1 A Summary of the Effects of the Alternatives

Updating the ABC control rule, as proposed in **Preferred Alternative 2**, would not have any direct biological effects. This change would; however, have minor indirect benefits to the biological environment since an improved scientific methodology would be adopted to establish ABCs for snapper grouper species that have not been assessed but for which there are reliable catch statistics. **Alternative 1 (No Action)** and **Preferred Alternative 2** would have no added beneficial or adverse economic impacts because **Action 1** is an administrative action; however, **Preferred Alternative 2** allows for subsequent action (**Actions 2** and **3**) to select ABC and associated ACLs that could have beneficial and/or adverse economic impacts beyond the status quo. Because the ABCs for the species without assessments for which there are reliable catch data would not be adjusted to reflect the new SSC ORCS methodology, including information from fishermen and scientific experts, **Alternative 1 (No Action)** would not result in any social benefits. On the other hand, the proposed ABC control rule under **Preferred Alternative 2** could help to increase some ABCs and associated ACLs, which would be more beneficial to the commercial and for-hire fleets, recreational fishermen, fishing businesses, and communities than maintaining the current ABC control rule under **Alternative 1 (No Action)**. The administrative impacts of **Preferred Alternative 2** would be minimal, and not differ much when compared with **Alternative 1** (**No Action**). Administrative burdens may result from revising the ACL values (**Actions 2** and **3**) in the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

2.2 Action 2. Apply the revised ABC Control Rule to select unassessed snapper grouper species

Alternative 1 (No Action). ABCs for select unassessed snapper grouper species are based on the current ABC Control Rule.

Species	Current ABC (lbs ww)
Bar Jack	24,780
Margate	29,889
Red Hind	24,867
Cubera Snapper	24,680
Yellowedge Grouper	30,221
Silk Snapper	25,104
Atlantic Spadefish	189,460
Gray Snapper	795,743
Lane Snapper	119,984
Rock Hind	37,953
Tomtate	80,056
White Grunt	674,033
Scamp	509,788
Gray Triggerfish	626,518

Preferred Alternative 2. Assign a risk tolerance scalar to stocks deemed by the SSC to be under low risk of overexploitation (scalar = 2):

Sub-alternative 2a. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.75	51,875	24,780	+27,095

Preferred Sub-alternative 2b. Apply a risk tolerance scalar of 0.90.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.90	62,249	24,780	+37,469

Preferred Alternative 3. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderate risk of overexploitation (scalar = 1.5):

Sub-alternative 3a. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.75	71,992	29,889	+42,103
Red Hind	27,570	1.5	0.75	31,016	24,867	+6,149
Cubera Snapper	52,721	1.5	0.75	59,311	24,680	+34,631
Yellowedge Grouper	46,330	1.5	0.75	52,121	30,221	+21,900
Silk Snapper	75,269	1.5	0.75	84,678	25,104	+59,574
Atlantic Spadefish	677,065	1.5	0.75	761,698	189,460	+572,238
Gray Snapper	1,039,277	1.5	0.75	1,169,187	795,743	+373,444
Lane Snapper	169,572	1.5	0.75	190,769	119,984	+70,785

Preferred Sub-alternative 3b. Apply a risk tolerance scalar of 0.80.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.80	76,792	29,889	+46,903
Red Hind	27,570	1.5	0.80	33,084	24,867	+8,217
Cubera Snapper	52,721	1.5	0.80	63,265	24,680	+38,585
Yellowedge Grouper	46,330	1.5	0.80	55,596	30,221	+25,375
Silk Snapper	75,269	1.5	0.80	90,323	25,104	+65,219
Atlantic Spadefish	677,065	1.5	0.80	812,478	189,460	+623,018
Gray Snapper	1,039,277	1.5	0.80	1,247,132	795,743	+451,389
Lane Snapper	169,572	1.5	0.80	203,486	119,984	+83,502

Preferred Alternative 4. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderately high risk of overexploitation (scalar = 1.25):

Sub-alternative 4a. Apply a risk tolerance scalar of 0.70.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.70	522,269	509,788	+12,481
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

Sub-alternative 4b. Apply a risk tolerance scalar of 0.75.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference of ABC
Rock Hind	42,849	1.25	0.75	40,171	37,953	+2,218
Tomtate	105,909	1.25	0.75	99,290	80,056	+19,234
White Grunt	735,873	1.25	0.75	689,881	674,033	+15,848
Scamp	596,879	1.25	0.75	559,574	509,788	+49,786
Gray Triggerfish	819,428	1.25	0.75	768,214	626,518	+141,696

Sub-alternative 4c. Apply a risk tolerance scalar of 0.50.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.50	26,781	37,953	-11,172
Tomtate	105,909	1.25	0.50	66,193	80,056	-13,863
White Grunt	735,873	1.25	0.50	459,921	674,033	-214,112
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.50	512,143	626,518	-114,375

Preferred Sub-alternative 4d. Apply a risk tolerance scalar of 0.70 for rock hind, tomtate, white grunt and gray triggerfish and 0.50 for scamp.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

2.2.1 A Summary of the Effects of the Alternatives

An increase in harvest beyond sustainable levels can have a negative biological impact on a species. However, all of the ABC sub-alternatives under this action were developed by the South Atlantic Council's SSC using the "ORCS" approach, and would not be expected to cause overfishing and result in negative biological impacts. There is uncertainty involved through the selection of the risk of overexploitation scalar (determined by the SSC) and the selection of the risk tolerance scalar (determined by the South Atlantic Council under this action). If the South Atlantic Council selects the risk tolerance scalar to achieve the most conservative values of ABC, biological impacts would be minimized. However, while conservative ABCs may provide the greatest biological benefit to the species, higher ABCs would not be expected to negatively impact the stock as long as harvest is maintained at sustainable levels and overfishing does not occur. Because the ACLs (commercial or recreational) for most of the species and species complexes addressed by this amendment have not recently been met or exceeded, the increases in the ABC under **Sub-alternatives 2a, Preferred 2b, 3a, Preferred 3b, 3c, 4a,** and **4b** are not expected to affect commercial and recreational fishermen harvesting these species. The lower ABCs expected under **Sub-alternative 4c** and **Preferred Sub-alternative 4d** could impact some species and species complexes if harvest increases in the future.

Sub-alternatives 2a, Preferred 2b, 3a, Preferred 3b, 4a, and **4b** would increase the ABCs (commercial and recreational) for most of the species, which could increase their ACLs and annual landings. However, actual changes are dependent on **Action 3** and historical landings. The lower ACLs expected from lower ABCs under **Sub-alternative 4c** could impact some of the stocks if harvest increases in the future. The decrease in ABC for white grunt under **Preferred Sub-alternative 4d** could limit fishing opportunities for this species, particularly for recreational anglers in south Florida and the Florida Keys, where the species is a popular, easy-to-target recreational species.

ABC alternatives selected in this action would result in modification of ACLs in **Action 3**. Alternatives in either **Action 2** or **Action 3** that allow for an increase in harvest could slightly reduce administrative burdens because the likelihood of triggering accountability measures (AMs) would be reduced. Conversely, alternatives in either **Action 2** or **Action 3** that result in a decrease in allowable harvest could increase the administrative burden because it would be more likely that AMs would be triggered and action would be needed to ensure overfishing did not occur. Administrative burdens resulting from revising the values under **Alternative 2, Alternative 3, Alternative 4,** and associated sub-alternatives would take the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

ACLs and recreational annual catch targets (ACTs) resulting from proposed changes in ABCs under **Alternatives 2-4** are addressed in **Action 3**. Some species in **Action 2** are contained within a complex and do not have sector ACLs or recreational ACTs at the species level.

2.3 Action 3. Establish ACLs for select unassessed snapper grouper species

Alternative 1 (No Action). ACL=OY=Current ABC

Alternative 2. ACL=OY=Proposed ABC
- **Preferred Sub-alternative 2a.** Snappers Complex[a]
- **Preferred Sub-alternative 2b.** Grunts Complex[b]
- **Preferred Sub-alternative 2c.** Shallow Water Grouper Complex[c]
- **Preferred Sub-alternative 2d.** Bar Jack
- **Preferred Sub-alternative 2e.** Atlantic Spadefish
- **Sub-Alternative 2f.** Scamp
- **Preferred Sub-Alternative 2g.** Gray Triggerfish

Alternative 3. ACL=OY=0.95*Proposed ABC
- **Sub-alternative 3a.** Snappers Complex[a]
- **Sub-alternative 3b.** Grunts Complex[b]
- **Sub-alternative 3c.** Shallow Water Grouper Complex[c]
- **Sub-alternative 3d.** Bar Jack
- **Sub-alternative 3e.** Atlantic Spadefish
- **Sub-alternative 3f.** Scamp
- **Sub-alternative 3g.** Gray Triggerfish

Alternative 4. ACL=OY=0.90*Proposed ABC
- **Sub-alternative 4a.** Snappers Complex[a]
- **Sub-alternative 4b.** Grunts Complex[b]
- **Sub-alternative 4c.** Shallow Water Grouper Complex[c]
- **Sub-alternative 4d.** Bar Jack
- **Sub-alternative 4e.** Atlantic Spadefish
- **Preferred Sub-alternative 4f.** Scamp
- **Sub-alternative 4g.** Gray Triggerfish

Alternative 5. ACL=OY=0.80*Proposed ABC
- **Sub-alternative 5a.** Snappers Complex[a]
- **Sub-alternative 5b.** Grunts Complex[b]
- **Sub-alternative 5c.** Shallow Water Grouper Complex[c]
- **Sub-alternative 5d.** Bar Jack
- **Sub-alternative 5e.** Atlantic Spadefish
- **Sub-alternative 5f.** Scamp
- **Sub-alternative 5g.** Gray Triggerfish

(a) Snappers: **Gray snapper, lane snapper, cubera snapper**, dog, mahogany
(b) Grunts: **White grunt, margate**, sailor's choice, **tomtate**
(c) Shallow Water Grouper: **Red hind, rock hind**, coney, graysby, yellowfin grouper, yellowmouth grouper

Table 2.3.1 describes proposed ACLs based on the preferred alternatives (**Preferred Alternative 2, Preferred Sub-alternative 2b, Preferred Alternative 3, Preferred Sub-alternative 3b, Preferred Alternative 4, Preferred Sub-alternative 4d**) in **Action 2** and alternatives in **Action 3**. **Table 2.3.2** presents commercial and recreational ACLs and recreational ACTs based on preferred alternatives in **Action 2** and preferred alternatives in **Action 3**. Highlighted cells represent the alternatives selected as preferred in **Action 3**.

Table 2.3.1. Proposed commercial and recreational ACLs and recreational ACTs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells indicate South Atlantic Council's preferred ACL change.

Species or Complex	Action 3, Alternative 1			Action 3, Alternative 2 ACL = OY= ABC			Action 3, Alternative 3 ACL = OY = 95%ABC			Action 3, Alternative 4 ACL = OY = 90%ABC			Action 3, Alternative 5 ACL = OY = 80%ABC		
	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT
Snappers Complex (a)	215,662	728,577	624,197	344,884	1,172,832	984,898	327,640	1,114,191	935,653	310,395	1,055,549	886,408	275,907	938,266	787,918
Grunts Complex (b)	218,539	588,113	442,970	217,903	618,122	455,962	794,224	207,008	433,164	752,423	196,113	410,366	174,322	494,498	364,770
SWG Complex (c)	49,776	46,656	23,595	55,542	48,648	20,542	98,981	52,764	19,515	93,771	49,987	18,488	44,434	38,918	16,434
Bar Jack	5,265	19,515	9,758	13,228	49,021	11,912	12,567	46,570	11,912	11,905	44,119	11,317	10,582	39,217	9,530
Atlantic Spadefish	35,108	154,352	96,470	150,552	661,926	413,704	143,025	628,830	393,018	135,497	595,733	372,333	120,442	529,541	330,963
Scamp	333,100	176,688	94,316	243,750	129,299	69,020	231,563	122,834	65,569	219,375	116,369	62,118	195,000	103,439	55,216
Gray Triggerfish	272,880	353,638	284,325	312,325	404,675	325,359	296,709	384,441	309,091	281,093	364,207	292,823	249,860	323,740	260,287

(a) Snappers: **Gray snapper, lane snapper, cubera snapper**, dog, mahogany
(b) Grunts: **White grunt, margate**, sailor's choice, **tomtate**
(c) Shallow Water Grouper: **Red hind, rock hind**, coney, graysby, yellowfin grouper, yellowmouth grouper

Table 2.3.2. Proposed commercial and recreational ACLs and recreational ACTs based on preferred sub-alternatives in Action 3, and preferred alternatives in Action 2.

Species or Complex	Action 3, Alternative 1 (No Action)			Action 3, Preferred Sub-alternatives 2a-2e, 2g, and 4f		
	Comm ACL	Rec ACL	Rec ACT	Comm ACL	Rec ACL	Rec ACT
Snappers Complex (a)	215,662	728,577	624,197	344,884	1,172,832	984,898
Grunts Complex (b)	218,539	588,113	442,970	217,903	618,122	455,962
SWG Complex (c)	49,776	46,656	23,595	55,542	48,648	20,542
Bar Jack	5,265	19,515	9,758	13,228	49,021	11,912
Atlantic Spadefish	35,108	154,352	96,470	150,552	661,926	413,704
Scamp	333,100	176,688	94,316	219,375	116,369	62,118
Gray Triggerfish	272,880	353,638	284,325	312,325	404,675	325,359

(a) Snappers: **Gray snapper, lane snapper, cubera snapper**, dog, mahogany
(b) Grunts: **White grunt, margate**, sailor's choice, **tomtate**
(c) Shallow Water Grouper: **Red hind, rock hind**, coney, graysby, yellowfin grouper, yellowmouth grouper

2.3.1 A Summary of the Effects of the Alternatives

Action 3 would specify ACLs and recreational ACTs for three species groups and four species based on the ABCs selected by the South Atlantic Council in **Action 2**. It would not change the ACL for the Deepwater Complex. **Table 2.3.1** displays the proposed commercial and recreational ACLs and recreational ACTs based on the preferred alternatives in **Action 2** and the alternatives in **Action 3**. Highlighted cells indicated preferred alternatives under **Action 3**. **Table 2.3.2** presents commercial and recreational ACLs, and recreational ACTs based on preferred alternatives in **Actions 2** and **3**. For an analysis of proposed ACLs based on all proposed alternatives in **Action 2** and **Action 3**, see **Chapter 4** (**Tables 4.3.1-4.3.11**).

Alternatives 3-5 would have a greater positive biological effect than **Alternative 2** because they would create a buffer between the ACL/OY and ABC, with **Alternative 5** setting the most conservative ACL at 80% of the ABC (**Tables 2.3.1, and Tables 4.3.1-4.3.11**). 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 SSB_{MSY}. However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The Magnuson-Stevens Act national standard 1 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. An ACT, which is not required, can also be set below the ACL to account for management uncertainty and provide greater assurance overfishing does not occur.

Alternatives under **Action 3** would increase the ACL for some species or species complexes or decrease the ACL for species or species complexes. For most species and species complexes, the

ACLs are currently not being met. If harvest is less than the proposed ACLs, biological effects would be expected to be minimal.

Among the action alternatives, **Alternative 2** would allow for the largest increases in the ACLs, followed in turn by **Alternatives 3**, **4,** and **5**. **Preferred Alternatives 2a-2e** and **2g** would generate the largest increases in the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, grunts complex, shallow water grouper complex, and snappers complexes. **Alternative 5f** would generate the largest decrease in the total ACL for scamp, followed in turn by **Preferred Alternative 4f**, **Alternative 3f**, **Alternative 2f,** and **Alternative 1.** These changes represent potential changes in net economic benefits that derive from landings of the three complexes and four species. Actual economic impacts are dependent on baseline landings relative to the current and revised ACLs.

Baseline commercial landings for Atlantic spadefish, grunts complex, shallow water grouper complex, and snappers complex are less than their current ACLs and **Preferred Sub-alternatives 2a-2c** and **2e** would increase these ACLs. Hence, **Preferred Sub-alternatives 2a-2c** and **2e** would have the same economic impact as **Alternative 1** (**No Action**). Baseline commercial landings of bar jack and gray triggerfish exceed their current ACLs and **Preferred Sub-alternatives 2d** and **2g** would increase these ACLs. It follows that **Preferred Sub-alternatives 2d** and **2g** would increase annual commercial landings of bar jack and gray triggerfish, respectively. Baseline commercial landings of scamp are less than its current commercial ACL. **Preferred Sub-alternative 4f** and **Sub-alternatives 2f**, **3f,** and **5f** would reduce the commercial ACL for scamp, but not less than baseline commercial landings. Consequently, **Alternative 1** (**No Action**), **Preferred Sub-alternative 4f** and **Sub-alternatives 2f**, **3f,** and **5f** would have the same economic impact.

A comparison of baseline recreational landings and the alternative recreational ACLs shows none of the alternatives of **Action 3** would produce a change in annual recreational landings of Atlantic spadefish, bar jack, Grunts Complex, scamp, Shallow Water Grouper Complex, or Snappers Complex. **Preferred Sub-Alternative 2g** and **Alternative 3g** would yield the same increases in recreational landings of and associated economic benefits from gray triggerfish. **Alternatives 4g** and **5g** would reduce annual recreational landings of and associated economic benefits from gray triggerfish, with **Sub-alternative 5g** having the largest adverse impact.

Regarding social effects, **Alternative 2** would be the most beneficial to fishermen and communities by setting the ACL at the highest level allowed by the ABC specified in **Action 2**, and **Alternative 5** would be the least beneficial. However, because the ABCs set in **Action 2** are based on ORCS methodology and for stocks with limited available data, a buffer as proposed in **Alternatives 3-5**, could be more beneficial to resource users in the long term, if future data indicate the ABCs should be lower.

Alternatives that result in higher ACLs for species or species complexes could slightly reduce administrative burdens because the likelihood of triggering AMs would be reduced. Conversely, alternatives that decrease ACLs could increase the administrative burden because it would be more likely that AMs would be triggered and action would be needed to ensure overfishing did not occur. Administrative burdens also may result from revising the values under the alternatives in the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

2.4 Action 4. Modify the minimum size limit for gray triggerfish

Alternative 1 (No Action). The minimum size limit is 12 inches total length (TL) in federal waters off the east coast of Florida and 12 inches fork length (FL) in state waters off the east coast of Florida.

Alternative 2. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off the east coast of Florida.
Sub-alternative 2a. The minimum size limit applies to the commercial sector.
Sub-alternative 2b. The minimum size limit applies to the recreational sector.

Preferred Alternative 3. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia.
Preferred Sub-alternative 3a. The minimum size limit applies to the commercial sector.
Preferred Sub-alternative 3b. The minimum size limit applies to the recreational sector.

Alternative 4. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off North Carolina, South Carolina, Georgia, and the east coast of Florida.
Sub-alternative 4a. The minimum size limit applies to the commercial sector.
Sub-alternative 4b. The minimum size limit applies to the recreational sector.

Preferred Alternative 5. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off the east coast of Florida.
Preferred Sub-alternative 5a. The minimum size limit applies to the commercial sector.
Preferred Sub-alternative 5b. The minimum size limit applies to the recreational sector.

2.4.1 A Summary of the Effects of the Alternatives

There would be little difference in the biological benefits of **Alternatives 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 3** since the establishment of a 12-inch fork length (FL) minimum size limit under **Alternative 2** and **Preferred Alternative 3** would do little to restrict commercial or recreational harvest of gray triggerfish in the South Atlantic. A minimum size limit of 12 inches FL for North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** would provide slightly greater spawning opportunities for gray triggerfish, relative to no action (**Alternative 1, No Action**). A minimum size limit of 14 inches FL under **Alternative 4** (North Carolina, South Carolina, Georgia, and the east coast of Florida), and **Preferred Alternative 5** (east coast of Florida only) would provide the greatest spawning opportunities of the alternatives considered. Therefore, biological benefits would be greatest for **Alternative 4**, followed by **Preferred Alternatives 3** and **5** combined, **Preferred Alternative 5, Preferred Alternative 3, Alternative 2**, and **Alternative 1** (**No Action**) for the commercial and recreational sectors.

Alternatives 1 (No Action), **2**, and **5 (Preferred)** would have no added adverse or beneficial economic impact. **Alternative 1 (No Action)** and **Sub-alternatives 2a** and **2b** would have the same economic impact on commercial and recreational fishermen of North Carolina, South Carolina, and Georgia who harvest gray triggerfish. **Alternative 4** would have the largest adverse economic impact on fishermen of the three states and **Preferred Alternative 3** would have the second largest adverse economic impact among the alternatives. **Alternatives 1 (No Action)** and **3 (Preferred)** would have no additional economic impact on fishermen of Florida. **Alternative 4** and **Preferred Alternative 5** would have the same and the largest adverse economic impact on fishermen of Florida, while **Alternative 2** would have the second smallest adverse impact. It is possible that fishermen may attempt to reduce the impacts by moving into state waters and/or increasing the length of a trip to harvest the same number of pounds; however, an increase in the length of a trip would increase trip-related costs, such as fuel, bait, and risk. In addition, the ability to mitigate for these reductions is dependent on other actions in this amendment, such as **Action 3** that would change the commercial ACL, and **Action 5** that would split the annual commercial ACL to create two 6-month seasons.

Changing the minimum size limit to 12 inches FL under **Preferred Alternative 3** would establish a minimum size limit that is consistent with the current minimum size limit requirements in state waters off east Florida (**Alternative 1 No Action)**. However, the South Atlantic Council has selected an alternative that would increase the minimum size limit to 14 inches FL off the east coast of Florida (**Preferred Alternative 5**). Thus, selection of **Preferred Alternatives 3** and **Alternative 5** would result in inconsistent regulations between the east coast of Florida and the other South Atlantic states. A 14-inch FL minimum size limit specified in **Alternative 4** and **Preferred Alternative 5** would allow for consistent minimum size limit regulations for gray triggerfish in the Gulf of Mexico and South Atlantic, which is particularly troublesome for fishermen and law enforcement in the Florida Keys. However, **Preferred Alternative 3** and **Alternative 4** could have some negative effects on recreational and commercial fishermen harvesting gray triggerfish in the EEZ off states that currently do not have size limits by limiting the number of fish that can be kept.

Some social effects of implementing minimum size limits would be associated with the positive and negative biological effects of minimum size limits on the gray triggerfish stock. Positive effects of allowing only fish of a certain size that are caught in the South Atlantic EEZ to be landed could help maintain sustainability of harvest and the health of the stock, which would be beneficial to recreational and commercial fishermen in the long term. Negative effects of potential increases in discard mortality due to a newly established size limit in North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** and **Alternative 4**, compared to allowing all fish to be landed in those states under **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 5,** could affect the stock and in turn, commercial and recreational fishing opportunities. Florida fishermen would experience increased discards under **Preferred Alternative 5**.

Beneficial administrative effects would be expected from **Alternative 2**, **Preferred Alternative 3**, and **Alternative 4**, and **Preferred Alternative 5** when compared with **Alternative 1** (**No Action**). **Alternative 4** and **Preferred Alternative 5** would further avoid confusion with regulations and aid law enforcement by specifying the same minimum size limit (14 inches FL) that is specified in federal waters of the Gulf of Mexico and in state waters off the west coast of Florida. Administrative impacts on the agency associated with the action alternatives would be incurred by rule making, outreach, education and enforcement.

2.5 Action 5. Establish a commercial split season for gray triggerfish

Alternative 1 (No Action). The commercial fishing year for gray triggerfish is the calendar year (January 1- December 31). The commercial ACL is allocated for the entire year.

Preferred Alternative 2. Allocate the directed commercial gray triggerfish ACL into two quotas: 50% to the period January 1 through June 30 and 50% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

Alternative 3. Allocate the directed commercial gray triggerfish ACL into two quotas; 40% to the period January 1 through June 30, and 60% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

2.5.1 A Summary of the Effects of the Alternatives

The biological impacts of a split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** are likely to be neutral since overall harvest would be limited to the sector ACL and split-season quotas, and AMs would be triggered if the ACL or quotas were exceeded. Dividing the ACL into two time periods could result in the gray triggerfish commercial harvest being open for a short period of time, and possibly encourage derby conditions to a greater extent than **Alternative 1 (No Action)**. Derby conditions would be expected to be more pronounced in season 1 under **Alternative 3** because season 1 would be much shorter than season 2. As a result, there could be increased targeting of gray triggerfish under season 1 in an effort to harvest some gray triggerfish before the season closed. Discards of gray triggerfish would be expected after quotas are met under **Preferred Alternative 2** and **Alternative 3** due to fishermen targeting co-occurring species. However, the magnitude of discards would be expected to be similar under the two alternatives. Furthermore, survival of discarded gray triggerfish is estimated to be very high (about 88%). Thus, any negative effects from alternatives that might result in an increase in regulatory discards would be expected to be minor. **Preferred Alternative 2** and **Alternative 3** would establish fishing seasons that have opening and closing dates similar to vermilion snapper. Since gray triggerfish and vermilion snapper are co-occurring species that are caught together, **Preferred Alternative 2** and **Alternative 3** could reduce bycatch of both species. Additionally, split season quotas would allow fishermen in different regions to target gray triggerfish when weather is good in their area. Therefore, alternatives that divide the ACL into two time period quotas would allow for a greater opportunity among fishermen in all areas to catch gray triggerfish. Furthermore, dividing the ACL into two seasons would allow fishermen to target gray triggerfish in summer when historical catches have been the best.

There would be no difference in annual economic impacts among **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Alternative 3** because there would be no change in annual total landings and dockside revenues, assuming all of the ACL is caught each year and the price of gray triggerfish remains relatively constant. **Preferred Alternative 2** and **Alternative 3** redistribute when fishing and landings of gray triggerfish can occur throughout the year. The degree of economic effects depends primarily on the timing of the closures in relationship to other seasonal closures. For the first six months of the fishing year, **Alternative 1 (No Action)** would be the status quo as no closure would be expected (**Table 4.5.5**); however, in 2014, the season for gray triggerfish closed on May 12th. **Preferred Alternative 2** is expected to have minor in-season direct negative economic effects; however, **Alternative 3** is expected to have greater direct negative economic effects due to the predicted timing of seasonal closures, potentially leaving at least some snapper grouper commercial fishermen with no species to target. The second six months of the fishing year is expected to close prior to the end of the calendar year. **Alternative 1 (No Action)** would result in the season closing sooner than either **Preferred Alternative 2** or **Alternative 3** and would result in greater direct negative economic effects. Because **Alternative 3** would extend the second season longer than **Preferred Alternative 2**, it is expected to have a greater direct economic benefit for the last six months of the fishing year.

A split commercial fishing season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** would likely increase access to the commercial ACL for North Carolina and South Carolina, which would be beneficial to commercial businesses in these areas. Additionally, a split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** could reduce discards of vermilion snapper because the two species are commonly caught together. When compared to **Alternative 1 (No Action)** minor social benefits are expected from **Preferred Alternative 2**. This could improve trip efficiency and help reduce regulatory discards for vessels catching vermilion snapper. The proposed 40%-60% split in the commercial ACL during the two fishing seasons for gray triggerfish under **Alternative 3** reflects recent harvest patterns for the species, and would be expected to result in fewer changes for the commercial fleet than under **Preferred Alternative 2**, which could impose some limited access to the commercial ACL during the second part of the fishing year.

Alternative 1 (**No Action)** would have fewer administrative impacts than **Preferred Alternative 2** or **Alternative 3** because only one quota would need to be monitored. Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2,** and **Alternative 3** would increase the administrative impacts in the form of rulemaking, outreach, education, monitoring, and enforcement.

2.6 Action 6. Establish a commercial trip limit for gray triggerfish

Alternative 1 (No Action). There is no commercial trip limit for gray triggerfish in the South Atlantic region.

Preferred Alternative 2. Establish a commercial trip limit for gray triggerfish in the South Atlantic region.

- **Sub-alternative 2a.** 500 pounds whole weight (lbs ww)
- **Preferred Sub-alternative 2b.** 1,000 lbs ww
- **Sub-alternative 2c.** 1,500 lbs ww

Alternative 3. When 75% of the gray triggerfish commercial seasonal quota is met or is projected to be met, the trip limit is reduced to:

- **Sub-alternative 3a.** 200 lbs ww
- **Sub-alternative 3b.** 500 lbs ww
- **Sub-alternative 3c.** 750 lbs ww

2.6.1 A Summary of the Effects of the Alternatives

The biological effects of **Alternatives 1 (No Action), Preferred Alternative 2** (and associated sub-alternatives)**,** and **Alternative 3** (and associated sub-alternatives) would be expected to be neutral because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded. **Alternative 1 (No Action)** could present a greater biological risk to gray triggerfish in terms of exceeding the ACL than **Alternatives 2 (Preferred)** and **3** since no trip limit would be in place to slow down the rate of harvest and help ensure the ACL is not exceeded. However, improvements have been made to the quota monitoring system, and the South Atlantic Council has approved a Dealer Reporting Amendment, which should enhance data reporting. Therefore, any biological benefits associated with trip limits would be expected to be small. Larger trip limits would not constrain catch and would result in the ACL being met earlier in the year. Early closures of gray triggerfish could result in increased bycatch of gray triggerfish when fishermen target co-occurring species such as vermilion snapper and black sea bass. However, release mortality of gray triggerfish is considered to be low. Thus, commercial closures associated with meeting the ACL are not expected to negatively affect the gray triggerfish stock due to bycatch.

Commercial trip limits in general, are not economically efficient. Although lower trip limits can lengthen an open fishing season, trip limits can also economically disadvantage larger vessels and vessels that have to travel farther to reach their fishing grounds. Depending on vessel characteristics and the distance required to travel to fish, a trip limit that is too low could result in targeted trips that are cancelled, if the vessel cannot target other species on the same trip. From 2009 through 2013, very few commercial trips, which landed gray triggerfish, landed more than 500 lbs ww per trip. It is reasonable to expect that larger vessels that make longer trips could have landings greater than 500, 1,000 or 1,500 lbs ww. If so, **Sub-alternative 2a** would have the largest adverse economic impact on commercial fishermen with historically larger landings per trip, followed in turn by **Sub-alternatives 2b (Preferred)** and **2c**. **Alternative 1 (No Action)** would have no adverse economic impact beyond the baseline. Since **Preferred Sub-Alternative 2b** would only extend the fishing season by 7 to 16 days, the economic effect of this alternative when compared to **Alternative 1 (No Action)** would not be significant. Because none of the sub-alternatives of **Alternative 3** are expected to have significant impact on extending the length of the fishing season, the sub-alternatives are expected to have minimal economic effects when compared to **Alternative 1 (No Action)**. A trip limit of 750 lbs ww after 75% of the ACL has been taken as in **Sub-alternative 3c** would provide the smallest adverse economic impact per trip followed by **Sub-alternatives 3b** (500 lbs ww) and **3a** (200 lbs ww), respectively.

Communities in the South Atlantic Region would be expected to experience positive or negative effects if a commercial trip limit is established. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Relative to **Alternative 1 (No Action)**, **Alternatives 2 (Preferred)**, and **3** could reduce the risk of derby conditions and associated negative impacts that can occur due to an in-season closure or payback provision if the ACL is exceeded. A more restrictive trip limit is more likely to slow the rate of harvest and lengthen the season than a less restrictive trip limit, unless vessels do not currently harvest over a proposed limit. The 500-lbs ww limit proposed under **Sub-alternative 2a** is the most restrictive under **Alternative 2 (Preferred)**, but a low percentage of trips exceed 500 lbs ww of gray triggerfish at this time (**Table 4.5.1**). Very few trips exceed 1,000 lbs ww (**Preferred Sub-alternative 2b**) and less than 1% exceed 1,500 lbs ww (**Sub-alternative 2c**). The step-down trip limit when 75% of the commercial ACL is met under **Alternative 3** would allow commercial trips to continue fishing for other species, but with a sort of bycatch allowance for any gray triggerfish caught on the trips. **Sub-alternatives 3a-3c** would help to reduce discards of gray triggerfish and could help extend the season. Overall, the social benefits to the commercial fleet, associated businesses, and communities would likely be maximized as a result of some trade-off between season length and economic changes.

Alternative 1 (No Action) would have fewer administrative impacts than **Alternatives 2 (Preferred)** and **3**. Administrative impacts associated with **Alternatives 2 (Preferred)** and **3** would come in the form of rulemaking, outreach, education, monitoring, and enforcement. NMFS has implemented trip limits in other fisheries and the impacts associated with **Alternative 2 (Preferred)** and **3** are expected to be minor.

Chapter 3. Affected Environment

This section describes the affected environment in the proposed project area. The affected environment is divided into four major components:

Affected Environment

- **Habitat environment (Section 3.1)**

  Examples include coral reefs, sea grass beds, and rock/hard-bottom substrates

- **Biological and ecological environment (Section 3.2)**

  Examples include populations of groupers, corals, and turtles

- **Human environment (Section 3.3)**

  Examples include fishing communities and economic descriptions of the fisheries

- **Administrative environment (Section 3.4)**

  Examples include the fishery management process and enforcement activities

3.1 Habitat Environment

Many snapper grouper species utilize both open-water and bottom habitats during several life-history stages; larval stages of these species live in the water column and feed on plankton. Most juveniles and adults are bottom-dwellers and associate with hard structures on the continental shelf that have moderate to high relief (e.g., coral reef systems and artificial reef structures, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings). Juvenile stages of some snapper grouper species also utilize inshore seagrass beds, mangrove estuaries, lagoons, oyster reefs, and embayment systems. In many species, various combinations of these habitats may be utilized during daily feeding migrations or seasonal shifts in cross-shelf distribution.

Predominant snapper grouper offshore fishing areas are located in live-bottom and shelf-edge habitats, where water temperatures range from 11° to 27°C (52° to 81°F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11° to 14°C (52° to 57°F). Water depths range from 16 to 27 meters (54 to 90 feet) or greater for live-bottom habitats, 55 to 110 meters (180 to 360 feet) for the shelf-edge habitat, and from 110 to 183 meters (360 to 600 feet) for lower-shelf habitat areas.

Artificial reef structures are also utilized to attract fish and increase fish harvests; however, research on artificial reefs is limited and opinions differ as to whether or not these structures promote an increase of ecological biomass or merely concentrate fishes by attracting them from nearby, natural unvegetated areas of little or no relief.

More detail on these habitat types is found in Volume II of the South Atlantic Fishery Management Council's (South Atlantic Council) Fishery Ecosystem Plan (SAFMC 2009b) available at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx. EFH and EFH-HAPCs are discussed below. Additional details are found in **Appendix C**.

3.1.1 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the 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.

EFH utilized by snapper grouper species in the South Atlantic 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 meters (100-foot) contour, such as attached microalgae; 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.

3.1.2 Habitat Areas of Particular Concern

Areas which meet the criteria for EFH-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) and Deepwater Marine Protected Areas (MPAs). Areas that meet the criteria for designating essential fish habitat-habitat areas of particular concern include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

3.2 Biological and Ecological Environment

The reef environment in the South Atlantic management area affected by actions in this environmental assessment is defined by two components (**Figure 3.1.1**). Each component will be described in detail in the following sections.

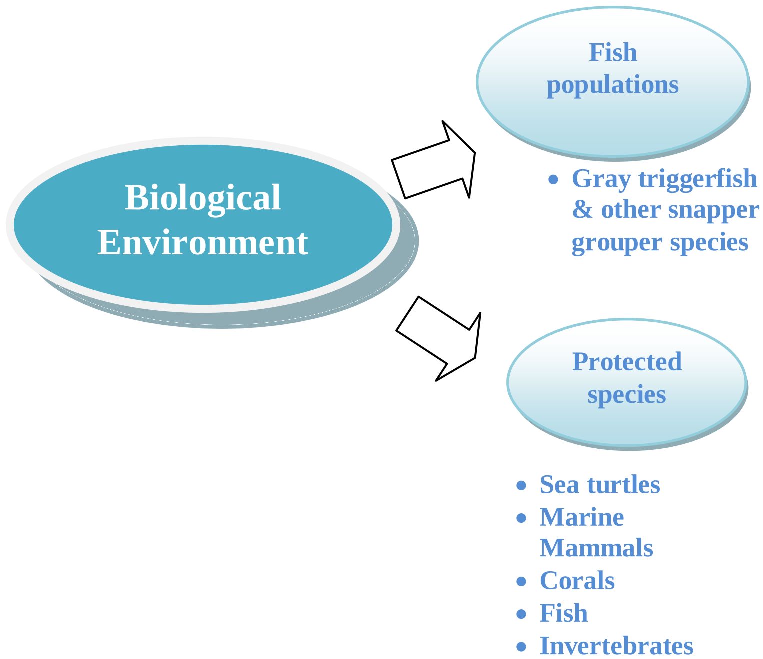

Figure 3.1.1. Two components of the biological environment described in this document.

3.2.1 Fish Populations

The waters off the South Atlantic coast are home to a diverse population of fish. The snapper grouper fishery management unit contains 59 species of fish, many of them neither "snappers" nor "groupers". These species live in depths from a few feet (typically as juveniles) to hundreds of feet. As far as north/south distribution, the more temperate species tend to live in the upper reaches of the South Atlantic management area (e.g., black sea bass, red porgy) while the tropical variety's core residence is in the waters off south Florida, Caribbean Islands, and northern South America (e.g., black grouper, mutton snapper).

These are reef-dwelling species that live amongst each other. These species rely on the reef environment for protection and food. There are several reef tracts that follow the southeastern coast. The fact that these fish populations congregate together dictates the nature of the fishery (multi-species) and further forms the type of management regulations proposed in this document.

Other snapper grouper species commonly taken with those directly affected by the actions proposed in this amendment could be affected by the action. Snapper grouper species most likely to be affected by the proposed actions include species that occupy the same habitat at the same time (see **Section 3.2.1.2** for a list of the co-occurring species).

3.2.1.1 Gray Triggerfish

Gray triggerfish, *Balistes capriscus*, are found in the Eastern Atlantic from the Mediterranean to Moçamedes, Angola, and in the Western Atlantic from Nova Scotia to Bermuda, the northern Gulf of Mexico, and to Argentina. The gray triggerfish is associated with live bottom and rocky outcrops from nearshore areas to depths of 100 m (328 ft). It also inhabits bays, harbors, and lagoons, and juveniles drift at the surface with *Sargassum*. Maximum reported size is 60 cm (23.76 in) TL (male/unsexed) and 6.2 kg (13.8 lbs; Froese and Pauly 2003). Males are significantly larger than females (Moore 2001). The maximum age of gray triggerfish collected from North Carolina to eastern Florida was 10 years (Moore 2001). The maximum age of gray triggerfish collected from the Northeastern Gulf of Mexico was 13 years (Johnson and Saloman 1984). Potts and Brennan (2001) estimated the natural mortality of gray triggerfish to be 0.30. Gray triggerfish are gonochorists that exhibit nest-building and territorial reproductive behavior. Mature females from fishery-independent samples are found in 0% of age-0, 98 % of age-1 and age-2 fish, and 100% of fish older than age-3. Mature males from fishery-independent samples are present in 63% of age-1, 91% of age-2, 98% of age-3, 99% of age-4 and age-5, and 100% of older age fish. Females reach first maturity at 14.2 cm (5.6 in) FL, with an L50 of 15.8 cm (6.3 in) FL. Males first mature at 17.0 cm (6.7 in) FL, with a L50 of 18.0 cm (7.1 in) FL (Moore 2001).

Along the southeast United States, Moore (2001) determined that gray triggerfish spawn every 37 days, or 3-4 times per season. In contrast, Ingram (2001) estimated that gray triggerfish spawn every 3.7 days in the Gulf of Mexico. Off the southeast United States, female gray triggerfish are in spawning condition from April to August, with a peak of activity during June/July. Male gray triggerfish are found in spawning condition throughout the year; however, there is a peak in activity during May-September (Moore 2001).

Stock Status of Gray Triggerfish

Gray triggerfish is not assessed in the South Atlantic. A benchmark assessment for this species was begun in 2013 (SEDAR 32 2013). However, ageing inconsistencies in some of the datasets used in the assessment caused concern among the analysts and work on the assessment stopped. A new assessment is currently underway.

3.2.1.2 Other Affected Species

An expanded discussion of life history traits and population characteristics of snapper grouper species covered in Amendment 29 can be found in **Sections 3.2.1** and **3.3** of the Comprehensive Annual Catch Limit (ACL) Amendment (SAFMC 2011c), which are hereby incorporated by reference and may be found at http://safmc.net/Library/pdf/Comp%20ACL%20Am%20101411%20FINAL.pdf. The stock status of these species can be found in the Report to Congress on the Status of U.S. stocks at http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm. Descriptions of other South Atlantic

Council-managed species may be found in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) or at the following web address: http://safmc.net/ecosystem-management/fishery-ecosystem-plan-1.

3.2.2 Protected Species

There are 49 species, or distinct population segments (DPSs) of species, protected by federal law that may occur in the exclusive economic zone (EEZ) of the South Atlantic Region. Thirty-one of these species are marine mammals protected under the Marine Mammal Protection Act (MMPA) (Wynne and Schwartz 1999, Waring et al. 2013). The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF) classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals. More information about the LOF and the classification process can be found at: http://www.nmfs.noaa.gov/pr/interactions/lof/. Six of the marine mammal species (sperm, sei, fin, blue, humpback, and North Atlantic right whales) protected by the MMPA, are also listed as endangered under the Endangered Species Act (ESA). In addition to those six marine mammals, five species of sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; five DPSs of Atlantic sturgeon; and six species of coral [elkhorn coral (*Acropora palmata*), staghorn coral (*A. cervicornis*) ("*Acropora*" collectively); lobed star coral (*Orbicella annularis*), mountainous star coral (*O. faveolata*), and knobby star coral (*O. franksi*) ("*Orbicella*" collectively); and rough cactus coral (*Mycetophylia ferox*)] are also protected under the ESA. Portions of designated critical habitat for North Atlantic right whales, the Northwest Atlantic (NWA) DPS of loggerhead sea turtles, and *Acropora* corals occur within the South Atlantic Council's jurisdiction. NMFS has conducted specific analyses ("Section 7 consultations") to evaluate the potential adverse effects from the South Atlantic Snapper-Grouper Fishery on species and critical habitat protected under the ESA. Summaries of those consultations and their determination are in **Appendix E**. Those consultations indicate that of the species listed above, sea turtles and smalltooth sawfish are the most likely to interact with the snapper grouper fishery. The species potentially affected by the hook-and-line portion of the fishery are discussed below.

3.2.2.1 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 50 m) 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 1,000 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 1986, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles eat a wide range of organisms 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 U.S. Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1987). 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).

3.2.2.2 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 sources (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).

3.3 Socio-economic Environment

3.3.1 Economic Environment

3.3.1.1 Economic Description of the Commercial Sector

Snapper grouper fishery as a whole

The South Atlantic snapper grouper fishery is one of eight fisheries managed by the South Atlantic Council: coastal migratory pelagics, coral and live bottom habitat, dolphin and wahoo, golden crab, shrimp, snapper grouper, spiny lobster, and *Sargassum*. Three of the eight managed fisheries are comprised of finfish (coastal migratory pelagics, dolphin and wahoo, and snapper grouper) and three are shellfish (golden crab, shrimp, and spiny lobster). The snapper grouper fishery is the South Atlantic Council's only managed fishery with overfished stocks. According to the NMFS 2nd Quarter 2014 Update on stock status for FSSI stocks, three stocks within the snapper grouper fishery are overfished (red porgy, red snapper, and snowy grouper) and four were experiencing overfishing (gag, red snapper, speckled hind, and warsaw grouper). Gag was approaching an overfished condition. A 2013 assessment for gag indicates the stock is not overfished and is not undergoing overfishing.

Over the 5-year period from 2008 through 2012, commercial landings of the above six finfish and shellfish fisheries in the South Atlantic Region (North Carolina, South Carolina, Georgia, and Florida's East Coast) represented approximately 31% of all non-confidential commercial landings by weight (**Figure 3.3.1**) and 44% by dockside revenue (**Figure 3.3.2**) in the region. The shrimp fishery (brown, pink, rock, and white) ranked first in commercial landings by both weight and dockside revenue among the managed fisheries. From 2008 through 2012, shrimp accounted for approximately 18% of all commercial landings in the Region by weight and 27% by dockside revenue. Landings of the snapper grouper fishery accounted for approximately 4% of commercial landings by weight and 7% by dockside revenue over those five years. Among the six finfish and shellfish fisheries, the snapper grouper fishery ranked second in commercial landings by dockside revenue and third by weight during that period.

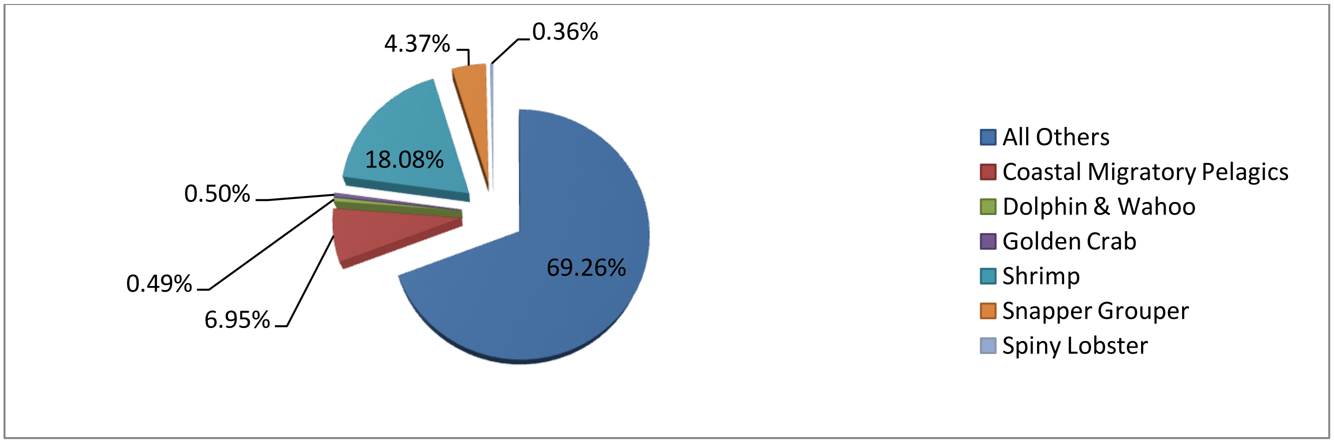

Figure 3.3.1. Percent of all commercial landings by fishery by weight (lbs ww) in South Atlantic Region from 2008-2012.
Source: NMFS ALS, confidential data excluded.

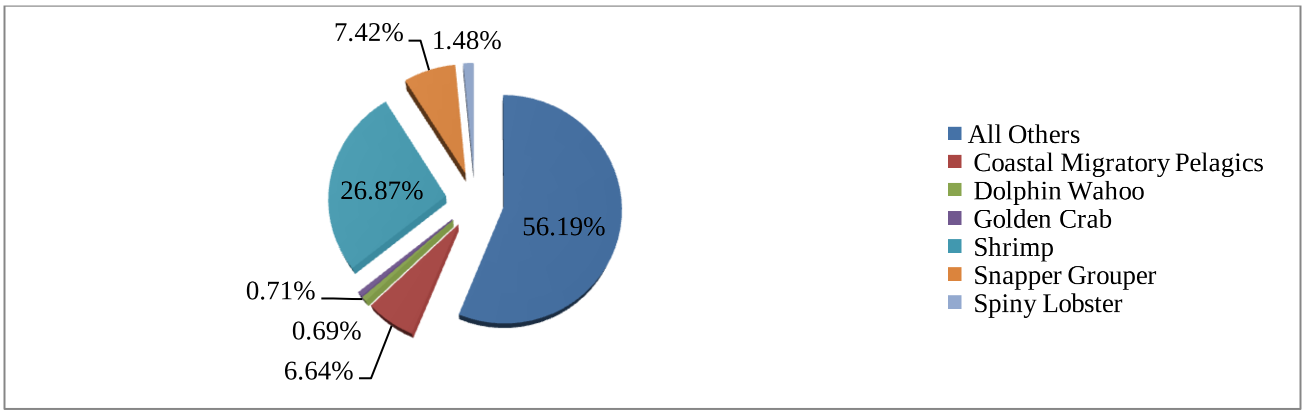

Figure 3.3.2. Percent of all commercial landings by dockside revenue (nominal dollars) in South Atlantic Region from 2008-2012.
Source: NMFS ALS, confidential data excluded.

Over the two 5-year periods from 2003 through 2007 and 2008 through 2012, the averages of annual commercial landings of snapper grouper species were approximately 6.79 million lbs ww and 7.29 million lbs ww, respectively (SERO ACL database). Although average annual commercial landings were higher in the second 5-year period, the range of annual commercial landings was lower from 2008 through 2012 than from 2003 through 2007 (**Figure 3.3.3**).

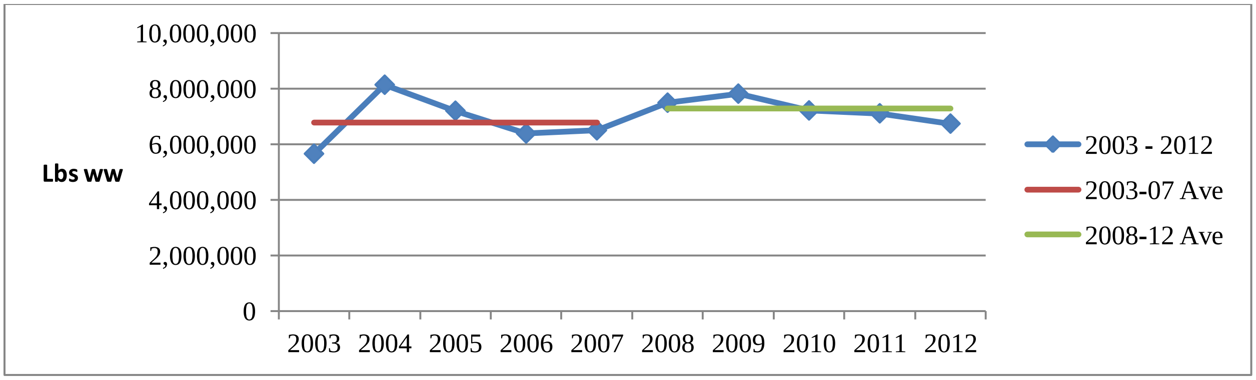

Figure 3.3.3. Annual commercial landings by weight (lbs ww) of snapper grouper species, 2003 – 2012. Source: SERO ACL.

Any commercial fishing vessel with landings of species within the snapper grouper fishery must have a valid commercial snapper grouper permit, which is a limited access permit for either an unlimited quantity of pounds per trip or up to 225 lbs per trip. The numbers of both valid unlimited and 225-lbs permits have declined annually since 2008 resulting in increased concentration of the commercial sector of the fishery (**Table 3.3.1**). These permits do not allow fishing for wreckfish. To commercially land wreckfish, a vessel must have a valid snapper grouper permit and wreckfish permit, and wreckfish permits are limited to those with shares of the wreckfish individual transferrable quota (ITQ).

Table 3.3.1. Numbers of valid South Atlantic commercial snapper grouper permits, 2007-2014.

Year	Valid permits		Change		% Change	
	Unlimited	225-lb	Unlimited	225-lb	Unlimited	225-lb
2007	695	165				
2008	665	151	-30	-14	-4.32%	-8.48%
2009	640	144	-25	-7	-3.76%	-4.64%
2010	624	139	-16	-5	-2.50%	-3.47%
2011	569	126	-55	-13	-8.81%	-9.35%
2012	558	123	-11	-3	-1.93%	-2.38%
2013	551	121	-7	-2	-1.25%	-1.63%
2014	541	109	-10	-12	-1.81%	-9.92%

Sources: SAFMC May 22, 2013 (SG Regulatory Amendment 19) for 2007-2013 and NMFS SERO PIMS for 2014 as of March 13.

The largest drop in the number of valid unlimited permits occurred in 2011. A partial explanation for that drop is that by 2011, there were many in-season closures for snapper grouper species, such as vermilion snapper, golden tilefish, and black sea bass, and longer seasonal closures for grouper species. Another explanation is the 2-for-1 permit transfer requirement. A vessel owner intending to obtain a commercial snapper grouper unlimited permit from a permit holder who is not in the vessel owner's immediate family must obtain and exchange two such permits for one permit to be issued. NMFS will transfer a single Snapper Grouper Unlimited permit only to the permit holder's immediate family (e.g., mother, father, brother, sister, son, daughter, or spouse). A transferred permit's catch history follows it to the new holder of or vessel with that permit, which can affect the perceived value of a permit.

During the first quarter of 2014, the total number of snapper grouper permits declined by two (**Table 3.3.2**). After a permit expires, it is not valid, but it can be renewed and transferred up to one year after it expires. Two 225-lbs permits were not renewed/transferred.

Table 3.3.2. Valid and renewable/transferrable South Atlantic commercial snapper grouper permits as of January 30, February 16, and March 13, 2014.

South Atlantic S-G Permits	Unlimited lbs			225 lbs			Total		
	Jan. 30, 2014	Feb. 16, 2014	Mar. 13, 2014	Jan. 30, 2014	Feb. 16, 2014	Mar. 13, 2014	Jan. 30, 2014	Feb. 16, 2014	Mar. 13, 2014
Valid	547	547	541	117	112	109	664	659	650
Renewable/Transferrable	22	22	28	8	12	14	30	34	42
Total	569	569	569	125	124	123	694	693	692

Source: NMFS SERO PIMS.

The largest percentages of commercial snapper grouper permit holders reside in Florida (**Table 3.3.3**). Residents outside the South Atlantic States hold less than 2% of the permits.

Table 3.3.3. Number and percent of valid and renewable/transferable commercial snapper grouper permits by state of residence of permit holder as of February 16, 2014.

State	Unlimited permits		225-lbs permits	
	Number	%	Number	%
FL	394	69.2%	112	90.3%
GA	5	0.9%	0	0.0%
NC	114	20.0%	8	6.5%
SC	49	8.6%	2	1.6%
Other	7	1.2%	2	1.6%
Total	569	100.0%	124	100.0%

Source: NMFS SERO PIMS.

Approximately 30% of the vessels with a 225-lbs limit and 43% with an unlimited trip permit are US Coast Guard (USCG) documented, which is required for all fishing vessels that are five net tons or more. Approximately 81% of the documented vessels with a 225-lbs permit have a USCG hailing port in Florida and 94% of the undocumented vessels with a 225-lbs permit have Florida registration (**Table 3.3.4**). None of the vessels has a hailing port or registration in Georgia, and two have a hailing port/registration outside the South Atlantic States; however, that does not preclude those two vessels from landing catches in the Region. Moreover, vessels with a permit can catch snapper grouper species from the South Atlantic Council's area of jurisdiction and land that catch in states beyond the South Atlantic Region. The average net tonnage of a documented vessel with a 225-lbs permit is approximately 15. Documented vessels with a hailing port in Florida have the highest average net tonnage of 16, followed in turn by North Carolina's documented vessels with an average net tonnage of 13 and South Carolina's with an average of 11 net tons.

Table 3.3.4. Number of documented and undocumented fishing vessels with 225-lb trip limit permit as of February 16, 2014, by state of hailing port or vessel registration and total net tonnage of documented vessels.

State	Documented				Undocumented		All vessels	
	No. vessels	Total net tonnage	Percent of vessels	Percent of total net tonnage	No. vessels	Percent of vessels	All vessels	Percent all vessels
FL	30	484	81.1%	85.7%	82	94.3%	112	90.3%
NC	4	51	10.8%	9.0%	4	4.6%	8	6.5%
SC	2	21	5.4%	3.7%	0	0.0%	2	1.6%
VA	1	9	2.7%	1.6%	0	0	1	0.8%
NJ	0	0	0.0%	0.0%	1	1.1%	1	0.8%
Total	37	565	100.0%	100.0%	87	100.0%	124	100.0%

Source: SERO PIMS for vessels with permits and state of vessel registration, NMFS online USCG Vessel Documentation System for net tonnage and hailing port.

Approximately 43% of the vessels with an unlimited trip permit are USCG documented, and approximately 57% of those vessels have a USCG hailing port in Florida. Approximately 78%

of the undocumented vessels have Florida registration (**Table 3.3.5**). Three of the documented vessels have a hailing port and four undocumented vessels have registration outside the South Atlantic Region. The average net tonnage of a documented vessel with an unlimited weight permit is approximately 16. Within the South Atlantic States Region, documented vessels with a hailing port in Georgia have the highest average net tonnage of 21, followed in turn by South Carolina's documented vessels with an average net tonnage of 17, North Carolina's with an average of 16, and Florida with an average of 15 net tons.

Table 3.3.5. Number of documented and undocumented fishing vessels with an unlimited weight trip limit permit as of February 16, 2014, by state of hailing port or vessel registration and total net tonnage of documented vessels.

State	Documented				Undocumented		All vessels	
	No. vessels	Total net tonnage	Percent of vessels	Percent of total net tonnage	No. vessels	Percent of vessels	All vessels	Percent all vessels
FL	140	2,111	57.1%	53.6%	254	78.4%	394	69.2%
GA	5	107	2.0%	2.7%	0	0.0%	5	0.9%
MI	0	0	0.0%	0.0%	1	0.3%	1	0.2%
NC	58	935	23.7%	23.8%	56	17.3%	114	20.0%
NJ	1	81	0.4%	2.1%	1	0.3%	2	0.4%
NY	0	0	0.0%	0.0%	1	0.3%	1	0.2%
OH	0	0	0.0%	0.0%	1	0.3%	1	0.2%
SC	39	675	15.9%	17.1%	10	3.1%	49	8.6%
VA	2	27	0.8%	0.7%	0	0.0%	2	0.4%
Total	245	3,936	100.0%	100.0%	324	100.0%	569	100.0%

Source: SERO PIMS for vessels with permits and state of vessel registration, NMFS online USCG Vessel Documentation System for net tonnage and hailing port.

Any individual who purchases snapper grouper species harvested from federal waters of the South Atlantic must have a snapper grouper dealer permit, and as of April 8, 2014, there were 194 individuals with a (valid) snapper grouper dealer permit. This permit does not allow the holder to purchase wreckfish harvested from those waters. A dealer must have a wreckfish dealer permit to buy the species.

Species, species complexes, and groups within the snapper grouper fishery

The number of species within the snapper grouper fishery varied considerably from 2008 through 2012. There were 73 until 2011, then 60 in 2012 after 13 species were removed from the FMP: black margate, bluestriped grunt, crevalle jack, French grunt, grass porgy, porkfish, puddingwife, queen triggerfish, sheepshead, smallmouth grunt, Spanish grunt, tiger grouper, and yellow jack. In 2013, blue runner was removed. Consequently, there are currently 59 species within the fishery. Six of the 59 species are designated as ecosystem component species (cottonwick, bank sea bass, rock sea bass, longspine porgy, ocean triggerfish, and schoolmaster) and, as such, there are no ACLs or AMs that directly affect them.

The 59 species can be divided into 11 species groups: sea basses, (3 species), groupers (17 species), wreckfish (1 species), snappers (14 species), porgies (7 species), grunts (5 species), jacks (5 species), tilefishes (3 species), triggerfishes (2 species), wrasses (1 species), and spadefishes (1 species). The six ecosystem component species are found within the sea basses, grunts, jacks, snappers, and triggerfish groups.

Snappers and groupers are the top two groups by annual landings. From 2008 through 2012, they combined to represent 47% of non-confidential landings by weight and 64% by dockside revenue (**Figures 3.3.4** and **3.3.5**).

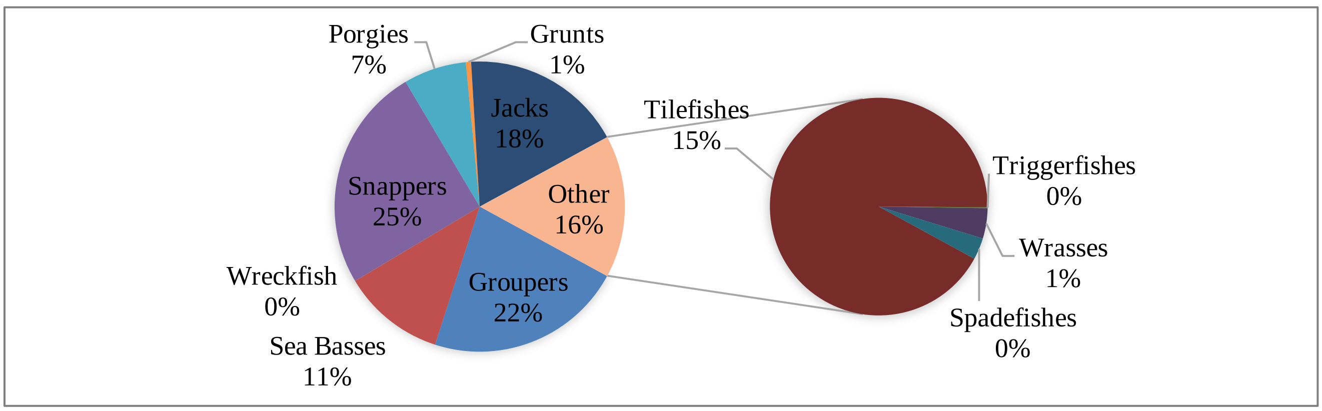

Figure 3.3.4. Percent of snapper grouper commercial landings (lbs ww) by species group, 5-year period from 2008-2012.
Source: NMFS ALS, excluding ecosystem component species and confidential data.

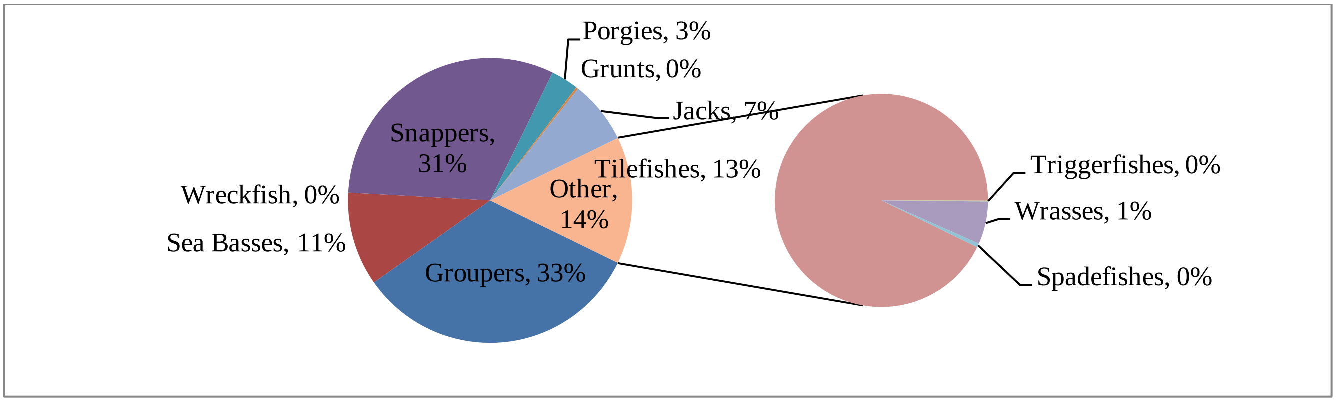

Figure 3.3.5. Percent of snapper grouper dockside revenue by species group, 5-year period from 2008-2012.
Source: NMFS ALS, excluding ecosystem component species and confidential data.

During varying years of the 10-year period from 2003 through 2012, seven snapper grouper stocks (black sea bass, snowy grouper, red grouper, red porgy, red snapper, black grouper, and golden tilefish) were overfished and had rebuilding plans. Ten stocks were undergoing overfishing (black sea bass, black grouper, vermilion snapper, red snapper, snowy grouper, golden tilefish, gag grouper, red grouper, speckled hind, and warsaw grouper) and multiple regulatory measures to end their overfishing were taken (NMFS OSF Status of U.S. Fisheries, 2003-2012). Among the most recent actions are the establishment of ACLs and AMs. The 53 regulated species comprise 28 species and species complexes, each subject to its own ACLs (**Table 3.3.6**). The Deepwater Complex, Grunts Complex, Jacks Complex, Porgies Complex, Shallow Water Grouper Complex, and Snappers Complex are composed of multiple species.

Actions 1-3 in this amendment affect four species and four species complexes: Atlantic spadefish, bar jack, Deepwater Complex, gray triggerfish, Grunts Complex, scamp, Shallow Water Grouper Complex, and Snappers Complex. Henceforth, the remainder of the description of the commercial sector focuses on these species and species complexes. Additional information on commercial landings and fishing for the snapper grouper fishery as a whole or the other groups within it can be found in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Regulatory Amendment 9 (SAFMC 2011a), and Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011c)] and is incorporated herein by reference.

Table 3.3.6. Snapper grouper species, species complexes, and current commercial ACLs.

Species	Species Complex	ACL	Units	Species	Species Complex	ACL	Units
Atlantic spadefish	Atlantic spadefish	35,108	ww	Jolthead porgy			
Bar jack	Bar jack	5,265	ww	Knobbed porgy			
Black sea bass	Black sea bass	780,020	ww	Saucereye porgy	Porgies	36,348	ww
Black snapper				Scup			
Blackfin snapper				Whitebone porgy			
Blueline tilefish[1]				Red grouper	Red grouper	343,200	ww
Misty grouper				Red porgy	Red porgy	154,500	ww
Queen snapper	Deepwater Complex[1]	376,469	ww	Red snapper[2]	Red snapper[2]	50,994	gw
Sand tilefish				Black grouper	Black grouper	96,844	ww
Silk snapper				Scamp	Scamp	333,100	ww
Yellowedge grouper				Coney			
				Graysby			
Gag	Gag	326,722	gw	Red hind			
Golden tilefish	Golden tilefish (hook-n-line)	135,324	gw	Rock hind	Shallow water grouper	49,776	ww
	Golden tilefish (longline)	405,971		Yellowfin grouper			
Goliath grouper	Goliath grouper	0	ww	Yellowmouth grouper			
Gray triggerfish	Gray triggerfish	272,880	ww	Cubera snapper			
Greater amberjack	Greater amberjack	800,163	ww	Dog snapper			
Margate				Gray snapper	Snappers	215,662	ww
Sailor’s choice	Grunts	218,539	ww	Lane snapper			
Tomtate				Mahogany snapper			
White grunt				Snowy grouper	Snowy grouper	82,900	gw
Hogfish	Hogfish	49,469	ww	Speckled hind	Speckled hind	0	ww
Almaco jack	Jacks	189,422	ww	Vermilion snapper[3]	Vermilion snapper[3]	892,160	ww
Banded rudderfish				Warsaw grouper	Warsaw grouper	0	ww

Lesser amberjack				Wreckfish	Wreckfish	223,250	ww
Mutton snapper	Mutton snapper	157,743	ww	Yellowtail snapper	Yellowtail snapper	1,596,510	ww
Nassau grouper	Nassau grouper	0	ww				

[1] A temporary ACL is in place for blueline tilefish pending submission and approval of Amendment 32. The temporary commercial ACL for blueline tilefish is 112,207 lbs ww. The temporary commercial ACL for the Deepwater Complex, without blueline tilefish, is 60,371 lbs ww.
[2] The 2014 commercial ACL for red snapper is 50,994 lbs ww.
[3] The vermilion snapper commercial ACL is split into two 6-month quotas of 446,080 lbs ww.

Atlantic Spadefish

Atlantic spadefish is found offshore and in coastal hard bottom reef habitats and reefs. Although it is popular with anglers, Atlantic spadefish is not a commercially targeted species. When landed, it is bycatch from fishing for targeted species. From 2003 through 2012, annual landings ranged from about 23,000 to over 50,000 lbs ww and $7,963 to $14,299 ($2013) (**Figure 3.3.6**). All of the commercial landings of the species in the South Atlantic Region during the above 10-year period occurred in North Carolina and Florida's East Coast. The Atlantic spadefish season is from January 1 through December 31.

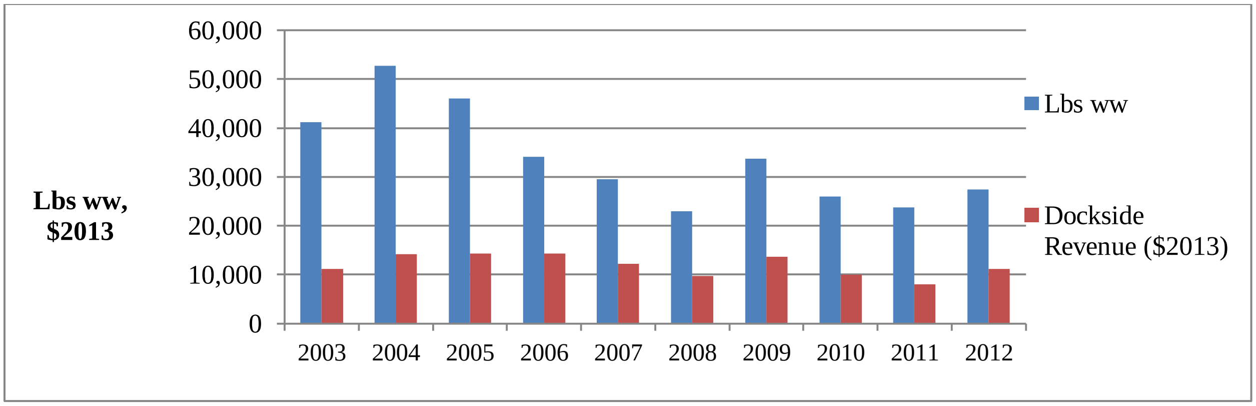

Figure 3.3.6. Annual commercial landings (lbs ww and $2013) of Atlantic spadefish, 2003-2012. Source: SERO ACL.

The commercial ACL for Atlantic spadefish was 36,476 lbs ww in 2012 and 27,416 lbs ww were landed that year. In 2013, the commercial ACL was 35,108 lbs ww and preliminary commercial landings figures indicate less than 4,000 lbs ww were landed last year. The current commercial ACL for Atlantic spadefish is 35,108 lbs ww and preliminary landings as of April 8, 2014, are 307 lbs ww. At that rate, commercial landings of Atlantic spadefish will be less than its ACL from 2012 through 2014.

Bar Jack

Bar jack is not a commercially targeted species and its landings are relatively low by comparison with other snapper grouper species. Florida's East Coast accounted for all of the landings from 2003 through 2012 (NMFS ALS, excluding confidential data). From 2003 through 2012, annual landings varied from 3,037 to 7,830 lbs ww and $3,794 to $10,314 ($2013), while averaging 5,027 lbs ww and $6,239 from 2003 through 2007 and $4,125 lbs ww and $5,017 from 2008 through 2012 (**Figure 3.3.7**).

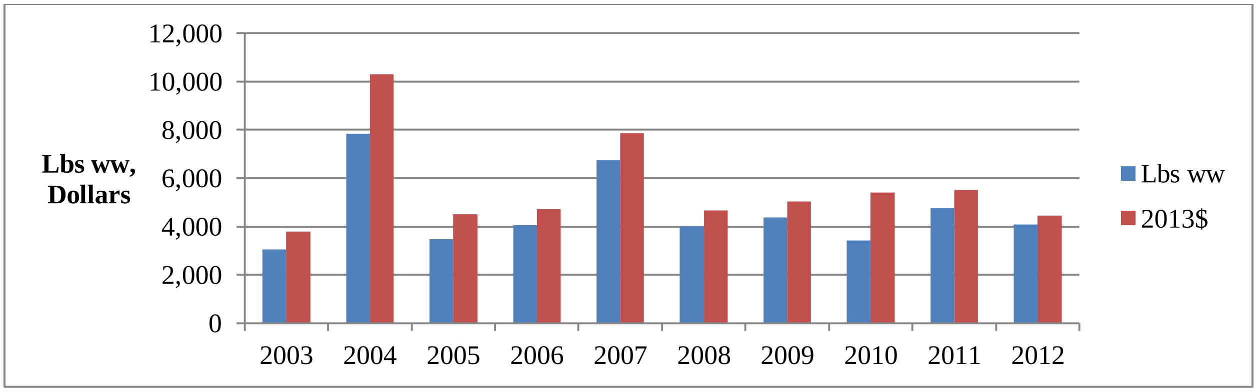

Figure 3.3.7. Annual commercial landings of bar jack, 2003-2012.
Source: SERO ACL.

The bar jack fishing season is from January 1 through December 31. In 2012, the commercial ACL was 6,686 lbs ww, while annual commercial landings were 4,072 lbs ww. Preliminary figures for 2013 indicate commercial landings exceeded the ACL of 5,265 by 985 lbs ww. Because bar jack is not overfished, its commercial ACL was not reduced in 2014 and is currently 5,265 lbs ww. As of April 8, 2014, preliminary commercial landings were 1,855 lb. If that rate continues, the commercial landings of bar jack would reach the ACL by October 6, 2014.

Deepwater Complex

Eight species comprise the Deepwater Complex: two species of groupers (misty grouper and yellowedge grouper), four species of snappers, (black snapper, blackfin snapper, queen snapper, and silk snapper) and two species of tilefishes (blueline tilefish and sand tilefish). However, a temporary rule (79FR 21636) removed blueline tilefish from the complex from April 17, 2014 through October 14, 2014. Amendment 32 to the Snapper Grouper FMP (under development) would permanently remove it from the complex. Consequently, the following description of the complex shows commercial landings of the complex with and without blueline tilefish.

Blueline tilefish comprised the majority of annual commercial landings of the Deepwater Complex from 2003 through 2012 and its landings and share increased significantly after 2007 (**Figure 3.3.8**). From 2003 through 2007, average annual landings of blueline tilefish represented approximately 67% of average annual landings (lbs ww) of the complex and approximately 91% from 2008 through 2012. The average of annual commercial landings of the complex from 2008 through 2012 with blueline tilefish is 405,540 lbs ww and without, it is 36,164 lbs ww.

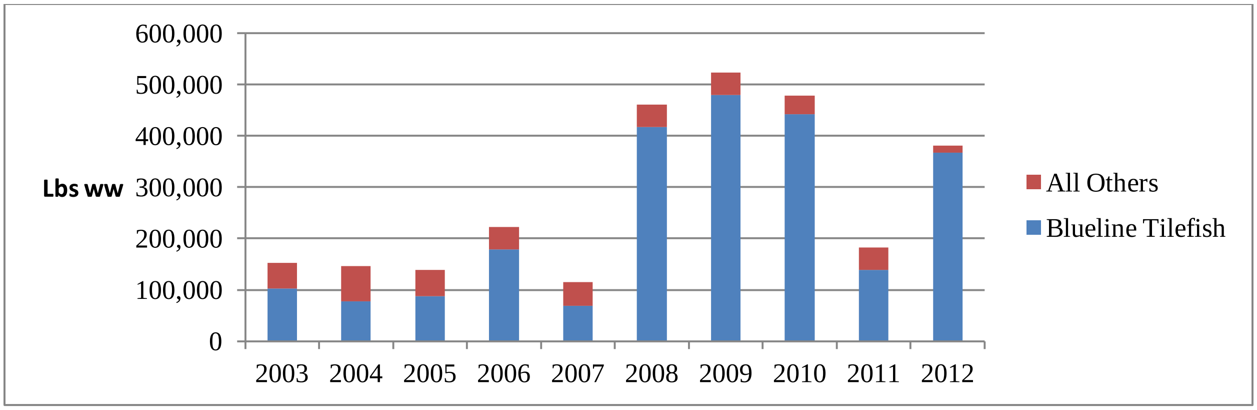

Figure 3.3.8. Annual commercial landings of the deepwater complex, 2003 – 2012, with and without blueline tilefish.
Source: SERO ACL.

From 2003 through 2012, dockside revenue ($2013) varied from approximately $0.28 million to $1.06 million with blueline tilefish landings and from $0.04 million to $0.22 without (**Figure 3.3.9**). Average annual dockside revenue during the first 5-year period (2003-2007) was approximately $0.34 million (2013 $) with blueline tilefish and approximately $0.17 without. Average annual dockside value during the second 5-year period (2008 – 2012) was approximately $0.85 million ($2013) with blueline tilefish and $0.12 million without.

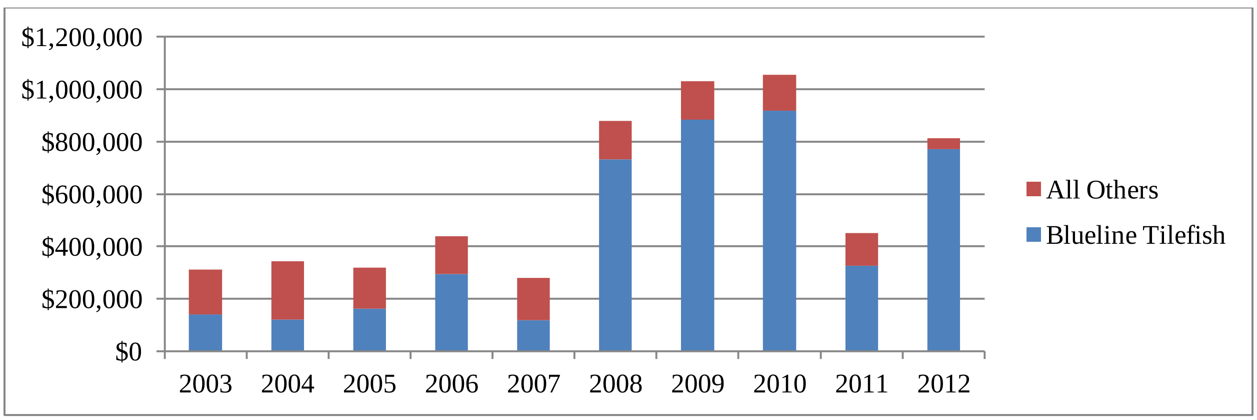

Figure 3.3.9. Annual dockside revenue (2013 $) from deepwater complex landings, 2003-2012.
Source: SERO ACL.

Results of the 2013 stock assessment for blueline tilefish (SEDAR 32 2013) indicate the stock is experiencing overfishing and is overfished according to the current definition of the minimum stock size threshold. Consequently, the recent temporary rule established a commercial ACL for blueline tilefish of 112,207 lbs ww and a commercial ACL for the revised (all but blueline tilefish) Deepwater Complex of 60,371 lbs ww. If commercial landings of blueline tilefish in 2014 exceed the ACL, the commercial ACL would be reduced in 2015. From 2003 through 2012, combined commercial landings of the other species within the Deepwater Complex only once exceeded 60,371 lbs ww and that occurred in 2004. The annual average landings from 2008 through 2012 is substantially less than that.

3.3.1.4 Gray Triggerfish

Like blueline tilefish, gray triggerfish had increasing commercial landings from 2003 through 2012. The average of annual commercial landings was 262,064 lbs ww worth $395,383 ($2013) from 2003 through 2007 and 403,139 lbs ww and $724,837 from 2008 through 2012 (**Figures 3.3.10** and **3.3.11**). Although there were landings in Virginia during those 10 years, essentially all commercial landings were in the South Atlantic States.

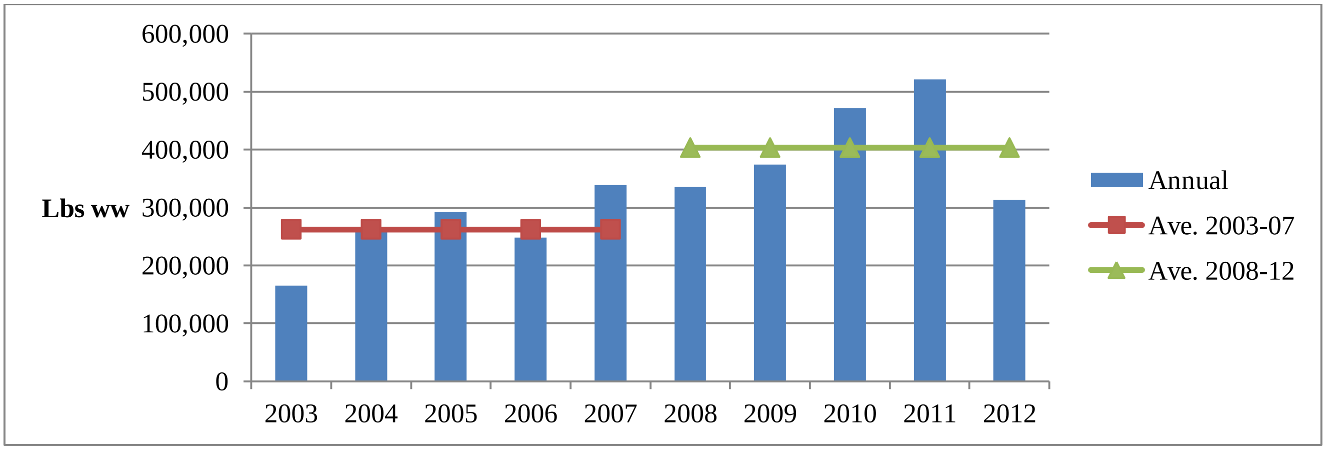

Figure 3.3.10. Annual and average annual commercial landings (lbs ww) of gray triggerfish, 2003-2012.
Source: SERO ACL.

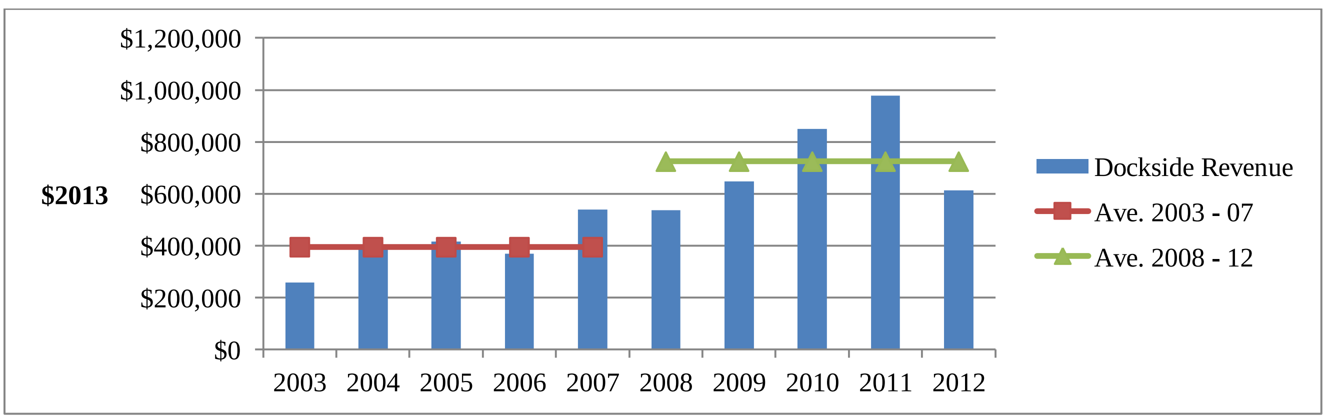

Figure 3.3.11. Annual and average annual commercial dockside revenue ($2013) from gray triggerfish landings, 2003-2012.
Source: SERO ACL.

Currently, the commercial season is from January 1 through December 31 and is open until landings reach or are projected to reach the ACL. In 2012, the commercial season was closed on September 11, but then it was reopened from December 12 through 19. The commercial ACL at that time was 305,262 lbs ww. The commercial ACL was reduced to 272,880 lbs ww in 2013 and the season closed on July 7. The current commercial ACL is the same as last year. As of April 8, 2014, preliminary data indicate 174,496 lbs ww have been landed this year. At that rate, approximately 1,781 lbs ww was landed daily, and if that daily rate continues, the season would close on June 2.

North Carolina ranked first in commercial landings from 2003 through 2012 with from approximately 42% to 71% of annual landings (lbs ww). From 2008 through 2012, it accounted for approximately 51% of average annual landings (**Figure 3.3.12**). South Carolina ranked second with Florida closely behind in third.

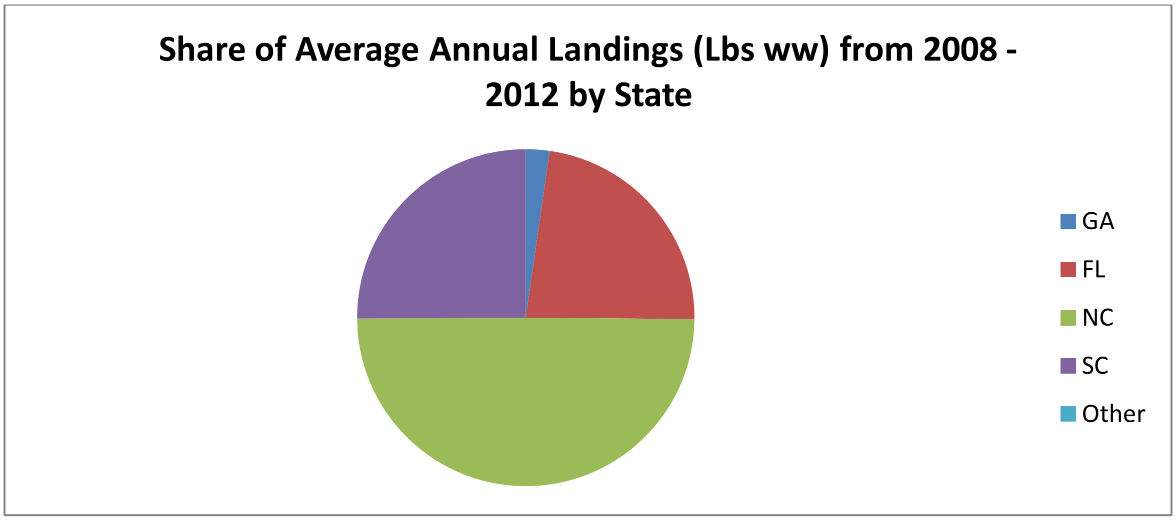

Figure 3.3.12. Share of average annual commercial landings (lbs ww) by state, 2008 – 2012. Source: SERO ACL.

Grunts Complex

The Grunts Complex is composed of white grunt, margate, sailor's choice, and tomtate. Unlike blueline tilefish and gray triggerfish, commercial landings of the Grunts Complex by weight and value declined from 2003 through 2012 (**Figure 3.3.13**). The annual averages from 2003 through 2007 were 195,375 lbs ww and $216,232 and 130,444 lbs ww and $142,057 from 2008 through 2012.

Less than 50% of the commercial ACL was landed in 2012 and 2013. The current commercial ACL is 218,539 lbs ww. As of April 8, 2014, preliminary landings data indicate less than 8% of the current ACL has been landed. At that rate, 2014 commercial landings will be less than the commercial ACL.

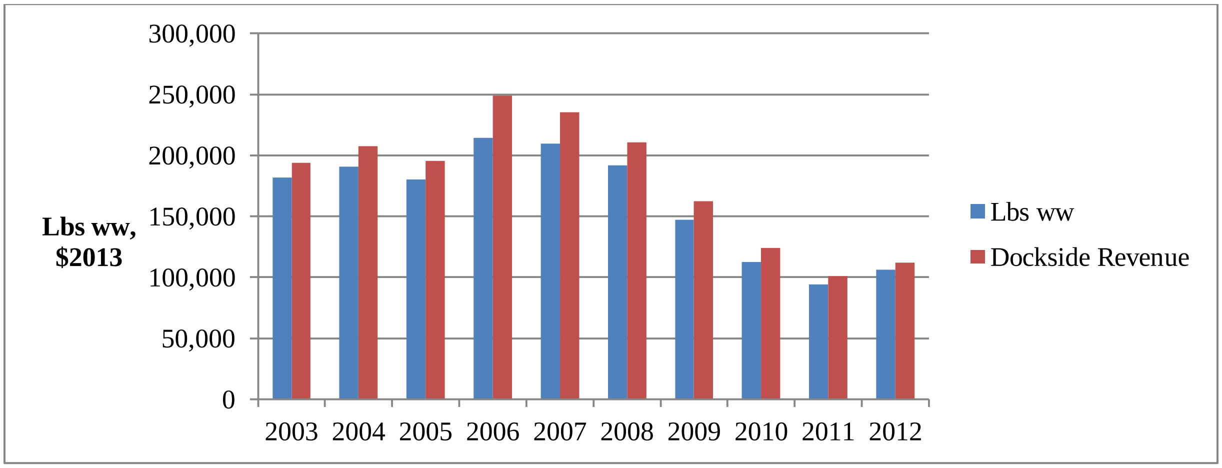

Figure 3.3.13. Annual commercial landings (lbs ww and $2013) of grunts complex, 2003-2012. Source: SERO ACL.

Scamp

Commercial landings of scamp by weight and value showed a general decline over the 10-year period from 2003 through 2012 (**Figures 3.3.14** and **3.3.15**). An average of 322,615 lbs ww with a dockside value of approximately $1.32 million ($2013) was landed annually from 2003 through 2007. That average fell to 222,044 lbs ww with a dockside value of approximately $0.96 million from 2008 through 2012.

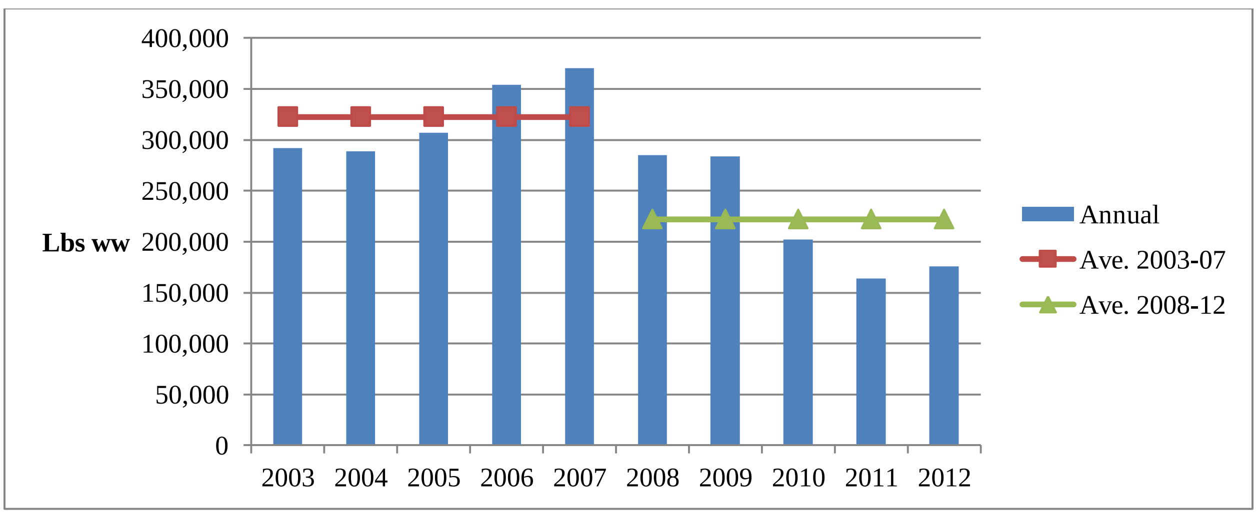

Figure 3.3.14. Annual and average annual commercial landings (lbs ww) of scamp, 2003-2012. Source: SERO ACL.

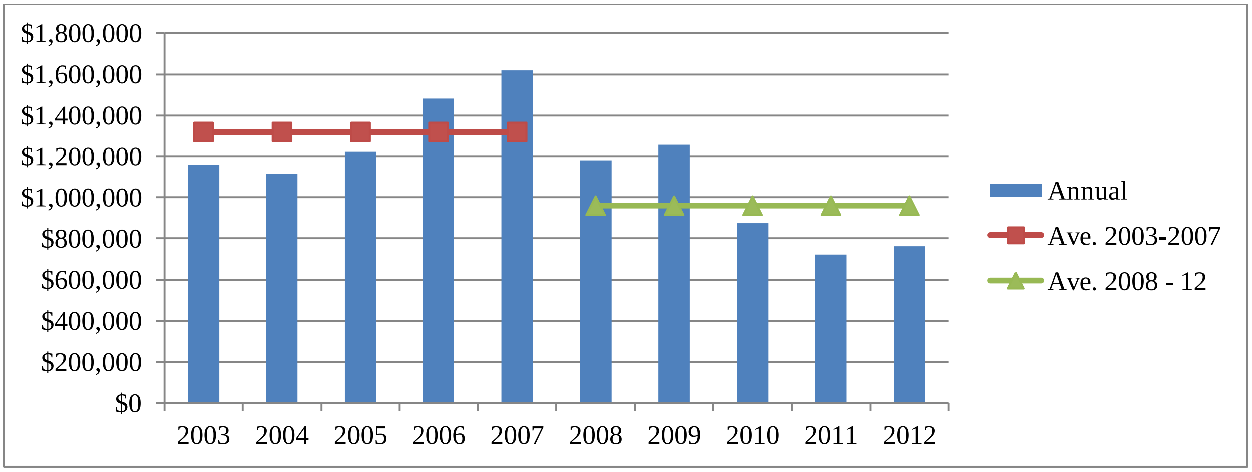

Figure 3.3.15. Annual and average annual dockside revenue ($2013) from scamp landings, 2003 – 2012.
Source: SERO ACL.

Scamp is a shallow water grouper species and its season is closed from January 1 through April each year. Moreover, in 2012, when the gag season closed, the Shallow Water Grouper Complex and scamp seasons closed as well. In 2012, the commercial season closed on October 20 and was reopened from November 13 through 21, not because commercial landings of scamp reached or exceeded the commercial ACL, but because gag landings were reaching its commercial ACL. Commercial landings of scamp in 2013 were approximately 39% of its ACL last year. The current commercial ACL is 333,100 lbs ww.

Shallow Water Grouper

The Shallow Water Grouper Complex is composed of six species: coney, graysby, red hind, rock hind, yellowfin grouper, and yellowmouth grouper. Annual commercial landings (lbs ww and $2013) from 2003 through 2012 show a generally decreasing trend (**Figures 3.3.16** and **3.3.17**). An average of 48,841 lbs ww with a value of $187,665 ($2013) was landed annually from 2003 through 2007. That average fell to 29,902 lbs ww and $118,055 from 2008 through 2012.

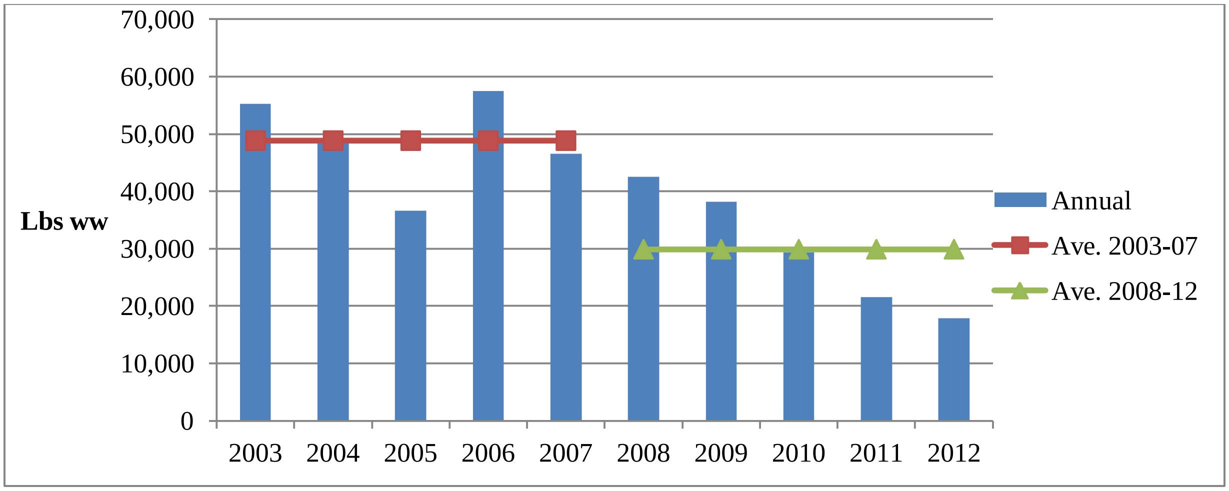

Figure 3.3.16. Annual and average annual commercial landings of shallow-water grouper complex, 2003-2012.
Source: SERO ACL.

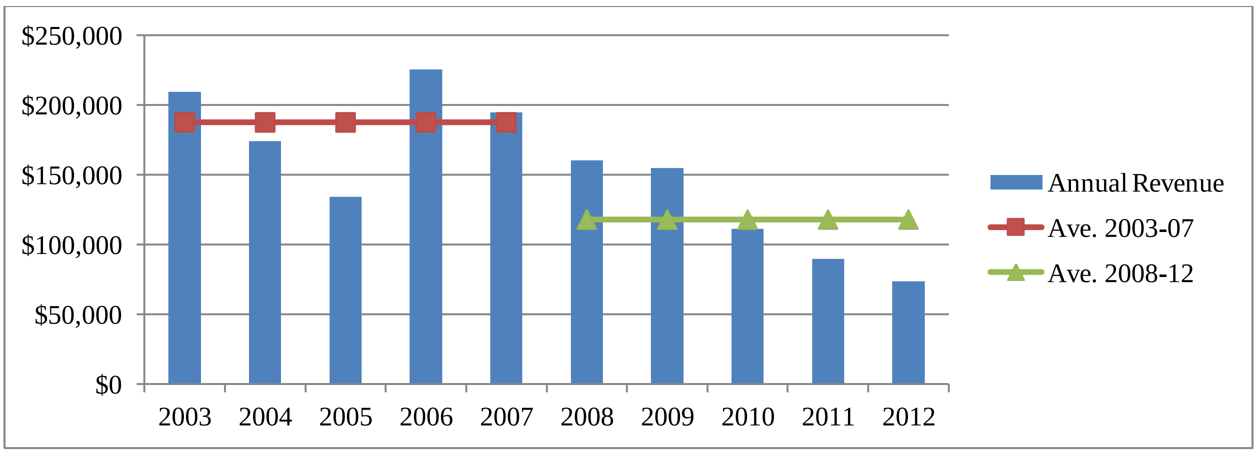

Figure 3.3.17. Annual and average annual dockside revenue ($2013) from commercial landings of shallow water grouper complex, 2003-2012.
Source: SERO ACL.

The Shallow Water Grouper Complex season is closed from January 1 through April each year. In 2012, the season closed on October 20th and was reopened from November 13th through 21st when the gag season closed and reopened. Approximately 36% of the commercial ACL was landed in 2012 and in 2013 approximately 39% of the commercial ACL of 49,776 lbs ww was landed that year. The current commercial ACL is the same as last year: 49,766 lbs ww.

Snappers

The Snappers Complex is composed of five species: gray, lane, cubera, dog, and mahogany snapper. Annual commercial landings from 2003 through 2012 varied from 90,359 lbs ww to 205,393 lbs ww and $220,974 to $514,163 ($2013) and showed a generally decreasing trend (**Figures 3.3.18** and **3.3.19**). The annual average was 145,517 lbs ww with a value of $360,500 ($2013) from 2003 through 2007, then 123,346 lbs ww with a value of $284,699 from 2008 through 2012.

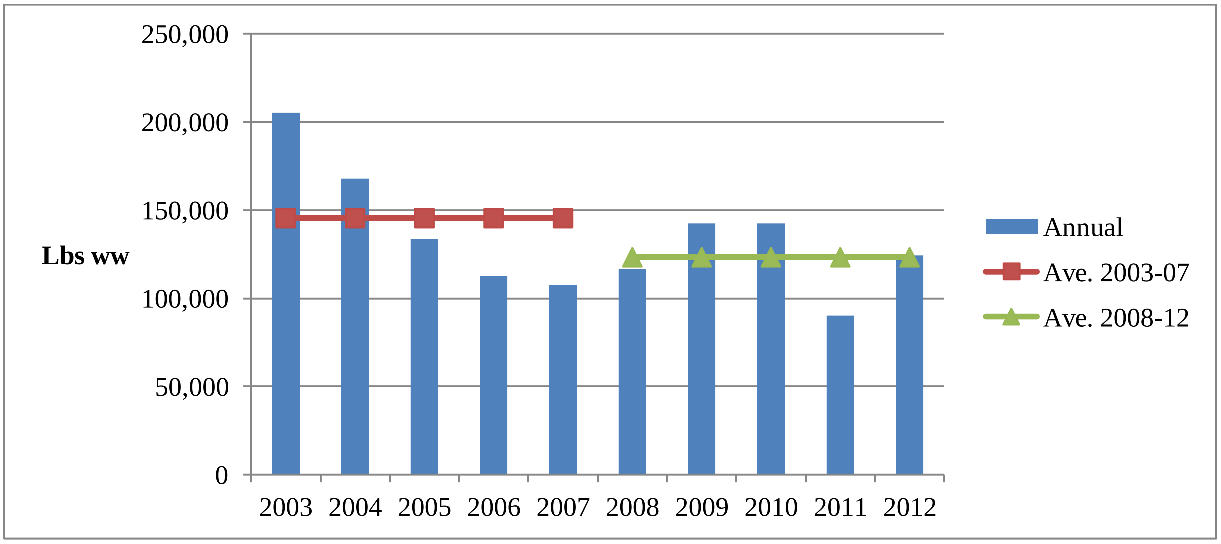

Figure 3.3.18. Annual and average commercial landings (lbs ww) of snappers complex, 2003-2012. Source: SERO ACL.

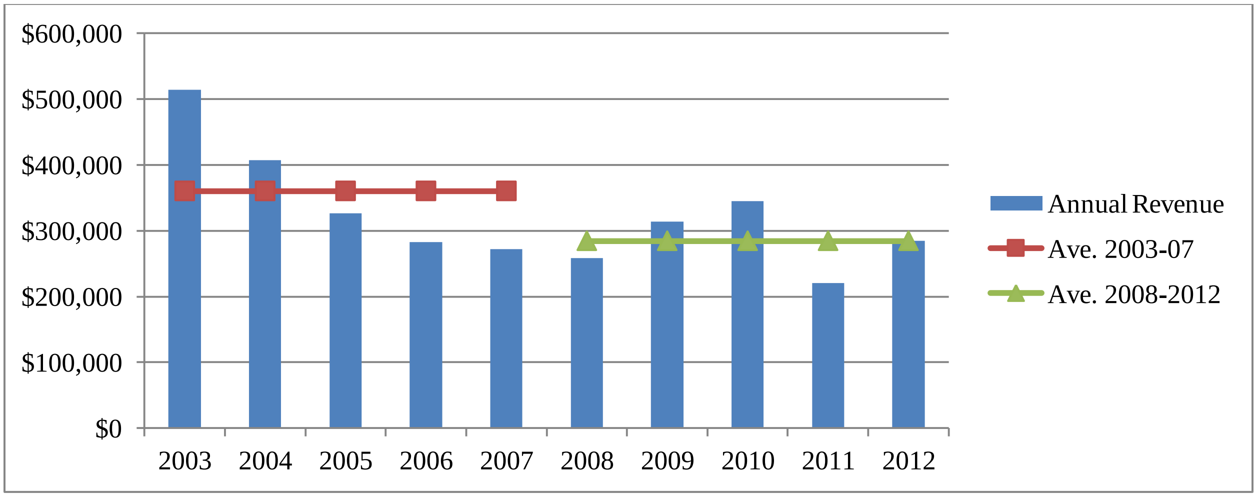

Figure 3.3.19. Annual and average dockside revenue ($2013) from commercial landings of snappers complex, 2003-2012.
Source: SERO ACL.

In 2012 and 2013, commercial landings reached between 61% and 62% of the commercial ACL for the year. The current ACL is 215,662 lbs ww, which is less than annual landings for any year during the 10-year period. Preliminary landings data indicates 9,263 lbs ww were landed as of April 8, 2014. At that rate, approximately 34,500 lbs ww would be landed by December 31, which is substantially less than the commercial ACL.

3.3.1.2 Economic Description of the Recreational Sector

A description of the recreational component of the snapper grouper fishery is contained in the Comprehensive ACL Amendment (SAFMC 2011c) and Snapper Grouper Regulatory Amendment 10 (SAFMC 2010c) and is incorporated herein by reference. The following is a brief summary and updated information, where available.

Amendment 17B (SAFMC 2010b) reported that recreational snapper grouper landings in the South Atlantic averaged approximately 10.8 million pounds (mp) per year during 2005-2009. Private boat anglers accounted for the largest landings, accounting for approximately 6.1 mp, followed by shore anglers (1.7 mp), charter anglers (1.6 mp), and headboat anglers (1.4 mp). In 2010-2011, recreational snapper grouper landings averaged approximately 11.8 mp annually, with 6.7 mp contributed by the private sector, 2.7 mp by the shore sector, 1.2 mp by the charter sector and 1.2 mp by headboats.

Recreational effort derived from the Marine Recreational Fisheries Statistics Survey (MRFSS)/Marine Recreational Information Program (MRIP) database can be characterized in terms of the number of trips as follows:

1. Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
2. Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
3. Total recreational trips - The total estimated number of recreational trips in the South Atlantic, regardless of target intent or catch success.

Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) reported that, over the years 2005-2009, an average of approximately 945,000 individual angler trips per year targeted snapper grouper species across all modes and states in the South Atlantic, or approximately 4% of all recreational shore, charter, and private angler trips. Snapper grouper target effort was highest in Florida, approximately 694,000 trips per year, and in the private mode, approximately 626,000 trips per year. In 2010-2011, total angler target trips for snapper grouper dropped to about 826,000 per year. This still comprised about 4% of all recreational shore, charter, and private angler trips. Florida accounted for the highest number of target trips at about 579,000 trips and the private mode accounted for the highest number of target trips at 592,000 trips. For the most recent five years (2007-2011), total target effort for snapper grouper in the South Atlantic averaged 906,106 trips annually.

Substantially more recreational trips catch snapper grouper species than target these species. Amendment 17A to the Snapper Grouper FMP (SAFMC 2010a) reported that during 2003-2008 an average of approximately 3.5 million individual angler trips in just the shore, private boat, and charter modes caught snapper grouper each year. Over 80% of these trips occurred off Florida. In 2009-2011, an average of about 2.8 million angler trips in the shore, private, and charter modes caught snapper grouper, with about 76% occurring off Florida. In 2005-2009, recreational catch effort for snapper grouper in the South Atlantic averaged approximately 2.7 million trips per year. The corresponding average catch effort for the most recent five years (2007-2011) is 3.3 million trips per year.

Similar analysis of recreational effort is not possible for the headboat sector because 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. Despite the inability to associate headboat effort with specific species, the stationary bottom nature of headboat fishing, as opposed to trolling, suggests that most headboat trips and, hence, angler days, are snapper grouper trips by intent. Amendment 17B (SAFMC 2010b) reported that over the years 2005-2009, an average of approximately 225,000 angler trips were taken each year in the South Atlantic. The majority of these trips, approximately 153,000 trips per year, were taken in Georgia-Florida (Georgia is combined with Florida because of confidentiality considerations). In 2010-2011, anglers in the South Atlantic took an average of 188,000 trips. Georgia-Florida, with an average of about 144,000 trips, accounted for most of the trips.

Amendment 17A (SAFMC 2010a) reported an average of 1,811 snapper grouper for-hire permits in the South Atlantic for the period 2003-2008. In 2009-2010, South Atlantic snapper grouper for-hire permits averaged 1,953. In both periods, most permit holders listed Florida as their homeport state. 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, Southeast Fisheries Science Center (SEFSC), personal communication, Feb. 2011). According to the Southeast Regional Office Website, the Constituency Services Branch (Permits) unofficially listed 1,407 current holders of South Atlantic for-hire snapper grouper permits as of January 22, 2014.

Participation, effort, and landings 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. 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.

Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) contain discussions on estimates of the consumer surplus (CS) associated with fishing for snapper grouper derived from different studies, including Haab et al. (2009), Dumas et al. (2009), and NMFS (2009). The estimated CS per snapper grouper (individual fish) used in the analysis of the expected effects of the management changes proposed in Amendment 17A was $80 in 2009 dollars, or $82.64 in 2011 dollars. More recently, Carter and Liese (2012) estimated CS values for various species. This estimate was specifically developed for use when management measures changed the recreational ACL, which is typically measured in pounds. That estimate was $10.93 per pound in 2009 dollars, which is $11.42 in 2011 dollars.

While anglers receive economic value as measured by the consumer surplus associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus is the measure of the economic value these operations receive. Producer surplus 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 producer surplus associated with for-hire trips are not available. However, proxy values in the form of net operating revenue are available (David Carter, NMFS SEFSC, personal communication, August 2010). These estimates were culled from several studies – Liese et al. (2009), Dumas et al. (2009), Holland et al. (1999), and Sutton et al. (1999). Amendment 17A utilized a value of $128 (2009 dollars), or $132 in 2011 dollars, per charter angler trip to assess the expected change in net operating revenue (NOR) of the proposed management changes on charter vessels. Since NOR from the harvest of a particular species is only attributed to trips targeting that species, NOR per year from trips targeting yellowtail snapper is estimated to have been approximately $113,800 on average for charter vessels between 2007 and 2011. In a more recent study, Holland et al. (2012) reported that charter vessels in the South Atlantic had average revenue of approximately $106,000 per vessel in 2009.

NOR per angler trip is lower for headboats than for charterboats. NOR estimates for a representative headboat trip are $48 in the Gulf of Mexico (all states and all of Florida), and $63-$68 in North Carolina. For full-day and overnight headboat trips, NOR are estimated to be $74-$77 in North Carolina. Comparable estimates are not available for Georgia and South Carolina. Amendment 17A (SAFMC 2010a) utilized a value of $68 (2009 dollars) per headboat angler trip to assess the expected change in net operating revenue of the proposed management changes on headboat vessels. Since target effort by headboat vessels cannot be estimated for specific species. Holland et al. (2012) reported that headboats in the South Atlantic had average revenue of approximately $188,000 per vessel in 2009. Holland et al. (2012) also report that, in 2009, no charter vessels earned more than $500,000 in gross revenues.

These value estimates should not be confused with angler expenditures or the 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 impacts (business activity) associated with the recreational snapper grouper fishery were derived using average output (sales) and job (FTE) impact coefficients for recreational angling across all fisheries (species), as derived by an economic add-on to the Marine Recreational Fisheries Statistical Survey (MRFSS), and described and utilized in USDOC (2009). Estimates of the average expenditures by recreational anglers are provided in USDOC (2009) and are incorporated herein by reference.

Because the headboat sector in the Southeast is not covered in the MRFSS, the results do not include estimates of the business activity associated with headboat anglers. Although estimates of the business activity associated with the headboat sector were provided in Amendment 17A, these estimates were based on the model parameters appropriate for the charterboat sector, which are higher than would be expected for the headboat sector because of higher fees charged by charter vessels and other factors discussed in Amendment 17A. As a result, these estimates are not repeated here and updated. More appropriate estimates of the business activity associated with the headboat component of the snapper grouper fishery are not available.

3.3.2 Social Environment

This section includes a description of the commercial and recreational components of select unassessed snapper grouper species including Atlantic spadefish, bar jack, blue runner, cubera snapper, gray snapper, gray triggerfish, lane snapper, margate, red hind, rock hind, scamp, silk snapper, tomtate, yellowedge grouper, and white grunt. The description is based on the geographical distribution of landings and the relative importance of the species for commercial and recreational communities. A spatial approach enables the consideration of fishing communities and the importance of fishery resources to those communities, as required by National Standard 8.

Because so many communities in the South Atlantic benefit from snapper grouper fishing, a discussion of the communities most involved in South Atlantic fishing, is included in **Section 3.8.3.3** of the Comprehensive ACL Amendment (SAFMC 2011c), which is hereby incorporated by reference. Detailed information is included on the importance of individual commercial species to each community and can be partnered with the following narrative to provide an understanding of the dependence by communities on the included snapper grouper species. A description of the social environment of the snapper grouper fishery is included in **Section 3.8.4** of the Comprehensive ACL Amendment and is also incorporated by reference. The Comprehensive ACL Amendment may be found at: http://www.safmc.net/LinkClick.aspx?fileticket=OlK4OjG54Vs%3d&tabid=415.

A description of the social environment of snapper grouper species complexes and individual species including figures showing the spatial distribution of commercial landings is included in Regulatory Amendment 13 (SAFMC 2013a) and is included by reference. In addition, detailed descriptions of fishing communities in the South Atlantic (including community demographics, fishing demographics, fishing employment, and fishing permits) are included in Jepson et al. (2005), which is incorporated herein by reference. The majority of the communities highlighted below as being the most involved in fishing for unassessed snapper grouper species are described in detail in Jepson et al. (2005).

Social Importance of Fishing

Socio-cultural values are qualitative in nature making it difficult to measure social valuation of marine resources and fishing activity. The following description includes multiple approaches to examining fishing importance. These spatial approaches focus on the community level (based on the address of dealers) and identify importance by "community", defined according to geo-political boundaries (cities). A single county may thus have several communities identified as reliant on fishing. Furthermore, while commercial fishing data are available at the species level, these data are not available for recreational fishing, which must be addressed more generally.

To identify communities with the greatest commercial reliance, an approach called the regional quotient (rq) was utilized. The rq is a way to measure the relative importance of a given species across all communities in the region and represents the proportional distribution of commercial landings of a particular species. This proportional measure does not provide the number of pounds or the value of the catch data, which might be confidential at the community level for many places. The rq is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities in the region.

In addition to examining the regional quotients to understand how communities are engaged and reliant on fishing, and specifically on select unassessed snapper grouper species, indices were created using secondary data from permit and landings information for the commercial sector and permit information for the recreational sector (Jepson and Colburn 2013). Fishing engagement is primarily the absolute numbers of permits, landings, and value. For commercial fishing, the analysis used the number of vessels designated commercial by homeport and owner address, value of landings, and total number of commercial permits for each community. Recreational fishing engagement is represented by the number of recreational permits and vessels designated as recreational by homeport and owners address. Fishing reliance includes the same variables as fishing engagement divided by population to give an indication of the per capita influence of this activity.

Using a principal component and single solution factor analysis, each community receives a factor score for each index to compare to other communities. Taking the communities with the highest regional quotients, factor scores of both engagement and reliance for both commercial and recreational fishing were plotted. Two thresholds of one and ½ standard deviation above the mean are plotted onto the graphs to help determine a threshold for significance. The factor scores are standardized, therefore, a score above 1 is also above one standard deviation. A score above ½ standard deviation is considered engaged or reliant with anything above 1 standard deviation to be very engaged or reliant.

The reliance index uses factor scores that are normalized. The factor score is similar to a z-score in that the mean is always zero and positive scores are above the mean and negative scores are below the mean. Comparisons between scores are relative but one should bear in mind that like a z-score the factor score puts the community on a spot in the distribution. Objectively they have a score related to the percent of communities with those similar attributes. For example, a score of 2.0 means the community is two standard deviations above the mean and is among the 2.27% most vulnerable places in the study (normal distribution curve). Reliance score comparisons between communities are relative. However, if the community scores greater than two standard deviations above the mean, this indicated that the community is dependent on the species. Examining the component variables on the reliance index and how they are weighted by factor score provides a measurement of commercial reliance. The reliance index provides a way to gauge change over time in these communities and also provides a comparison of one community with another.

These measures are an attempt to quantify the importance of the components of the included fisheries to communities around the South Atlantic coast and suggest where impacts from management actions are more likely to be experienced.

Figures 3.3.20-3.3.22 show the top communities in Florida, South Carolina and North Carolina for relative levels of recreational and commercial engagement and reliance for select unassessed snapper grouper species affected by this amendment. These figures will be referenced in the discussions below.

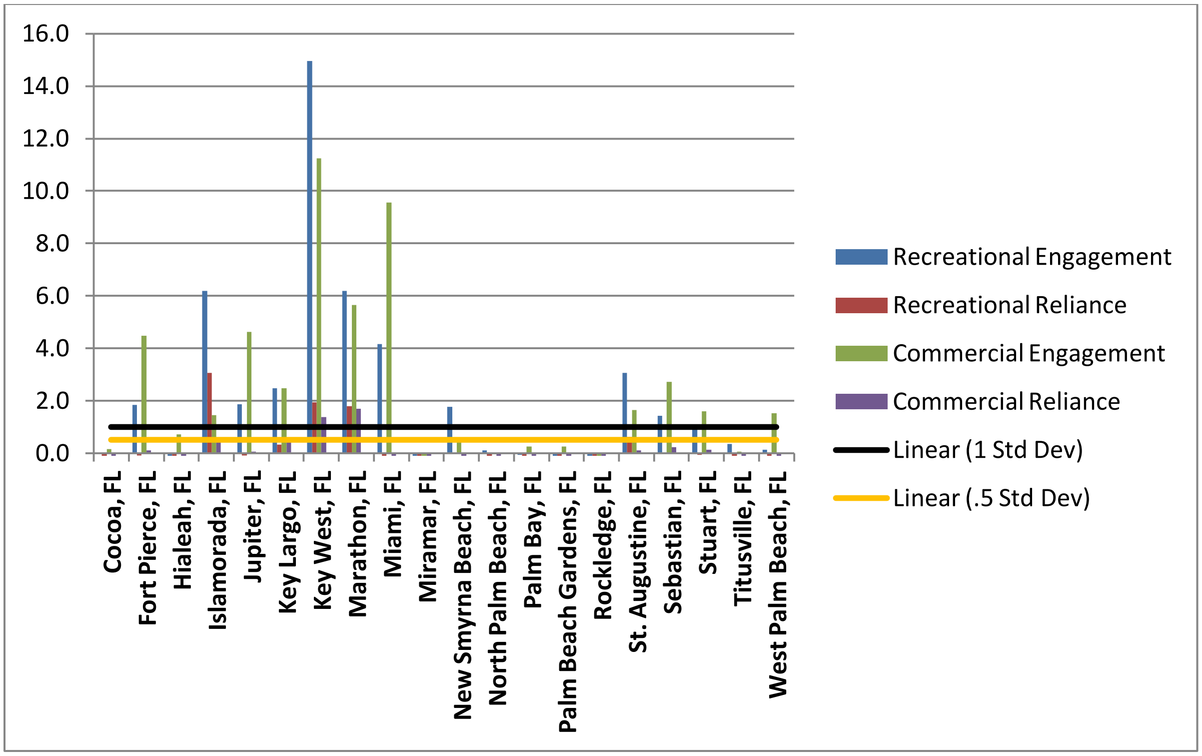

Figure 3.3.20. Commercial and recreational reliance and engagement for Florida communities with top commercial landings of select unassessed snapper grouper species.
Source: Southeast Regional Office Social Indicator Database 2013.

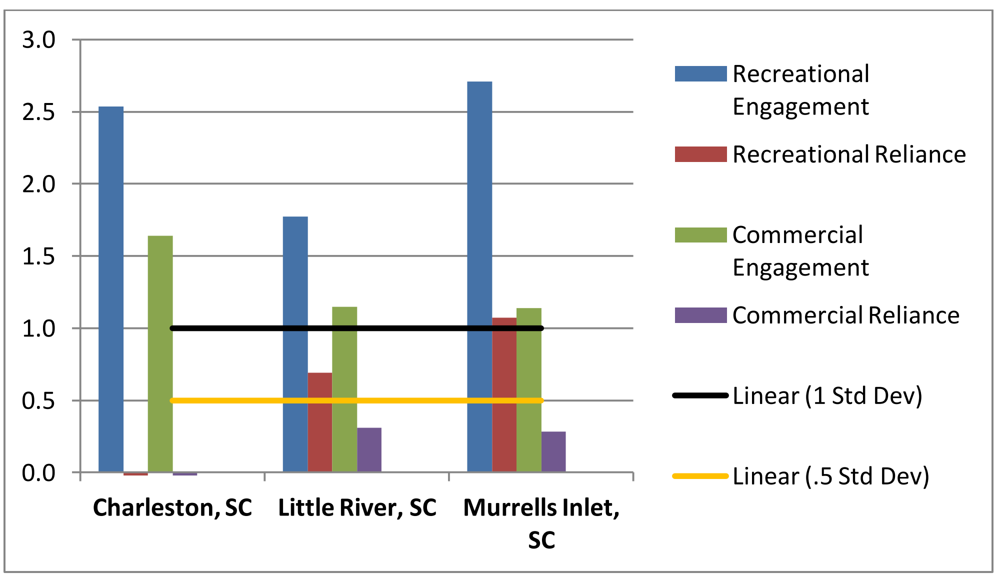

Figure 3.3.21. Commercial and recreational reliance and engagement for South Carolina communities with top commercial landings of select unassessed snapper grouper species.
Source: Southeast Regional Office Social Indicator Database 2013.

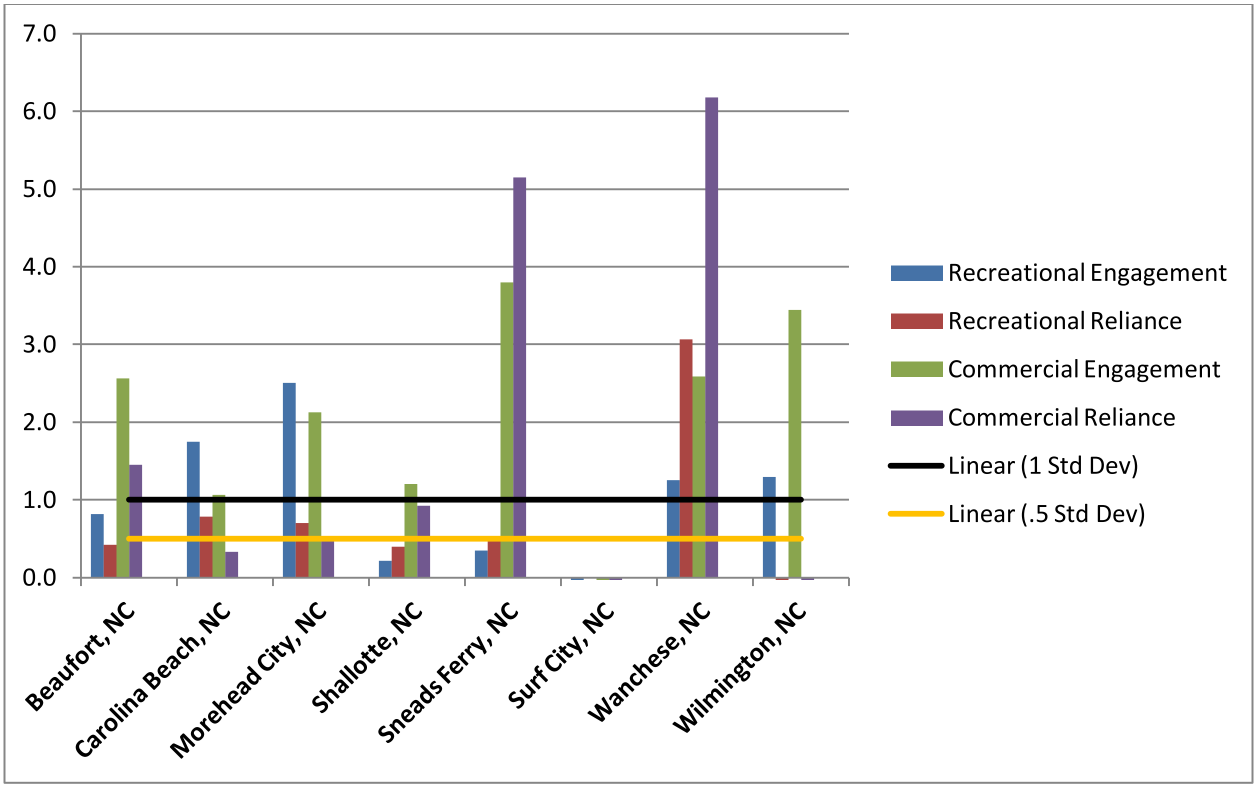

Figure 3.3.22. Commercial and recreational reliance and engagement for North Carolina communities with top commercial landings of select unassessed snapper grouper species.
Source: Southeast Regional Office Social Indicator Database 2013.

Fishing Communities

<u>Atlantic Spadefish</u>

Commercial Communities

Commercial landings are greatest for Atlantic spadefish in Florida, although this species is also landed commercially in South Carolina. **Figure 3.3.23** identifies the communities with commercial landings of Atlantic spadefish. The majority of dealer reported landings are located along the mid-Florida coast, through Florida's lower east coast, and in South Carolina (McClellanville).

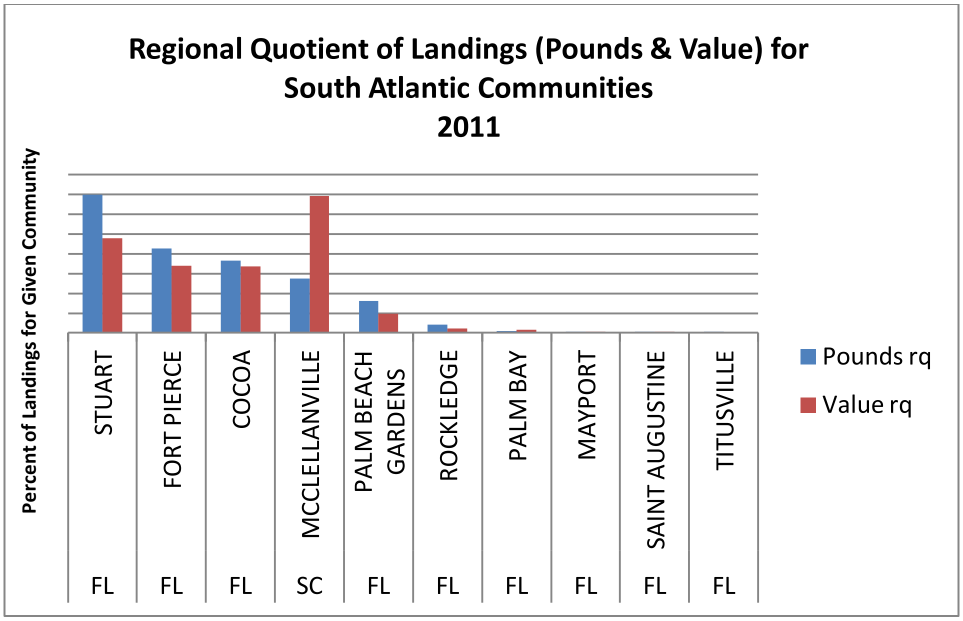

Figure 3.3.23. Proportion (rq) of Atlantic spadefish commercial landings (pounds and value) for South Atlantic communities out of total landings and value of atlantic spadefish. Values have been omitted because of confidentiality issues.
Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For Atlantic spadefish, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance Fort Pierce, St. Augustine, and Stuart, Florida (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species). Communities with substantial recreational engagement and/or reliance include Fort Pierce and St. Augustine, Florida.

Bar Jack

Commercial Communities

Bar jack is landed commercially in Florida. **Table 3.3.7** identifies the communities with commercial landings of bar jack (the regional quotient is not displayed for bar jack for confidentiality reasons). Dealer reported landings are located in the Florida Keys, Miami, and in a few communities located on the mid-Florida coast.

Table 3.3.7. Communities with commercial bar jack landings in descending order based on pounds landed.

STATE	CITY
FL	Key West
FL	Key Largo
FL	Cocoa
FL	Miami
FL	Mayport
FL	Islamorada
FL	Sebastian

Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For bar jack, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Islamorada, Key Largo, Key West, Miami, and Sebastian, Florida (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species). Communities with substantial recreational engagement and/or reliance include Islamorada, Key Largo, Key West, Miami, and Sebastian.

Cubera Snapper

Commercial Communities

Commercial landings are greatest for cubera snapper in Florida, although this species is also landed in North Carolina and South Carolina. **Figure 3.3.24** identifies the communities with the most commercial landings of cubera snapper. The majority of dealer reported landings are located in northern South Carolina, along the Florida coast, in North Carolina (Shallotte), and in the Florida Keys.

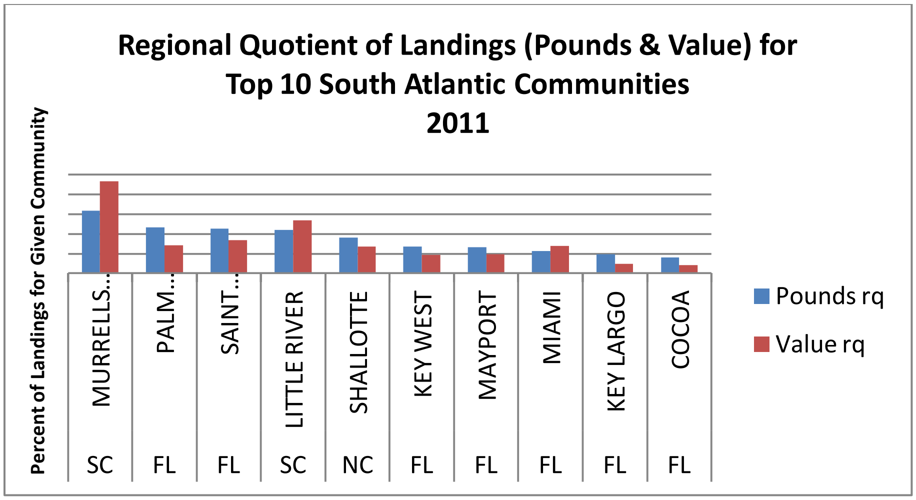

Figure 3.3.24. Proportion (rq) of cubera snapper commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of cubera snapper.
Values have been omitted because of confidentiality issues.
Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For cubera snapper, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key Largo, Key West, Miami, and St. Augustine, Florida; Shallotte, North Carolina; and Little River and Murrells Inlet, South Carolina (included in **Figure 3.3.21** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.22** which details all top South Carolina communities, and **Figure 3.3.24** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key Largo, Key West, Miami, and St. Augustine, Florida and Little River and Murrells Inlet, South Carolina.

Gray Snapper

Commercial Communities

Commercial landings are greatest for gray snapper in Florida, although this species is also landed in North Carolina and South Carolina. **Figure 3.3.25** identifies the communities with the most commercial landings of gray snapper. The majority of dealer reported landings are located in the Florida Keys and along the lower east coast of Florida (Miami, Hialeah, Fort Lauderdale, and North Palm Beach).

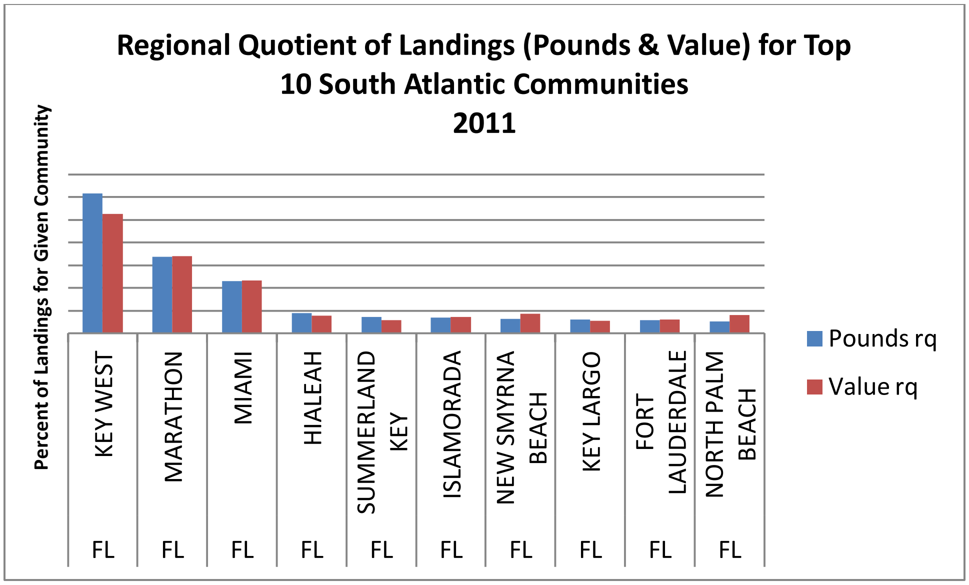

Figure 3.3.25. Proportion (rq) of gray snapper commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of gray snapper.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For gray snapper, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Fort Lauderdale, Islamorada, Key Largo, Key West, Marathon, and Miami, Florida (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species). Communities with substantial recreational engagement and/or reliance include Fort Lauderdale, Islamorada, Key Largo, Key West, Marathon, Miami, and New Smyrna Beach, Florida.

Gray Triggerfish

Commercial Communities

Triggerfish are landed commercially in North Carolina, South Carolina, and Florida. **Figure 3.3.26** identifies the communities with the most commercial landings of triggerfish. The majority of dealer reported landings are located in along the north coast of Florida (Mayport and St. Augustine), South Carolina (Horry and Georgetown Counties), and along the southern North Carolina coast (Brunswick and Carteret Counties). Unclassified triggerfishes were included in this analysis because unclassified triggerfish are usually gray triggerfish.

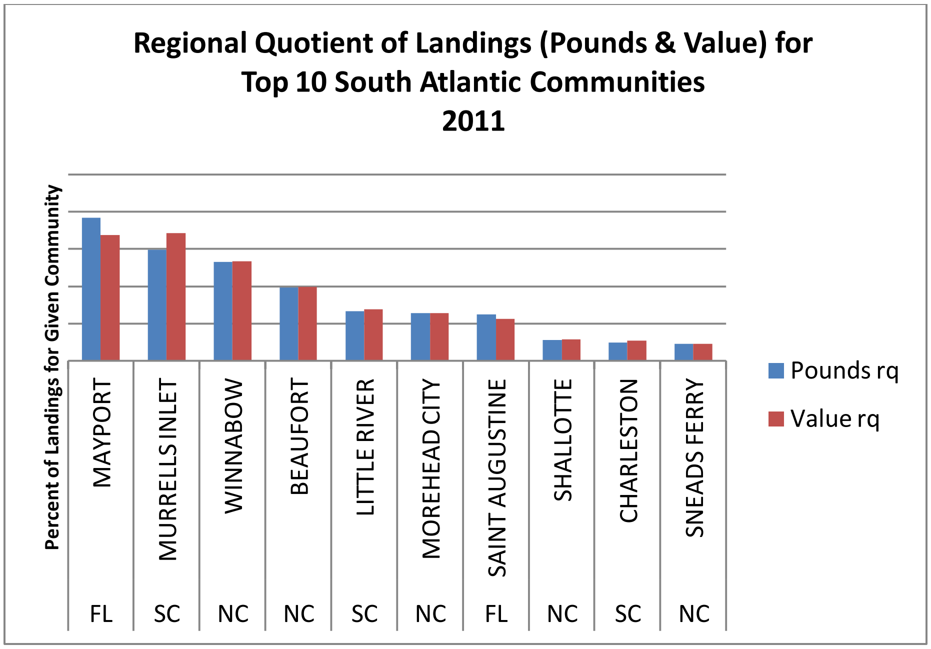

Figure 3.3.26. Proportion (rq) of triggerfish commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of triggerfish.
Values have been omitted because of confidentiality issues.
Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For gray triggerfish, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include St. Augustine, Florida; Beaufort, Morehead City, and Shallotte, North Carolina; and Little River and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include St. Augustine, Florida; Morehead City, North Carolina; and Little River and Murrells Inlet, South Carolina.

Grunts Complex

The grunts complex includes white grunt, margate, sailor's choice, and tomtate. All species in this complex except for sailor's choice are unassessed and are thus included in this amendment; however all grunts complex species are included in the community level analysis below because a large portion of the landings are reported as unclassified grunts.

Commercial Communities

Commercial landings are greatest for grunts in Florida (52.4%), although grunts complex species are also landed in North Carolina (33.6%) and South Carolina (14%, ALS 2011). **Figure 3.3.27** identifies the communities with the most commercial landings of grunts complex species.

The majority of dealer reported landings are located in the Florida Keys (Key West and Key Largo make up 22.4% of landings in the year 2011), the southern coast of North Carolina, and the northern coast of South Carolina.

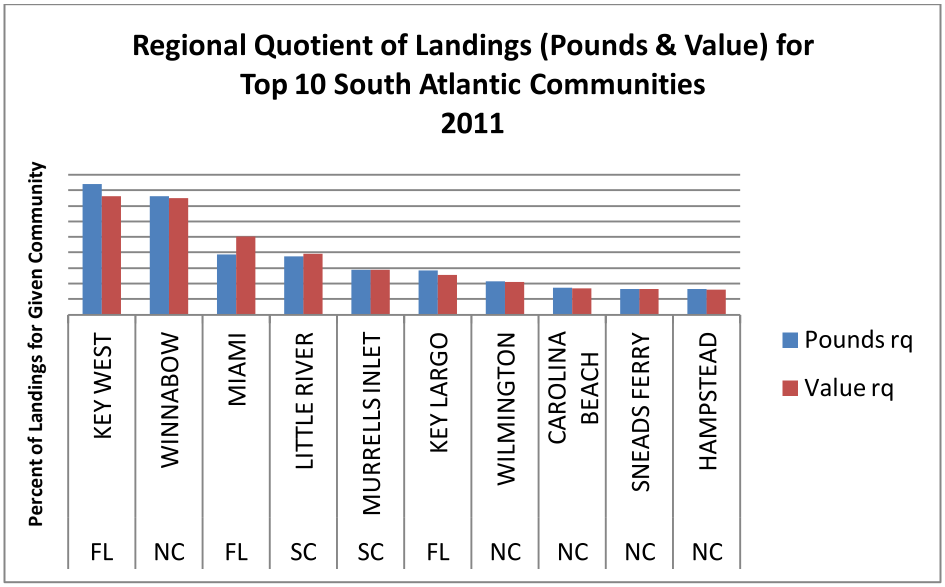

Figure 3.3.27. Proportion (rq) of grunts complex commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of grunts complex.
Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For grunts, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key Largo and Key West, Florida; Sneads Ferry and Wilmington, North Carolina; and Little River and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key Largo and Key West, Florida; Carolina Beach and Wilmington, North Carolina; and Little River and Murrells Inlet, South Carolina.

Lane Snapper

Commercial Communities

Lane snapper is landed commercially in Florida. **Figure 3.3.28** identifies the communities with the most commercial landings of lane snapper. The majority of dealer reported landings are located in the Florida Keys, along the central coast of Florida (Cocoa), and along the lower east coast of Florida (Miami and Jupiter).

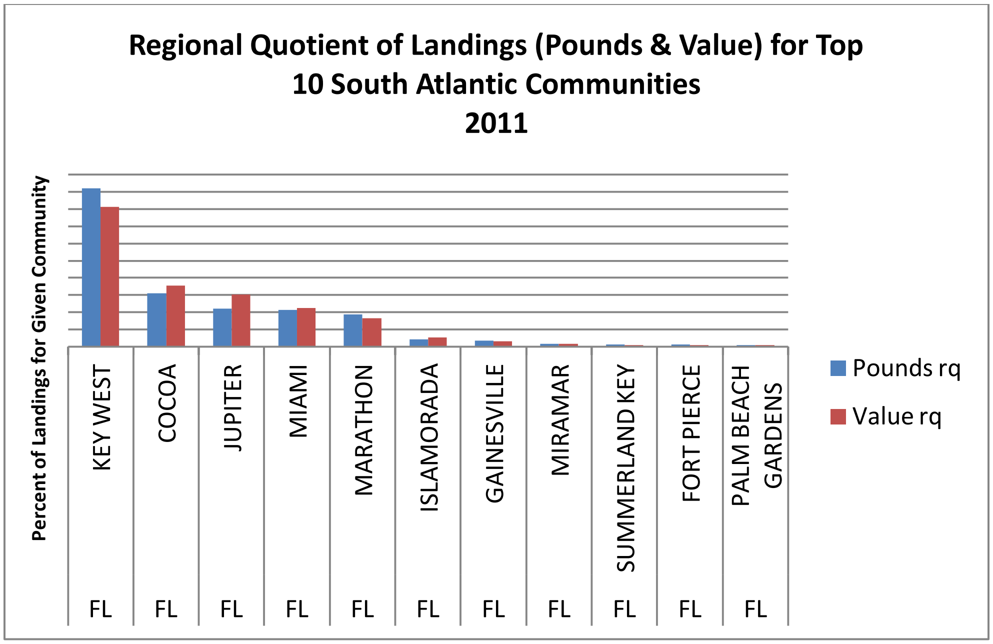

Figure 3.3.28. Proportion (rq) of lane snapper commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of lane snapper.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For lane snapper, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Fort Pierce, Islamorada, Jupiter, Key West, Marathon, and Miami, Florida (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species). Communities with substantial recreational engagement and/or reliance include Fort Pierce, Islamorada, Jupiter, Key West, Marathon, and Miami, Florida.

Red Hind

Commercial Communities

Commercial landings are greatest for red hind in North Carolina, although this species is also landed in Florida. **Figure 3.3.29** identifies the communities with the most commercial landings of red hind. The majority of dealer reported landings are located in North Carolina (approximately 88%, ALS 2011).

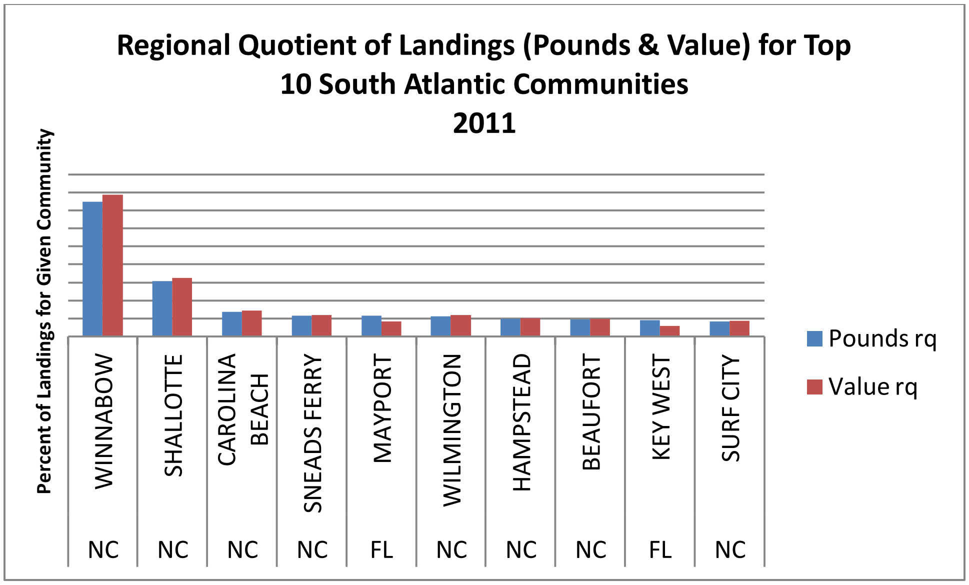

Figure 3.3.29. Proportion (rq) of red hind commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of red hind.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For red hind, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key West, Florida and Beaufort, Shallotte, Sneads Ferry, and Wilmington, North Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key West, Florida and Carolina Beach, and Wilmington, North Carolina.

Rock Hind

Commercial Communities

Commercial landings are greatest for rock hind in South Carolina, although this species is also landed in Florida and North Carolina. **Figure 3.3.30** identifies the communities with the most commercial landings of rock hind. The majority of dealer reported landings are located in South Carolina in Horry and Georgetown Counties.

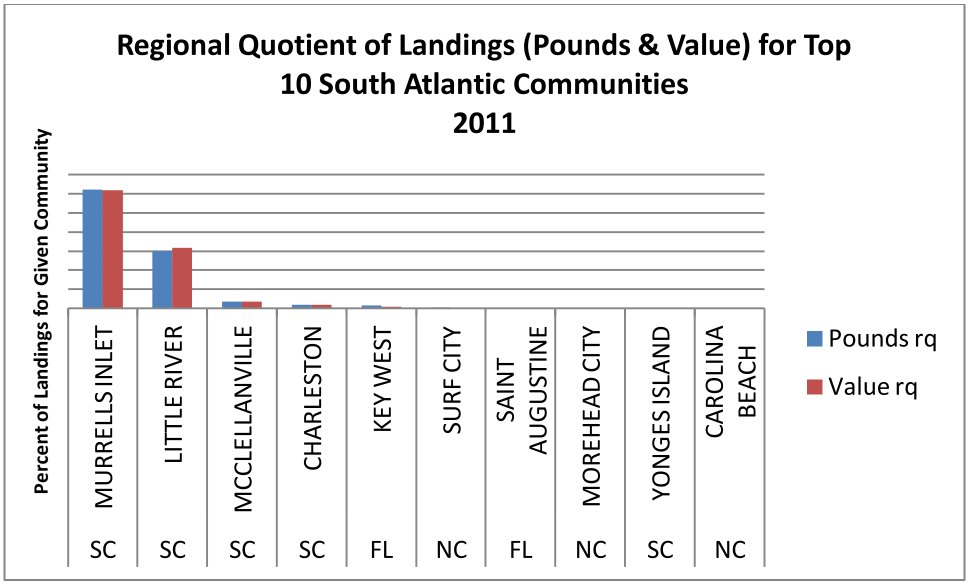

Figure 3.3.30. Proportion (rq) of rock hind commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of rock hind.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For rock hind, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key West and St. Augustine, Florida; Morehead City, North Carolina; and Charleston, Little River, McClellanville, and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key West and St. Augustine, Florida; Carolina Beach and Morehead City, North Carolina; and Charleston, Little River, and Murrells Inlet, South Carolina.

Scamp

Commercial Communities

Commercial landings are greatest for scamp in South Carolina, although this species is also landed in North Carolina and Florida. **Figure 3.3.31** identifies the communities with the most commercial landings of scamp. The majority of dealer reported landings are located in South Carolina (Murrells Inlet, Little River, Charelston, and McClellanville make up over 65% of landings in 2011) and North Carolina.

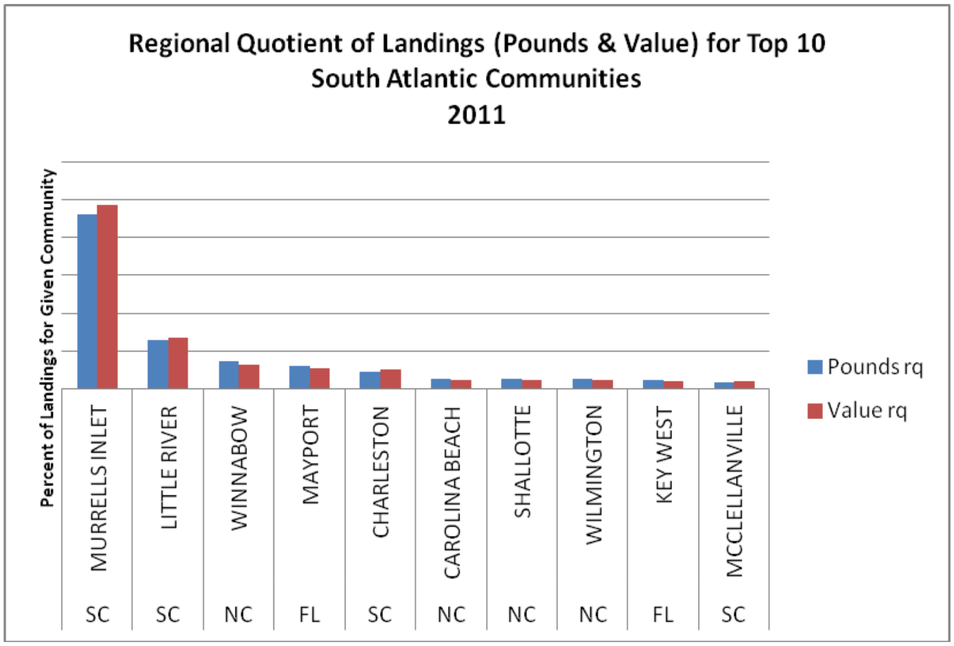

Figure 3.3.31. Proportion (rq) of scamp commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of scamp.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For scamp, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key West, Florida; Shallotte and Wilmington, North Carolina; and McClellanville and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key West, Florida; Carolina Beach and Wilmington, North Carolina; and Charleston, Little River, and Murrells Inlet, South Carolina.

Silk Snapper

Commercial Communities

Commercial landings are greatest for silk snapper in Florida, although this species is also landed in South Carolina, North Carolina, and Georgia. **Figure 3.3.32** identifies the communities with the most commercial landings of silk snapper. The majority of dealer reported landings are located in the Florida Keys.

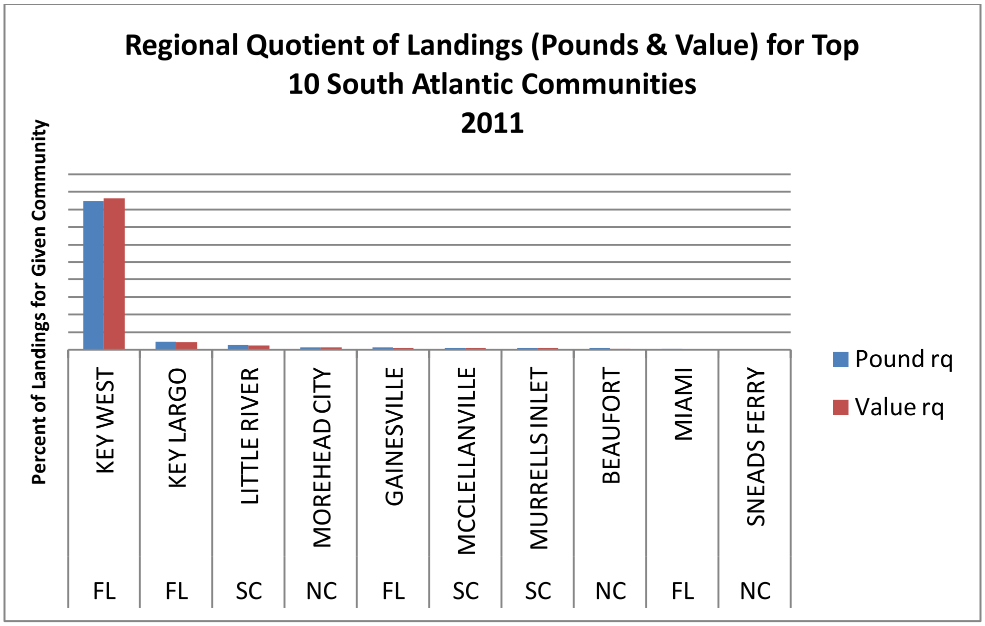

Figure 3.3.32. Proportion (rq) of silk snapper commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of silk snapper.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For silk snapper, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key Largo, Key West, and Miami, Florida; Beaufort, Morehead City, and Sneads Ferry, North Carolina; and Little River, McClellanville, and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key Largo, Key West, and Miami, Florida; Morehead City, North Carolina; and Little River and Murrells Inlet, South Carolina.

Yellowedge Grouper

Commercial Communities

Commercial landings are greatest for yellowedge grouper in Florida, although this species is also landed in South Carolina and North Carolina. **Figure 3.3.33** identifies the communities with the most commercial landings of yellowedge grouper. The majority of dealer reported landings are located in the Florida Keys, in northern South Carolina, and along the central and lower east coast of Florida.

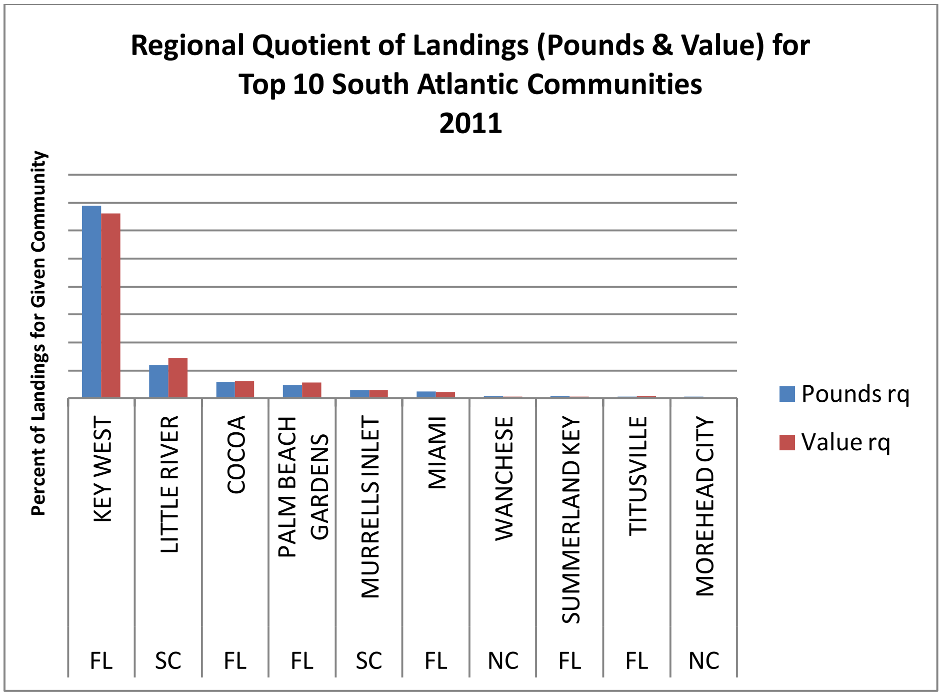

Figure 3.3.33. Proportion (rq) of yellowedge grouper commercial landings (pounds and value) for top 10 South Atlantic communities out of total landings and value of yellowedge grouper.
Values have been omitted because of confidentiality issues. Source: ALS dealer reports 2011.

Reliance and Engagement with Commercial and Recreational Fishing

The details of these indices are explained at the beginning of the Social Environment section. For yellowedge grouper, the primary communities that demonstrate high levels of commercial fishing engagement and/or reliance include Key West and Miami, Florida; Morehead City and Wanchese, North Carolina; and Little River and Murrells Inlet, South Carolina (included in **Figure 3.3.20** which details top Florida communities by commercial landings and value for select unassessed snapper grouper species, **Figure 3.3.21** which details all top South Carolina communities, and **Figure 3.3.22** which details all top North Carolina communities). Communities with substantial recreational engagement and/or reliance include Key West and Miami, Florida; Morehead City and Wanchese, North Carolina; and Little River and Murrells Inlet, South Carolina.

3.3.3 Environmental Justice

Executive Order 12898 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. The main focus of Executive Order 12898 is to consider "the 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…" This executive order is generally referred to as environmental justice (EJ).

Commercial fishermen, recreational fishermen, and coastal communities would be expected to be impacted by the proposed action in the South Atlantic. However, information on the race and income status for these individuals is not available. Because the proposed action could be expected to impact fishermen and community members in numerous communities in the South Atlantic, census data have been assessed to examine whether any coastal counties have poverty or minority rates that exceed thresholds for raising EJ concerns.

The threshold for comparison used was 1.2 times the state average for the proportion of minorities and population living in poverty (EPA 1999). If the value for the county was greater than or equal to 1.2 times this average, then the county was considered an area of potential EJ concern. Census data for the year 2010 were used. Estimates of the state minority and poverty rates, associated thresholds, and county rates are provided in **Table 3.3.8**; note that only counties that exceed the minority threshold and/or the poverty threshold are included in the table.

While some counties expected to be affected by this proposed amendment may have minority or economic profiles that exceed the EJ thresholds and, therefore, may constitute areas of concern, significant EJ issues are not expected to arise as a result of this proposed amendment. It is anticipated that the impacts from the proposed regulations may impact minorities or the poor, but not through discriminatory application of these regulations.

Table 3.3.8. Environmental Justice thresholds (2010 U.S. Census data) for counties in the South Atlantic region.
Only coastal counties (east coast for Florida) with minority and/or poverty rates that exceed the state threshold are listed.

State	County	Minority Rate	Minority Threshold*	Poverty Rate	Poverty Threshold*
Florida		**39.5**	**47.4**	**13.2**	**15.8**
	Broward	52.0	-4.6	11.7	4.1
	Miami-Dade	81.9	-34.5	16.9	-1.1
	Orange County	50.3	-2.9	12.7	3.1
	Osceola	54.1	-6.7	13.3	2.5
Georgia		**41.7**	**50.0**	**15.0**	**18.0**
	Liberty	53.2	-3.2	17.5	0.5
South Carolina		**34.9**	**41.9**	**15.8**	**19.0**
	Colleton	44.4	-2.5	21.4	-2.4
	Georgetown	37.6	4.3	19.3	-0.3
	Hampton	59.0	-17.1	20.2	-1.2
	Jasper	61.8	-19.9	19.9	-0.9
North Carolina		**32.6**	**39.1**	**15.1**	**18.1**
	Bertie	64.6	-25.5	22.5	-4.4
	Chowan	39.2	-0.1	18.6	-0.5
	Gates	38.8	0.3	18.3	-0.2
	Hertford	65.3	-26.2	23.5	-5.4
	Hyde	44.5	-5.4	16.2	1.9
	Martin	48.4	-9.3	23.9	-5.8
	Pasquotank	43.4	-4.3	16.3	1.8
	Perquimans	27.7	11.4	18.6	-0.5
	Tyrrell	43.3	-4.2	19.9	-1.8
	Washington	54.7	-15.6	25.8	-7.7

*The county minority and poverty thresholds are calculated by comparing the county minority rate and poverty estimate to 1.2 times the state minority and poverty rates. A negative value for a county indicates that the threshold has been exceeded.

Finally, the general participatory process used in the development of fishery management measures (e.g., scoping meetings, public hearings, and open South Atlantic Council meetings) is expected to provide sufficient opportunity for meaningful involvement by potentially affected individuals to participate in the development process of this amendment and have their concerns factored into the decision process. Public input from individuals who participate in the fishery has been considered and incorporated into management decisions throughout development of the amendment.

3.4 Administrative Environment

3.4.1 The Fishery Management Process and Applicable Laws

3.4.1.1 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 EEZ, an area extending 200 nautical miles (nm) 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 (Secretary) 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 is responsible for collecting and providing the data necessary for the councils to prepare fishery management plans 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. In most cases, the Secretary has delegated this authority to NMFS.

The 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 North Carolina, South Carolina, Georgia, and east Florida to Key West. The South Atlantic Council has thirteen voting members: one from NMFS; 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 South Atlantic 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.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel matters, are open to the public. The South Atlantic Council uses its Scientific and Statistical Committee (SSC) 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 Procedure Act, in the form of "notice and comment" rulemaking.

3.4.1.2 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 South Atlantic 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 is also represented at the South Atlantic Council level, but does not have voting authority at the South Atlantic Council level.

NMFS' 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.

3.4.1.3 Enforcement

Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries Office for Law 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.

Administrative monetary penalties and permit sanctions are issued pursuant to the guidance found in the Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions for the NOAA Office of the General Counsel – Enforcement Section. This Policy is published at the Enforcement Section's website: http://www.gc.noaa.gov/enforce-office3.html.

Chapter 4. Environmental Consequences and Comparison of Alternatives

4.1 Action 1. Update the South Atlantic Council's Acceptable Biological Catch (ABC) Control Rule

Alternatives for Action 1

Alternative 1 (No Action). Utilize the South Atlantic Council's ABC control rule as adopted in the Comprehensive Annual Catch Limit (ACL) Amendment to specify ABCs for snapper grouper species.

Preferred Alternative 2. Adopt the SSC's recommended approach to determine ABC values for Only Reliable Catch Stocks (ORCS). This approach will become Level 4 of the ABC Control Rule and the existing Level 4 will be renumbered as Level 5.

4.1.1 Biological Effects

Alternative 1 (No Action) would continue to utilize the South Atlantic Fishery Management Council's (South Atlantic Council) ABC control rule as adopted in the Comprehensive Annual Catch Limit (ACL) Amendment (SAFMC 2011c) to specify ABCs for snapper grouper species, including those for unassessed species. The ABC control rule, which was developed by the South Atlantic Council's Scientific and Statistical Committee (SSC), involves a systematic inspection of all sources of uncertainty, including variables such as susceptibility, vulnerability, bycatch, and discard information when estimating ABC. For assessed species, the control rule considers the probability of overfishing in determining ABC. The ABC control rule for assessed species has four dimensions included in the 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 an overfishing limit and ABC, is expressed in terms of a reduction in the probability of overfishing, or P*.

For unassessed species, the ABC control rule sets the ABC equal to the third highest or median landings from 1999-2008. **Preferred Alternative 2** would modify the ABC control rule to use the Only Reliable Catch Stocks (ORCS) approach to calculate ABC values for select unassessed stocks. The following unassessed snapper grouper species would be affected by this action: Bar Jack, Margate, Red Hind, Cubera Snapper, Yellowedge Grouper, Silk Snapper, Atlantic Spadefish, Gray Snapper, Lane Snapper, Rock Hind, Tomtate, White Grunt, Scamp, and Gray Triggerfish.

Table 4.1.1 lists unassessed species that would not be subject to the ORCS approach due to SSC concerns on the reliability of catch statistics based on variability, landings, or data collection issues and species identification.

Table 4.1.1. Unassessed species that would not be affected by the revisions to the ABC control rule proposed by this amendment.

Variability	Landings or Data Collection issues	Species ID
Black Snapper	Black Snapper	Almaco Jack
	Blackfin Snapper	Lesser Amberjack
	Sand Tilefish	Sailor's Choice
	Mahogany	Banded Rudderfish
	Dog Snapper	Yellowmouth Grouper
	Misty Grouper	Scup
	Sailor's Choice	Saucereye Porgy
	Coney	Jolthead Porgy
	Graysby	Knobbed Porgy
	Saucereye Porgy	Whitebone Porgy
	Scup	
	Queen Snapper	
	Warsaw grouper	
	Speckled hind	

Preferred Alternative 2 updates the ABC control rule for unassessed species based on recommendation developed by the South Atlantic Council's SSC. The SSC has developed no other options, modifications, or recommendations to the ABC control rule for the South Atlantic Council's consideration. Therefore, the South Atlantic Council and the National Marine Fisheries Service (NMFS) determined it is not reasonable to include additional alternatives for modifications to the ABC control rule. Updating the ABC control rule as proposed in **Preferred Alternative 2** would not have any direct biological effects. This change would have minor indirect effects on the biological environment since an improved scientific methodology would be adopted to establish ABCs for snapper grouper species that have not been assessed but for which there are reliable catch statistics. ABCs would be used to establish ACLs for individual species and for species complexes (see **Action 3**).

Modifying the ABC control rule for snapper grouper species would not 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.

This action is administrative in nature and would not have any impact on essential fish habitat or habitat areas of particular concern (HAPCs).

4.1.2 Economic Effects

Alternative 1 (No Action) would continue use of the current control rule to specify ABCs for snapper grouper species, while **Preferred Alternative 2** would change the ABC control role used to determine ABCs for species without assessments for which there are reliable catch data. **Alternative 1 (No Action)** and **Preferred Alternative 2** would have no added beneficial or adverse economic impacts because **Action 1** is an administrative action; however, **Preferred Alternative 2** would allow for subsequent actions that would change the ABCs and ACLs (**Actions 2** and **3**) for these stocks that could have beneficial and/or adverse economic impacts beyond the status quo.

4.1.3 Social Effects

Setting of the biological parameters for harvest thresholds has few direct social effects as the effects are more indirect from the implementation of the ABC and any subsequent reduction through other actions to set ACLs, annual catch targets (ACTs), and accountability measures (AMs). Because the ABC control rule already exists under **Alternative 1 (No Action)**, there would be no difference in direct social effects between **Alternative 1 (No Action)** and the proposed change in the ABC control rule under **Preferred Alternative 2**, because there would be no change to the ACLs, ACTs, and AMs that are currently in place through **Action 1**.

Changes in the ACLs that could occur if the rule used to designate an ABC for an unassessed stock is changed based on an SSC-recommended method under **Preferred Alternative 2** are expected to result in beneficial social effects. The SSC supports using this approach for cases with less information, and the ORCS method is expected to be more representative of actual conditions and stock status. More valid assessments of stock status for the species with limited information available would contribute to improved management with an approach tailored to a specific stock. Additionally, some stocks may appear to have poor stock status, which could be attributed to a lack of adequate and updated data instead of actual problems with the species. **Preferred Alternative 2** would be expected to be beneficial to the commercial fleet, for-hire fleet, private anglers, and other resource users because the ORCS method is expected to improve assessment of how much of each stock can be harvested, even if there are not accurate, up-to-date or available fishery-independent data for the stock. Because the ACLs for the species without assessments for which there are reliable catch data would not be adjusted using the new SSC ORCS methodology to specify the ABC for these stocks, including information from fishermen and scientific experts, **Alternative 1 (No Action)** would not result in any social benefits. On the other hand, the proposed updates to the ABC control rule under **Preferred Alternative 2** could help to increase some ABCs and associated ACLs, which would be more beneficial to the commercial and for-hire fleets, recreational fishermen, fishing businesses, and communities than maintaining the current ABC control rule under **Alternative 1 (No Action)**.

4.1.4 Administrative Effects

The mechanisms for specifying ABCs were established with implementation of the Comprehensive ACL Amendment (SAFMC 2011c), and reflects **Alternative 1** (**No Action**). **Preferred Alternative 2** is an administrative action and would not result in any direct changes to harvest parameters. Therefore, the administrative impacts of **Preferred Alternative 2** would be minimal, and not differ much when compared with **Alternative 1** (**No Action**). Administrative burdens may result from revising the ACL values under the preferred alternatives of **Action 3** would take the form of development and dissemination of outreach and education materials for fishery participants and law enforcement.

4.2 Action 2. Apply the revised ABC control rule to select unassessed snapper grouper species

Alternatives for Action 2

Alternative 1 (No Action). ABCs for select unassessed snapper grouper species are based on the current ABC Control Rule.

Preferred Alternative 2. Assign a risk tolerance scalar to stocks deemed by the SSC to be under low risk of overexploitation (scalar = 2):
- **Sub-alternative 2a.** Apply a risk tolerance scalar of 0.75.
- **Preferred Sub-alternative 2b.** Apply a risk tolerance scalar of 0.90.

Preferred Alternative 3. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderate risk of overexploitation (scalar = 1.5):
- **Sub-alternative 3a.** Apply a risk tolerance scalar of 0.75.
- **Preferred Sub-alternative 3b.** Apply a risk tolerance scalar of 0.80.

Preferred Alternative 4. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderately high risk of overexploitation (scalar = 1.25):
- **Sub-alternative 4a.** Apply a risk tolerance scalar of 0.70.
- **Sub-alternative 4b.** Apply a risk tolerance scalar of 0.75.
- **Sub-alternative 4c.** Apply a risk tolerance scalar of 0.50.
- **Preferred Sub-alternative 4d.** Apply a risk tolerance scalar of 0.70 for rock hind, tomtate, white grunt and gray triggerfish and 0.50 for scamp.

4.2.1 Biological Effects

Alternative 1 (No Action) would not adjust ABCs for select unassessed snapper grouper species based on the revisions to the ABC control rule specified in **Action 1 Table 4.2.1)**.

Preferred Alternatives 2-4 consider adjustments to the ABC for select unassessed snapper grouper species based on modifications to the ABC control rule in **Action 1**. **Table 4.1.1** identifies species that would not be affected by the revisions to the ABC control rule proposed by this amendment.

Based on the methodology in *Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* (Berkson et al. 2011; **Appendix H**), the South Atlantic Council's SSC recommended an approach (**Preferred Alternative 2** under **Action 1**) to compute the ABC for select unassessed stocks with reliable catch data. The approach involved selection of a "catch statistic", a scalar to denote the risk of overexploitation for the stock, and a scalar to denote the management risk level. Refer to **Section 1.6** for a description of this approach.

The SSC provided the catch statistic and risk of overexploitation for each stock, and the South Atlantic Council specified their risk tolerance level for each stock as described in **Sub-alternatives 2a-4c**. **Sub-alternative 2a** and **Preferred Sub-alternative 2b** would apply risk tolerance scalars of 0.75 and 0.90, respectively, for stocks with low risk of overexploitation (**Tables 4.2.2** and **4.2.3**). **Sub-alternative 3a** and **Preferred Sub-alternative 3b** would apply risk tolerance scalars of 0.75 and 0.80, respectively, for stocks with moderate risk of overexploitation (**Tables 4.2.4** and **4.2.5**). Finally, **Sub-alternatives 4a-4c** would use scalars of 0.70, 0.75, and 0.50, respectively, for stocks with moderately high risk of overexploitation (**Tables 4.2.6-4.2.8**). **Preferred Sub-Alternative 4d** would apply a risk tolerance scalar of 0.70 for rock hind, tomtate, white grunt, and gray triggerfish and 0.50 for scamp (**Table 4.2.9**). The sub-alternatives provide the South Atlantic Council with a range of alternatives to select the risk tolerance level for species at different risk levels of overexploitation as specified by the SSC.

The SSC classified only one species, bar jack, as having a low risk of overexploitation. Both sub-alternatives under **Alternative 2** would increase the ABC for bar jack. However, the increase in the ABC under **Preferred Sub-alternative 2b** would be about 10,000 pounds whole weight (lbs ww) greater than the resulting increase from **Sub-alternative 2a**.

Table 4.2.1. Current ABCs (lbs ww) for species addressed in this amendment.

Species	Current ABC (lbs ww)
Bar Jack	24,780
Margate	29,889
Red Hind	24,867
Cubera Snapper	24,680
Yellowedge Grouper	30,221
Silk Snapper	25,104
Atlantic Spadefish	189,460
Gray Snapper	795,743
Lane Snapper	119,984
Rock Hind	37,953
Tomtate	80,056
White Grunt	674,033
Scamp	509,788
Gray Triggerfish	626,518

Table 4.2.2. Revised ABC under Sub-alternative 2a, which applies a risk tolerance scalar of 0.75 to species with low risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.75	51,875	24,780	+27,095

Table 4.2.3. Revised ABC under **Preferred Sub-alternative 2b**, which applies a risk tolerance scalar of 0.90 to species with low risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Bar Jack	34,583	2	0.90	62,249	24,780	+37,469

The sub-alternatives under **Alternative 3** would affect stocks deemed by the SSC to be under a moderate risk of overexploitation. These stocks are margate, red hind, cubera snapper, yellowedge grouper, silk snapper, Atlantic spadefish, gray snapper, and lane snapper. Both **Sub-alternative 3a** and **Preferred Sub-alternative 3b** would result in increases to the ABCs for all stocks mentioned above.

Table 4.2.4. Revised ABCs under Sub-alternative 3a, which applies a risk tolerance scalar of 0.75 to species with moderate risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.75	71,992	29,889	+42,103
Red Hind	27,570	1.5	0.75	31,016	24,867	+6,149
Cubera Snapper	52,721	1.5	0.75	59,311	24,680	+34,631
Yellowedge Grouper	46,330	1.5	0.75	52,121	30,221	+21,900
Silk Snapper	75,269	1.5	0.75	84,678	25,104	+59,574
Atlantic Spadefish	677,065	1.5	0.75	761,698	189,460	+572,238
Gray Snapper	1,039,277	1.5	0.75	1,169,187	795,743	+373,444
Lane Snapper	169,572	1.5	0.75	190,769	119,984	+70,785

Table 4.2.5. Revised ABCs under **Preferred Sub-alternative 3b**, which applies a risk tolerance scalar of 0.80 to species with moderate risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Margate	63,993	1.5	0.80	76,792	29,889	+46,903
Red Hind	27,570	1.5	0.80	33,084	24,867	+8,217
Cubera Snapper	52,721	1.5	0.80	63,265	24,680	+38,585
Yellowedge Grouper	46,330	1.5	0.80	55,596	30,221	+25,375
Silk Snapper	75,269	1.5	0.80	90,323	25,104	+65,219
Atlantic Spadefish	677,065	1.5	0.80	812,478	189,460	+623,018
Gray Snapper	1,039,277	1.5	0.80	1,247,132	795,743	+451,389
Lane Snapper	169,572	1.5	0.80	203,486	119,984	+83,502

Sub-alternatives under **Alternative 4** would affect 5 stocks (rock hind, tomtate, white grunt, scamp, and gray triggerfish) deemed by the SSC to be under moderately high risk of overexploitation.

Table 4.2.6. Revised ABCs under Sub-alternative 4a, which applies a risk tolerance scalar of 0.70 to species with moderately high risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.70	522,269	509,788	+12,481
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

Table 4.2.7. Revised ABCs under Sub-alternative 4b, which applies a risk tolerance scalar of 0.75 to species with moderately high risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference of ABC
Rock Hind	42,849	1.25	0.75	40,171	37,953	+2,218
Tomtate	105,909	1.25	0.75	99,290	80,056	+19,234
White Grunt	735,873	1.25	0.75	689,881	674,033	+15,848
Scamp	596,879	1.25	0.75	559,574	509,788	+49,786
Gray Triggerfish	819,428	1.25	0.75	768,214	626,518	+141,696

Table 4.2.8. Revised ABCs under Sub-alternative 4c, which applies a risk tolerance scalar of 0.50 to species with moderately high risk of overexploitation.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.50	26,781	37,953	-11,172
Tomtate	105,909	1.25	0.50	66,193	80,056	-13,863
White Grunt	735,873	1.25	0.50	459,921	674,033	-214,112
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.50	512,143	626,518	-114,375

Table 4.2.9. Revised ABCs under **Preferred Sub-alternative 4d**, which applies a risk tolerance scalar of 0.70 to rock hind, tomtate, white grunt, and gray triggerfish, and a risk tolerance scalar of 0.50 to scamp.

Stock	Catch Statistic (Highest landings 1999-2007)	Risk of Overexploitation Scalar	Risk Tolerance Scalar	New ABC (lbs ww)	Current ABC (lbs ww)	Difference in ABC
Rock Hind	42,849	1.25	0.70	37,493	37,953	-460
Tomtate	105,909	1.25	0.70	92,670	80,056	+12,614
White Grunt	735,873	1.25	0.70	643,889	674,033	-30,144
Scamp	596,879	1.25	0.50	373,049	509,788	-136,739
Gray Triggerfish	819,428	1.25	0.70	717,000	626,518	+90,482

Action 2 would not functionally increase the ACLs, the revisions to ABCs would have impacts on ACLs, sector ACLs (based on commercial and recreational allocations) and the recreational ACT specified in **Action 3**. **Preferred Sub-alternatives 2b** and **3b** would result in an increase in ABC for all species. **Sub-alternative 4a** would result in ABC decreases for two stocks (rock hind and white grunt) and increases for tomtate, scamp, and gray triggerfish, with the highest increase in ABC affecting gray triggerfish. **Sub-alternative 4b** would result in an increase in ABC for all stocks deemed to be at a moderately high risk of overexploitation; whereas, under **Sub-alternative 4c** the ABC for all stocks would decrease. Changes in the ABCs would result in changes to the ACLs for species and species complexes (see **Action 3**) as ACL is a function of the ABC. **Preferred Sub-alternative 4d** would result in ABC decreases for three stocks (rock hind, white grunt, and scamp) and increases for tomtate and gray triggerfish, with the highest increase in ABC affecting gray triggerfish.

Any increase in harvest can have a negative biological impact on a species. However, all of the sub-alternatives under this action were developed by the South Atlantic Council's SSC's recommended ORCS approach and would not be expected to establish ABCs that would lead to overfishing and result in negative biological impacts. There is uncertainty involved through the selection of the risk of overexploitation scalar (determined by the SSC) and the selection of the risk tolerance scalar (selected by the South Atlantic Council). If the South Atlantic Council selects the risk tolerance scalar to achieve the most conservative values of ABC, any biological impacts would be minimized. However, while conservative ABCs, which allow for lower ACLs and harvest (**Action 3**), may provide the greatest biological benefit to the species, higher ABCs, which would allow for higher ACLs and harvest (**Action 3**), would not be expected to negatively impact the stock as long as harvest is maintained at a sustainable level and overfishing does not occur.

Applying the revised ABC control rule will not, in and of itself, affect protected species or essential fish habitat since immediate harvest objectives are based off, and not set by, the ABC. Establishing the future ACLs for select unassessed snapper grouper species in **Action 3** is an example of a specific management actions based on the ABC control rule may affect protected species or habitat. The biological effects to protected species and habitat are discussed under **Action 3**.

4.2.2 Economic Effects

Action 2 is an administrative action and would have no direct economic impact. Any indirect impact is dependent on subsequent action (**Action 3**) that would change the ACLs (because of changes to the ABCs), which could affect annual landings and economic benefits from those landings.

Alternative 2 would assign the highest scalar value, **Alternative 3** the second highest, and **Alternative 4** the lowest. **Preferred Sub-alternative 2b** would yield a higher ABC for bar jack than **Sub-alternative 2a**. **Preferred Sub-alternative 3b** would yield higher ABCs for eight snapper grouper species than **Sub-alternative 3a**. **Preferred Sub-alternative 4d** would yield higher ABCs for five species than **Sub-alternative 4c**, but lower ABCs than **Sub-alternative 4b** and **4a.** The higher the scalar value, the higher the ABC, and, potentially, the greater the increase of the ACL, annual landings, and economic benefits that derive from those landings.

4.2.3 Social Effects

As discussed in **Section 4.1.3**, the ORCS methodology is designed to incorporate expert knowledge of the species and fishery to compensate for unavailable data on some stocks, which provides some flexibility in stock status determination with unassessed stocks and presumably a more accurate account of the stock. Additionally, the use of the risk tolerance scalar allows the South Atlantic Council to incorporate expertise and direct knowledge of the stocks in this action into proactive management. This type of decision-making is beneficial to fishermen and other resource users by taking advantage of experience and knowledge of South Atlantic Council members and the public when selecting the level of risk for an ORCS species.

Adjustments in the ABC for any stock would not directly affect resource users, but the level of the ABC and the associated ACL would affect fishermen if the ACL is met or exceeded and AMs are triggered. Because the ABC for a stock is the highest level at which the ACL can be set, the specification of higher or lower ABCs in this action would result in positive and negative effects on fishermen and associated businesses and communities. In general, a higher ABC would be more beneficial to commercial and recreational fishermen as long as it is set at a level that prevents overfishing.

For bar jack, margate, rock hind, cubera snapper, yellowedge grouper, silk snapper, Atlantic spadefish, gray snapper, and lane snapper, the ACL would increase under all alternatives except for **Alternative 1 (No Action)**, which would be expected to benefit commercial and recreational fishermen by increasing access to these stocks. However, the ACLs (commercial or recreational) for most of the species have not recently been met or exceeded, and the increased ABC under **Alternative 2** (bar jack) and **Alternative 3 (**rock hind, cubera snapper, yellowedge grouper, silk snapper, Atlantic spadefish, gray snapper, and lane snapper) would not be expected to affect commercial and recreational fishermen harvesting these species except for providing room for growth if harvest increases in the future.

Because species in **Alternative 4** are designated as moderately high risk of exploitation, a lower or decrease in the ACL would be expected to benefit fishermen in the long term by reducing the risk of overfishing to occur. The proposed decreased ABC for rock hind in **Sub-alternatives 4a, 4c**, and **Preferred Sub-alternative 4d** and proposed decreased ABC for tomtate in **Sub-alternative 4c** could have some negative effects on fishermen if an AM is triggered due to a reduction in the ACL for the shallow water grouper complex. However, meeting the complex ACL and triggering the AM would not be expected. The increased ABC for these stocks under **Sub-alternative 4b** would be expected to benefit fishermen as long as overfishing does not occur.

The decreased ABC for white grunt proposed under **Sub-alternatives 4a**, **4c**, and **Preferred Sub-alternative 4d**, and for scamp under **Sub-alternatives 4c** and **Preferred 4d** could limit fishing opportunities for these species, particularly with white grunt for recreational anglers in south Florida and the Florida Keys, where the species is a popular, easy-to-target recreational species. The increased ABCs for white grunt and scamp proposed under **Sub-alternative 4b** would be expected to benefit fishermen as long as overfishing does not occur. Access to another popular species, gray triggerfish, could also be affected by changes to the ACL, particularly because of in-season closures for gray triggerfish in recent years. Under **Sub-alternative 4a**, **Sub-alternative 4b**, and **Preferred Sub-alternative 4d**, the commercial ACL for gray triggerfish is expected to increase (**Tables 4.2.6**, **4.2.7**, and **4.2.9**), which could help lengthen the commercial season for gray triggerfish. However, under **Sub-alternative 4c** the commercial ACL for gray triggerfish would decrease, respectively, which could result in more frequent and earlier closures for both sectors.

Because there is concern about the status of the scamp stock by fishermen and South Atlantic Council members due to decreasing landings in recent years, a lower risk tolerance under **Preferred Sub-alternative 4d** could be more beneficial to fishermen in the long term, even if the ABC is reduced for a period.

4.2.4 Administrative Effects

The mechanisms for determining ABCs through application of the ABC control rule were put in place with implementation of the Comprehensive ACL Amendment (SAFMC 2011c), and reflect **Action 2**, **Alternative 1** (**No Action**). Furthermore, allocations to specify sector ACLs from ABCs were identified in previous amendments. Amendment 29 considers new mechanisms for utilization of an ABC control rule to establish harvest parameters in **Action 3**. Therefore, the administrative impacts of **Preferred Alternatives 2-4**, and associated sub-alternatives would be minimal, and not differ much from **Alternative 1** (**No Action**). The administrative burden would be greater for **Action 3** than for **Action 2**, because **Action 3** considers revisions to ACLs, which include the need to monitor landings and implement AMs when ACLs are met or are projected to be met. **Action 2** would revise the ABCs but may not necessarily result in changes to the ACLs.

4.3 Action 3. Establish ACLs for select unassessed snapper grouper species

Alternatives for Action 3

1. (No Action). ACL=OY=Current ABC

2. ACL=OY=Proposed ABC
   - **Preferred 2a.** Snappers Complex
   - **Preferred 2b.** Grunts Complex
   - **Preferred 2c.** Shallow Water Grouper
   - **Preferred 2d.** Bar Jack
   - **Preferred 2e.** Atlantic Spadefish
   - 2f. Scamp
   - **Preferred 2g.** Gray Triggerfish

3. ACL=OY=0.95*Proposed ABC
   - 3a. Snappers Complex
   - 3b. Grunts Complex
   - 3c. Shallow Water Grouper
   - 3d. Bar Jack
   - 3e. Atlantic Spadefish
   - 3f. Scamp
   - 3g. Gray Triggerfish

4. ACL=OY=0.90*Proposed ABC
   - 4a. Snappers Complex
   - 4b. Grunts Complex
   - 4c. Shallow Water Grouper
   - 4d. Bar Jack
   - 4e. Atlantic Spadefish
   - **Preferred 4f. Scamp**
   - 4g. Gray Triggerfish

5. ACL=OY=0.80*Proposed ABC
   - 5a. Snappers Complex
   - 5b. Grunts Complex
   - 5c. Shallow Water Grouper
   - 5d. Bar Jack
   - 5e. Atlantic Spadefish
   - 5f. Scamp
   - 5g. Gray Triggerfish

4.3.1 Biological Effects

ACLs for unassessed snapper grouper species were set equal to the ABC in the Comprehensive ACL Amendment (SAFMC 2011c), Amendment 24 to the Snapper Grouper FMP (SAMFC 2011d), Regulatory Amendment 12 (SAFMC 2012), Regulatory Amendment 15 to the Snapper Grouper FMP (SAFMC 2013b), Regulatory Amendment 18 to the Snapper Grouper FMP (SAFMC 2013c), and Regulatory Amendment 19 to the Snapper Grouper FMP (SAFMC 2013d) since the South Atlantic Council felt that the ABC control rule was prescriptive enough to render a buffer between the ABC and ACL unnecessary. The Comprehensive ACL Amendment (SAFMC 2011c) further established recreational ACTs for species in the Snapper Grouper FMP. The ACTs adjust the ACLs by 50% or by one minus the percent standard error (PSE) of recreational landings, whichever is greater based on data from 2005-2009. PSEs for species affected by this amendment are included in **Table 4.3.1**. The South Atlantic Council concluded that 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. The current ACT functions as a performance standard, and does not trigger an AM. If an evaluation concludes that the ACT and ACL are being chronically exceeded for a species, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. For the commercial snapper grouper sector, the South Atlantic Council concluded that quota monitoring and AMs were sufficient to account for management uncertainty. Therefore, the South Atlantic Council did not establish a commercial ACT.

The Comprehensive ACL Amendment (SAFMC 2011c) also specified sector allocations for species addressed by Amendment 29 based on landings information from 1986-2008 and 2006-2008; thereby, combining past and present participation. Current sector allocations for species addressed in Amendment 29 are shown in **Table 4.3.1**. The values in **Table 4.3.1** were used to specify proposed sector ACLs in **Alternatives 2-5**.

Table 4.3.1. Existing commercial and recreational allocations for species with proposed changes in ABC. Average percent standard error (PSE) from MRIP for 2005-2009.

Species	Allocations		PSE
	Comm	Rec	
Bar jack	21.25%	78.75%	76
Margate	18.88%	81.12%	46
Red hind	73.60%	26.40%	77
Cubera snapper	19.57%	80.43%	74
Yellowedge grouper	90.77%	9.23%	86
Silk snapper	73.95%	26.05%	69
Atlantic spadefish	18.53%	81.47%	38
Gray snapper	24.23%	75.77%	11
Lane snapper	14.75%	85.25%	24
Rock hind	60.90%	39.10%	61
Tomtate	0.00%	100.00%	31
White grunt	31.59%	68.41%	21
Scamp	65.34%	34.66%	47
Gray triggerfish	43.56%	56.44%	20

Alternative 1 (No Action) would not change the current ACLs. ACL would be set equal to the optimum yield (OY), which would be set equal to the current ABC. Under this alternative, ACL values would not change from the status quo regardless of whether or not the ABC values are revised in **Action 2**. **Table 4.3.2** shows the current commercial and recreational ACLs and recreational ACTs for the species groups and individual species affected by this action.

Table 4.3.2. Current commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for unassessed species in Action 3 (Alternative 1).

Species or Complex	Comm ACL	Rec ACL	Rec ACT
Snappers Complex[a]	215,662	728,577	624,197
Grunts Complex[b]	218,539	588,113	442,970
SWG Complex[c]	49,776	46,656	23,595
Bar Jack	5,265	19,515	9,758
Atlantic Spadefish	35,108	154,352	96,470
Scamp	333,100	176,688	94,316
Gray Triggerfish	272,880	353,638	284,325

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Alternative 2 would set ACL=OY=Proposed ABC for selected sub-alternatives. **Preferred Sub-alternative 2a** would apply to the snappers complex, **Preferred sub-alternative 2b** would apply to the grunts complex, **Preferred Sub-alternative 2c** would apply to the shallow water complex, **Preferred Sub-alternative 2d** would apply to the bar jack, **Preferred Sub-alternative 2e** would apply to Atlantic spadefish, and **Preferred Sub-alternative 2g** would apply to gray triggerfish. **Sub-alternative 2f** would apply to scamp but was not selected as preferred under **Alternative 2**. Under **Action 2**, the ABC would increase for most species using the ORCS approach. As such, the ACLs would also increase. **Table 4.3.3** shows the proposed changes based on the preferred ABC alternatives in **Action 2** and **Alternative 2** in **Action 3**.

Table 4.3.3. Proposed commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for unassessed snapper grouper species in Action 3, Alternative 2 where ACL=OY=Proposed ABC. Based on preferred ABC alternatives in Action 2.

Species or Complex Sub-alt	Action 3, Alternative 2		
	Comm ACL	Rec ACL	Rec ACT
Sub-Alt 2a (Preferred) - Snappers Complex[a]	**344,884**	**1,172,832**	**984,898**
Sub-Alt 2b (Preferred) - Grunts Complex[b]	**217,903**	**618,122**	**455,962**
Sub-Alt 2c (Preferred) - SWG Complex[c]	**55,542**	**48,648**	**20,542**
Sub-Alt 2d (Preferred) - Bar Jack	**13,228**	**49,021**	**11,912**
Sub-Alt 2e (Preferred) - Atlantic Spadefish	**150,552**	**661,926**	**413,704**
Sub-Alt 2f - Scamp	243,750	129,299	69,020
Sub-Alt 2g (Preferred) - Gray Triggerfish	**312,325**	**404,675**	**325,359**

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Alternative 3 would revise the ACL definition to set ACL=OY=0.95*(Proposed ABC) for the complexes and species specified in **Sub-alternatives 3a-3g**. The proposed ABC would be based on the ORCS approach in **Action 1** and **Action 2**. **Alternative 3** would provide a buffer between ABC and ACL providing greater biological protection to species and species complexes. Proposed revisions to the ACLs and recreational ACT are in **Table 4.3.4**.

Table 4.3.4. Proposed commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for unassessed snapper grouper species in Action 3, Alternative 3, where ACL=OY=95%Proposed ABC. Based on preferred ABC alternatives in Action 2.

Species or Complex Sub-alt	Action 3, Alternative 3		
	Comm ACL	Rec ACL	Rec ACT
Sub-Alt 3a - Snappers Complex[a]	327,640	1,114,191	935,653
Sub-Alt 3b - Grunts Complex[b]	794,224	207,008	433,164
Sub-Alt 3c - SWG Complex[c]	98,981	52,764	19,515
Sub-Alt 3d - Bar Jack	12,567	46,570	11,912
Sub-Alt 3e - Atlantic Spadefish	143,025	628,830	393,018
Sub-Alt 3f - Scamp	231,563	122,834	65,569
Sub-Alt 3g - Gray Triggerfish	296,709	384,441	309,091

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Alternative 4 would revise the ACL definition to set ACL=OY=0.90*(Proposed ABC) for the species and species complexes specified in **Sub-alternatives 3a-3g**. The proposed ABC would be based on the ORCS approach in **Action 2**. **Preferred Sub-alternative 4f** was selected as preferred for the commercial and recreational ACL and recreational ACT for scamp. **Alternative 4** would provide a greater buffer between ABC and ACL than **Alternative 3,** which would lead to greater biological protection to the species. **Table 4.3.5** provides proposed commercial and recreational ACLs and recreational ACTs based on **Alternative 4**.

Table 4.3.5. Proposed commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for unassessed snapper grouper species in Action 3, Alternative 4, where ACL=OY=90%Proposed ABC. Based on preferred ABC alternatives in Action 2.

Species or Complex Sub-alt	Action 3, Alternative 4		
	Comm ACL	Rec ACL	Rec ACT
Sub-Alt 4a - Snappers Complex[a]	310,395	1,055,549	886,408
Sub-Alt 4b - Grunts Complex[b]	752,423	196,113	410,366
Sub-Alt 4c - SWG Complex[c]	93,771	49,987	18,488
Sub-Alt 4d - Bar Jack	11,905	44,119	11,317
Sub-Alt 4e - Atlantic Spadefish	135,497	595,733	372,333
Sub-Alt 4f **(Preferred)** - Scamp	219,375	116,369	62,118
Sub-Alt 4g - Gray Triggerfish	281,093	364,207	292,823

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Alternative 5 would revise the ACL definition to set ACL=OY=0.80*(Proposed ABC) for the species and species complexes specified in **Sub-alternatives 5a-5g**. The proposed ABC would be based on the ORCS approach in **Action 1** and **Action 2**. **Alternative 5** would provide the largest buffer between ABC and ACL and would provide the greatest biological protection to the species. **Table 4.3.6** provides proposed commercial and recreational ACLs and recreational ACTs based on **Alternative 5**.

Table 4.3.6. Proposed commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for unassessed snapper grouper species in Action 3, Alternative 5 where, ACL=OY=80%Proposed ABC. Based on preferred ABC alternatives in Action 2.

Species or Complex Sub-alt	Action 3, Alternative 5		
	Comm ACL	Rec ACL	Rec ACT
Sub-Alt 5a - Snappers Complex[a]	275,907	938,266	787,918
Sub-Alt 5b - Grunts Complex[b]	174,322	494,498	364,770
Sub-Alt 5c - SWG Complex[c]	44,434	38,918	16,434
Sub-Alt 5d - Bar Jack	10,582	39,217	9,530
Sub-Alt 5e - Atlantic Spadefish	120,442	529,541	330,963
Sub-Alt 5f - Scamp	195,000	103,439	55,216
Sub-Alt 5g - Gray Triggerfish	249,860	323,740	260,287

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Table 4.3.7 displays the proposed revised ACLs under **Alternatives 2-5** based on the preferred ABC alternatives specified in **Action 2**. **Table 4.3.8** illustrates the difference between the current ACLs (**Alternative 1, No Action**) and the ACLs under **Alternatives 2-5** that would result from the preferred ABC alternatives in **Action 2**.

Table 4.3.7. Proposed commercial and recreational ACLs (lbs ww) and recreational ACT (lbs ww) for preferred sub-alternatives for **Alternatives 2** and **4** in Action 3. Based on preferred ABC alternatives in Action 2.

Species or Complex Sub-alt	Action 3, Alternatives 2 & 5		
	Comm ACL	Rec ACL	Rec ACT
Sub-Alt 2a (Preferred) - Snappers Complex[a]	344,884	1,172,832	984,898
Sub-Alt 2b (Preferred) - Grunts Complex[b]	217,903	618,122	455,962
Sub-Alt 2c (Preferred) - SWG Complex[c]	55,542	48,648	20,542
Sub-Alt 2d (Preferred) - Bar Jack	13,228	49,021	11,912
Sub-Alt 2e (Preferred) - Atlantic Spadefish	150,552	661,926	413,704
Sub-Alt 4f (Preferred) - Scamp	219,375	116,369	62,118
Sub-Alt 2g (Preferred) - Gray Triggerfish	312,325	404,675	325,359

(a) Snappers: Gray snapper, lane snapper, cubera snapper, dog snapper, mahogany snapper
(b) Grunts: White grunt, margate, sailor's choice, tomtate
(c) Shallow Water Grouper: Red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper

Under all of the alternatives in **Action 3** (based on preferred ABC alternatives in **Action 2**), the sector ACLs would increase for the Snappers Complex (**Table 4.3.8**). **Alternative 2** and associated **Preferred Sub-alternatives 2a, 2d, 2e**, and **2g** would result in increases in the ACL for the Snappers Complex as well as bar jack, Atlantic spadefish, and gray triggerfish. **Preferred Sub-alternative 2b** would result in a slight decrease in the ACL for the commercial grunts ACL. The ACL for scamp would also decrease through **Preferred Alternative 4**, **Preferred Sub-alternative 4f**. **Table 4.3.9** shows the difference in commercial and recreational ACLs among the alternatives in **Action 3** and based on the preferred ABC alternatives in **Action 2**.

Table 4.3.8. Stock or stock complex commercial and recreational ACLs (lbs ww) for alternatives in Action 3 based on preferred alternatives in Action 2. Highlighted cells indicate South Atlantic Council's preferred ACL change.

STOCK OR STOCK COMPLEX NAME	Alt 1 (No Action)		Alt 2 ACL=OY=ABC		Alt 3 ACL=OY=95%ABC		Alt 4 ACL=OY=90%ABC		Alt 5 ACL=OY=80%ABC	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
SNAPPERS	215,662	728,577	344,884	1,172,832	327,640	1,114,191	310,395	1,055,549	275,907	938,266
Gray snapper	192,830	602,913	302,180	944,952	287,071	897,704	271,962	850,457	241,744	755,962
Lane snapper	17,695	102,289	30,014	173,472	28,513	164,798	27,013	156,125	24,011	138,778
Cubera snapper	4,829	19,851	12,381	50,884	11,762	48,340	11,143	45,796	9,905	40,707
Dog snapper	273	3,012	273	3,012	259	2,861	246	2,711	218	2,410
Mahogany snapper	36	512	36	512	34	486	32	461	29	410
GRUNTS	218,539	588,113	217,903	618,122	207,008	587,216	196,113	556,310	174,322	494,498
White grunt	212,896	461,136	203,405	440,484	193,235	418,460	183,065	396,436	162,724	352,387
Sailors choice	0	22,674	0	22,674	0	21,540	0	20,407	0	18,139
Tomtate	0	80,056	0	92,670	0	88,037	0	83,403	0	74,136
Margate	5,643	24,246	14,498	62,294	13,773	59,179	13,048	56,065	11,598	49,835
SHALLOW WATER GROUPERS	49,776	46,656	55,542	48,648	52,765	46,216	49,988	43,783	44,434	38,918
Red hind	18,303	6,564	24,350	8,734	23,133	8,297	21,915	7,861	19,480	6,987
Rock hind	23,115	14,838	22,833	14,660	21,691	13,927	20,550	13,194	18,266	11,728
Yellowmouth grouper	44	3,995	44	3,995	42	3,795	40	3,596	35	3,196
Yellowfin grouper	4,879	4,379	4,879	4,379	4,635	4,160	4,391	3,941	3,903	3,503
Coney	665	2,053	665	2,053	632	1,950	599	1,848	532	1,642
Graysby	2,771	14,827	2,771	14,827	2,632	14,086	2,494	13,344	2,217	11,862
INDIVIDUAL STOCKS										
Atlantic spadefish	35,108	154,352	150,552	661,926	143,025	628,830	135,497	595,733	120,442	529,541
Bar jack	5,265	19,515	11,023	40,852	12,567	46,570	11,905	44,119	10,582	39,217
Gray triggerfish	272,880	353,638	312,325	404,675	296,709	384,441	281,093	364,207	249,860	323,740
Scamp	333,100	176,688	243,750	129,299	231,563	122,834	219,375	116,369	195,000	103,439

Table 4.3.9. Stock or stock complex differences in commercial and recreational for ACLs (lbs ww) for alternatives in Action 3 based on preferred alternatives in Action 2.
Highlighted cells indicate South Atlantic Council's preferred ACL change.

STOCK OR STOCK COMPLEX NAME	Alt 1 (No Action)		Alt 2 ACL=OY=ABC		Alt 3 ACL=OY=95%ABC		Alt 4 ACL=OY=90%ABC		Alt 5 ACL=OY=80%ABC	
	Comm	Rec	Diff Comm	Diff Rec	Diff Comm	Diff Rec	Diff Comm	Diff Rec	Diff Comm	Diff Rec
SNAPPERS	215,662	728,577	129,222	444,255	111,978	385,614	94,733	326,972	60,245	209,689
Gray snapper	192,830	602,913	109,350	342,039	94,241	294,791	79,132	247,544	48,914	153,049
Lane snapper	17,695	102,289	12,319	71,183	10,818	62,509	9,318	53,836	6,316	36,489
Cubera snapper	4,829	19,851	7,552	31,034	6,933	28,489	6,314	25,945	5,076	20,856
Dog snapper	273	3,012	0	0	-14	-151	-27	-301	-55	-602
Mahogany snapper	36	512	0	0	-2	-26	-4	-51	-7	-102
GRUNTS	218,539	588,113	-636	30,009	-11,531	-897	-22,426	-31,803	-44,217	-93,615
White grunt	212,896	461,136	-9,492	-20,652	-19,661	-42,676	-29,832	-64,700	-50,172	-108,749
Sailors choice	0	22,674	0	0	0	-1,134	0	-2,267	0	-4,535
Tomtate	0	80,056	0	12,614	0	7,981	0	3,347	0	-5,920
Margate	5,643	24,246	8,856	38,048	8,130	34,933	7,405	31,819	5,955	25,589
SHALLOW WATER GROUPERS	49,776	46,656	5,766	1,992	2,989	-440	212	-2,873	-5,342	-7,738
Red hind	18,303	6,564	6,047	2,171	4,830	1,733	3,612	1,297	1,177	423
Rock hind	23,115	14,838	-282	-178	-1,424	-911	-2,565	-1,644	-4,849	-3,110
Yellowmouth grouper	44	3,995	0	0	-2	-200	-4	-400	-9	-799
Yellowfin grouper	4,879	4,379	0	0	-244	-219	-488	-438	-976	-876
Coney	665	2,053	0	0	-33	-103	-67	-205	-133	-411
Graysby	2,771	14,827	0	0	-139	-741	-277	-1,483	-554	-2,965
INDIVIDUAL STOCKS									0	0
Atlantic spadefish	35,108	154,352	115,444	507,574	107,917	474,478	100,389	441,381	85,334	375,189
Bar jack	5,265	19,515	5,759	21,336	7,302	27,055	6,640	24,604	5,318	19,701
Gray triggerfish	272,880	353,638	39,445	51,037	23,829	30,803	8,212	10,569	-23,020	-29,898
Scamp	333,100	176,688	-89,350	-47,390	-101,537	-53,854	-113,725	-60,319	-138,100	-73,249

Alternatives 3-5 and associated sub-alternatives would have a greater positive biological effect than **Alternative 2** and associated sub-alternatives because they would create a buffer between the ACL/OY and ABC, with **Alternative 5** and associated sub-alternatives setting the most conservative ACL at 80% of the ABC (**Tables 4.3.1-4.3.8**). 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 SSB_{MSY}. However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The National Standard 1 guidelines indicate the 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.

Alternatives under **Action 3** would increase the ACL for some species or species complexes or decrease the ACL for species or species complexes. For most species and species complexes affected by the actions in this amendment, the ACLs are currently not being met. If harvest is less than the proposed ACLs, biological effects would be expected to be minimal.

Regardless of the alternative or sub-alternative selected, none is anticipated to have adverse effects on listed coral species, large whales, or any distinct population segment (DPS) of Atlantic sturgeon. Previous Endangered Species Act (ESA) consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect listed coral species, large whales, or any DPS of Atlantic sturgeon. For the species that may interact with the fishery (i.e., sea turtles and smalltooth sawfish), there is likely to be no additional biological benefit from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between these ESA-listed species and the fishery. The impacts from **Alternatives 2-5** (and associated sub-alternatives) on sea turtles and smalltooth sawfish are unclear. If alternatives, which increase ACLs, lead to greater fishing effort in the fishery as a whole, both preferred alternatives would likely be less biologically beneficial to sea turtles and smalltooth sawfish. Conversely, if the proposed ACL increases do not increase fishing effort as a whole but simply shift the level of existing effort then these alternatives are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. Based on the same rationale, alternatives that result in the smallest ACLs are likely to have more biological benefit to sea turtles and smalltooth sawfish than those alternatives that result in larger ACLs.

Regardless of the alternative or sub-alternatives selected as preferred, none is expected to have impacts on essential fish habitat or HAPCs. ACLs for some species may increase, potentially causing increased effort in the snapper grouper fishery. However, this increased effort is not expected to have an impact on habitat.

4.3.2 Economic Effects

Alternative 1 (**No Action**) would not change the ACLs for any snapper grouper species or complex, whereas **Alternatives 2-5** would change the ACLs for three species complexes and four species. None of the alternatives of **Action 3** would affect the ACL of the Deepwater Complex or status quo net economic benefits that derive from landings of the Deepwater Complex. Among the action alternatives,

Alternative 2 would allow for the largest increases in the ACLs, followed in turn by **Alternatives 3**, **4**, and **5**.

Preferred Sub-alternatives 2a-2e and **2g** would generate the largest increases in the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, Grunts Complex, Shallow Water Grouper Complex and Snappers Complexes. **Sub-alternative 5f** would generate the largest decrease in the total ACL for scamp, followed in turn by **Preferred Sub-alternatives 4f**, **3f**, **2f**, and **Alternative 1 (No Action).** These changes represent potential changes in net economic benefits that derive from landings of the three complexes and four species. Actual economic impacts are dependent on baseline landings relative to the current and revised ACLs.

None of the alternatives are expected to change annual commercial landings of Atlantic spadefish, Grunts Complex, scamp, Shallow Water Grouper Complex, or Snappers Complex because baseline landings are less than the current and alternative commercial ACLs (**Table 4.3.10**). **Preferred Sub-alternative 2g** yields the largest increase in annual commercial landings of gray triggerfish and associated economic net benefits, followed in turn by **Sub-alternatives 3g** and **4g.** **Alternative 5** would reduce annual commercial landings and associated economic benefits from gray triggerfish. **Preferred Sub-alternative 2d** and **Sub-alternatives 3d**, **4d**, and **5d** would generate the same increase in commercial landings of and associated economic benefits from bar jack.

Table 4.3.10. Comparison of baseline commercial landings and alternative commercial ACLs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells represent where commercial ACL for gray triggerfish would be less than its baseline landings.

Species or Complex	Commercial ACL (lbs ww)					Baseline landings (lbs ww)
	1	2	3	4	5	
Atlantic Spadefish (a)	35,108	150,552	143,025	135,497	120,442	2,747 - 15,284
Bar Jack (d)	5,265	13,228	12,567	11,905	10,582	5,161 - 6,694
Gray Triggerfish (g)	272,880	312,325	296,709	281,093	249,860	295,858 - 307,606
Grunts (b)	218,539	217,903	207,008	196,113	174,322	91,310 - 100,785
Scamp (f)	333,100	243,750	231,563	219,375	195,000	153,253 - 193,412
Shallow Water Grouper (c)	49,776	55,542	52,765	50,823	46,105	18,615 - 35,424
Snappers (e)	215,662	344,884	327,640	310,549	275,907	78,101 - 129,303

A comparison of baseline recreational landings and the alternative recreational ACLs shows none of the alternatives of Action 3 would produce a change in annual recreational landings of Atlantic spadefish, bar jack, Grunts Complex, scamp, Shallow Water Grouper Complex, or Snappers Complex (**Table 4.3.11**). **Preferred Sub-alternative 2g** and **Sub-alternative 3g** would yield the same increases in recreational landings of and associated economic benefits from gray triggerfish. **Sub-alternatives 4g** and **5g** would reduce annual recreational landings of and associated economic benefits from gray triggerfish, with **Sub-alternative 5g** having the largest adverse impact.

Table 4.3.11. Comparison of baseline recreational landings and recreational ACLs based on alternatives in Action 3 and preferred alternatives in Action 2. Highlighted cells represent where recreational ACL would be less than baseline landings.

Species or Complex	Recreational ACL (lbs ww)					Baseline landings (lbs ww)
	1	2	3	4	5	
Atlantic Spadefish (a)	154,352	661,926	628,830	595,733	529,541	120,492
Bar Jack (d)	19,515	49,021	46,570	44,119	39,217	2,384
Gray Triggerfish (g)	353,638	404,675	384,441	364,207	323,740	378,725
Grunts (b)	588,113	618,122	588,350	558,577	499,032	383,850
Scamp (f)	176,688	129,299	122,834	116,369	103,439	62,130
Shallow Water Grouper (c)	46,656	48,648	47,478	46,309	43,969	23,256
Snappers (e)	728,577	1,172,832	1,114,190	1,055,549	938,766	616,216

4.3.3 Social Effects

The specified catch levels can have substantial negative effects when an ACL is met or exceeded, in which case AMs, which restrict or close harvest, could negatively impact the commercial fleet, for-hire fleet, and private anglers. In general, the higher the ACL, the greater the short-term social and economic benefits that would be expected to accrue, assuming overfishing does not occur. Adherence to sustainable harvest goals is assumed to result in net long-term positive social and economic benefits. Additionally, adjustments in an ACL based on updated information from a stock assessment would be the most beneficial in the long term to fishermen and communities because catch limits would be based on the current conditions.

Because **Alternative 1 (No Action)** would not update the ACLs based on the ABCs specified in **Action 2**, commercial and recreational fishermen could not benefit from the proposed increases in harvest levels, which reduce the likelihood of triggering an in-season closure or payback provision due to an overage. Additionally, under **Alternative 1 (No Action)** the ACLs would not be based on the most updated, relevant information about the stocks that is provided in the ORCS methodology as they are in **Alternatives 2-5**. **Alternatives 2-5** would update the ACLs based on the ABCs specified in **Action 2**, but depending on the percentage of the ABC that is selected, could only provide benefits to the fishermen if the proposed ACL is an increase over the current ACL for a given stock. **Preferred Sub-alternatives 2a, 2b, 2c, 2d, 2e,** and **2g** would be the most beneficial to fishermen targeting these species by setting the ACL at the highest level allowed by the ABC specified in **Action 2**, and **Sub-alternatives 5a-5g** under **Alternative 5** would be the least beneficial, with the exception of scamp under **Sub-alternative 5f,** which provides an additional buffer for scamp to reduce the risk of overfishing. However, because the ABCs set in **Action 2** are based on ORCS methodology and for stocks with limited available data, a buffer as in **Alternatives 3-5** could be more beneficial to resource users in the long term, if future data indicate the ABCs should be lower.

4.3.4 Administrative Effects

Alternatives that result in higher ACLs for species or species complexes could slightly reduce administrative burdens because the likelihood of triggering AMs would be reduced. Conversely, alternatives that decrease ACLs could increase the administrative burden because it would be more likely that AMs would be triggered, and action would be needed to ensure overfishing did not occur. Administrative burdens also may result from revising the values under the alternatives in the form of development and dissemination of outreach and educational materials for fishery participants and law enforcement.

4.4 Action 4: Modify the minimum size limit for gray triggerfish

Alternatives for Action 4

Alternative 1 (No Action). The minimum size limit is 12 inches total length (TL) in federal waters off the east coast of Florida and 12 inches fork length (FL) in state waters off the east coast of Florida.

Alternative 2. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off the east coast of Florida.
- **Sub-alternative 2a.** The minimum size limit applies to the commercial sector.
- **Sub-alternative 2b.** The minimum size limit applies to the recreational sector.

Preferred Alternative 3. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia.
- **Preferred Sub-alternative 3a.** The minimum size limit applies to the commercial sector.
- **Preferred Sub-alternative 3b.** The minimum size limit applies to the recreational sector.

Alternative 4. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off North Carolina, South Carolina, Georgia, and the east coast of Florida.
- **Sub-alternative 4a.** The minimum size limit applies to the commercial sector.
- **Sub-alternative 4b.** The minimum size limit applies to the recreational sector.

Preferred Alternative 5. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off the east coast of Florida.
- **Preferred Sub-alternative 5a.** The minimum size limit applies to the commercial sector.
- **Preferred Sub-alternative 5b.** The minimum size limit applies to the recreational sector.

4.4.1 Biological Effects

Currently, the commercial and recreational minimum size limit for South Atlantic gray triggerfish is 12 inches total length (TL) in federal waters off the east coast of Florida and 12 inches fork length (FL) in east Florida state waters (**Alternative 1, No Action**). In the Gulf of Mexico EEZ, and in state waters off the west coast of Florida, the commercial and recreational minimum size limit is 14 inches FL. The South Atlantic Council is considering alternatives to modify the minimum size limit.

A stock assessment for South Atlantic gray triggerfish (SEDAR 32 2013) provided an equation to estimate TL from a FL measurement (**Table 4.4.1**). Unfortunately, significant discrepancies in ageing led the analysts to postpone completion of the assessment until 2015. Based on this equation, a 12-inch TL gray triggerfish is equal to a 10.46 inch FL gray triggerfish. SEDAR 32 determined the mid-range of discard mortality to be 12.5%. This information was used in the size limit analysis for **Action 4**. Additional information on the details on the gray triggerfish size limit analysis can be found in **Appendix G**.

Table 4.4.1. Total length to fork length conversions for South Atlantic gray triggerfish.

Conversion	Model
Total Length (mm) to Fork Length (mm)	Total Length = 1.19*(Fork Length) – 11.42

Source: SEDAR 32.

Commercial Sector

Alternative 1 (No Action) would retain the minimum size limit for gray triggerfish at 12 inches TL in federal waters off east Florida and 12 inches FL in east Florida state waters. During 2007-2012, there was a slight increase in average length of gray triggerfish harvested by the commercial sector (**Table 4.4.2** and **Figure 4.4.1**).

Table 4.4.2. Average fork length of gray triggerfish for the South Atlantic commercial sector by year, 2007-2012.

Year	Average Fork Length (inches)	Number measured (n)
2007	15.07	1,882
2008	14.98	1,714
2009	14.73	1,845
2010	15.36	2,148
2011	15.42	2,680
2012	15.29	1,862

Source: SEFSC Trip Interview Program (TIP) data.

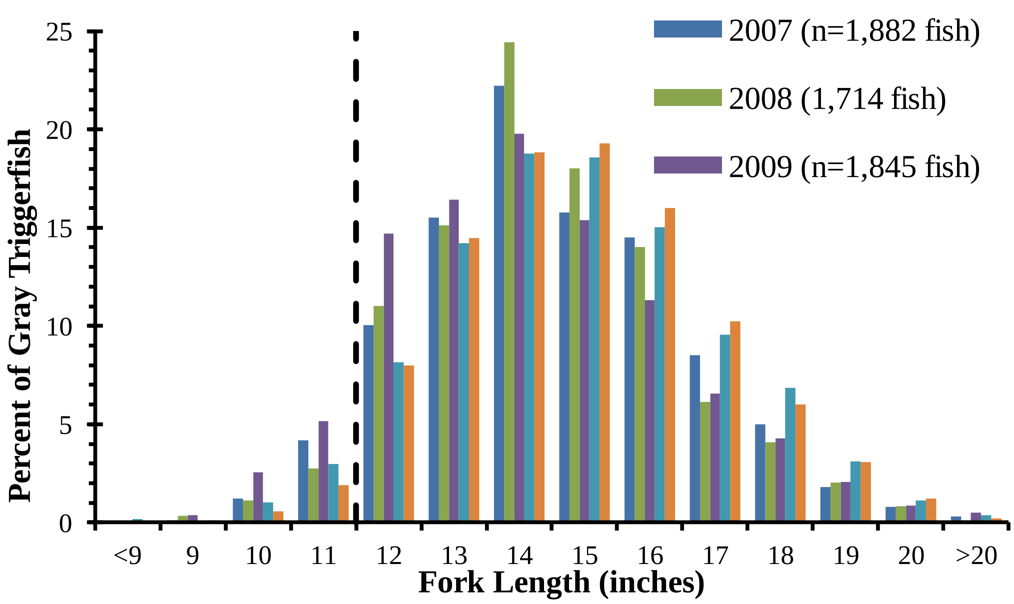

Figure 4.4.1. Distribution of gray triggerfish lengths by year for the commercial sector in the South Atlantic. Note: dashed line represents 12 inches folk length.

Alternative 2 would specify a minimum size limit for gray triggerfish of 12 inches FL in federal waters off east Florida. Currently the commercial and recreational minimum size limit for South Atlantic gray triggerfish is 12 inches TL in federal waters off east Florida and 12 inches FL in east Florida state waters. Under **Alternative 2**, commercial harvest of gray triggerfish in Florida could be reduced by 2.1% (± 2.0%) in 2014. On a monthly basis, this might reduce commercial landings in Florida by up to 6% (**Table 4.4.3**). On average, during 2007-2012, commercial landings in Florida accounted for 19% (± 5%) of the annual gray triggerfish commercial harvest in the South Atlantic (**Table 4.4.3**). As this reduction is only 2.1% of 19% of the total harvest, it is relatively minor (0.4% reduction), and only adds around one fishing day to the season (**Table 4.4.4**).

Table 4.4.3. Mean percent commercial gray triggerfish landings in Florida between 10.46 – 12 inches FL, during 2007-2012.

MONTH	MEAN (2007-2012)	SD	N
January	0%	1%	435
February	0%	0%	257
March	1%	1%	304
April	1%	1%	109
May	0%	1%	175
June	0%	0%	209
July	6%	7%	367
August	5%	6%	378
September	0%	1%	223
October	2%	6%	165
November	6%	14%	132
December	4%	5%	232

Table 4.4.4. Projected commercial gray triggerfish quota closure dates for the 2014 fishing season under **Alternative 2** (12" FL off east Florida) for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	26-Jul	No Closure	21-Apr
312,325	Action 3, Alt 2	19-Aug	No Closure	12-May
296,709	Action 3, Alt 3	9-Aug	No Closure	3-May
281,093	Action 3, Alt 4	2-Aug	No Closure	26-Apr
249,860	Action 3, Alt 5	8-Jul	No Closure	8-Apr

Currently there is no minimum size limit off North Carolina, South Carolina, and Georgia, which account for 81% of the gray triggerfish commercial landings, and the minimum size limit for South Atlantic gray triggerfish is 12 inches TL (10.46 inches FL) in federal waters off east Florida and 12 inches FL in east Florida state waters. **Preferred Alternative 3** would specify a minimum size limit for gray triggerfish of 12 inches FL in federal waters off North Carolina, South Carolina, and Georgia. Establishing a 12-inch FL minimum size limit off Georgia, South Carolina, and North Carolina, with no change in the minimum size limit off east Florida, would provide a slight reduction in harvest rates of gray triggerfish (**Table 4.4.5**). These reductions in harvest would extend the gray triggerfish season by 2-4 days (**Table 4.4.6**).

Table 4.4.5. Mean percent of commercial gray triggerfish landings less than 12 inches FL in the South Atlantic during 2007-2012.

MONTH	MEAN	SD
January	2%	2%
February	2%	1%
March	2%	1%
April	1%	1%
May	2%	1%
June	3%	1%
July	4%	4%
August	3%	3%
September	2%	1%
October	2%	3%
November	2%	3%
December	4%	1%

Table 4.4.6. Projected commercial gray triggerfish quota closure dates for the 2014 fishing season under **Preferred Alternative 3** (12" FL off NC, SC, and GA) for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	30-Jul	No Closure	23-Apr
312,325	Action 3, Alt 2	21-Aug	No Closure	15-May
296,709	Action 3, Alt 3	11-Aug	No Closure	5-May
281,093	Action 3, Alt 4	4-Aug	No Closure	28-Apr
249,860	Action 3, Alt 5	11-Jul	No Closure	10-Apr

Alternative 4 would specify a minimum size limit for gray triggerfish of 14 inches FL in federal waters off North Carolina, South Carolina, Georgia, and east Florida, which is equal to the minimum size limit that is currently in place in state and federal waters of west Florida and the Gulf of Mexico. Establishing a minimum size limit of 14 inches FL off Georgia, South Carolina, and North Carolina, and increasing the federal minimum size limit off east Florida, would provide a reduction in harvest rates under **Alternative 4** (**Table 4.4.7**). These reductions would extend the gray triggerfish season by 25-37 days (**Table 4.4.8**).

Preferred Alternative 5 would specify a 14-inch FL minimum size limit for gray triggerfish in federal waters off east Florida. If only **Preferred Alternative 5** is selected, the commercial fishing season would be extended by 3 to 7 days (**Table 4.4.9**). If both **Preferred Alternatives 3** and **5** are selected, the commercial fishing season would be extended by 6 to 11 days (**Table 4.4.10**)

Table 4.4.7. Mean percent of commercial gray triggerfish landings less than 14 inches FL in the South Atlantic during 2007-2012.

MONTH	MEAN	SD
January	14%	3%
February	12%	5%
March	15%	5%
April	15%	5%
May	19%	7%
June	25%	7%
July	26%	5%
August	25%	7%
September	22%	11%
October	14%	11%
November	11%	7%
December	19%	4%

Table 4.4.8. Projected commercial gray triggerfish quota closure dates for the 2014 fishing season under Alternative 4 (14" FL off NC, SC, GA, and FL) for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	31-Aug	No Closure	16-May
312,325	Action 3, Alt 2	20-Sep	No Closure	11-Jun
296,709	Action 3, Alt 3	11-Sep	No Closure	30-May
281,093	Action 3, Alt 4	4-Sep	No Closure	21-May
249,860	Action 3, Alt 5	14-Aug	No Closure	1-May

Table 4.4.9. Projected commercial gray triggerfish quota closure dates for the 2014 fishing season under **Preferred Alternative 5** (14" FL off east Florida) for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	2-Aug	No Closure	24-Apr
312,325	Action 3, Alt 2	25-Aug	No Closure	16-May
296,709	Action 3, Alt 3	15-Aug	No Closure	7-May
281,093	Action 3, Alt 4	7-Aug	No Closure	29-Apr
249,860	Action 3, Alt 5	13-Jul	No Closure	11-Apr

Table 4.4.10. Projected commercial gray triggerfish quota closure dates for the 2014 fishing season under combined effects of **Preferred Alternative 3** and **Preferred Alternative 5** for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	5-Aug	No Closure	27-Apr
312,325	Action 3, Alt 2	29-Aug	No Closure	19-May
296,709	Action 3, Alt 3	18-Aug	No Closure	9-May
281,093	Action 3, Alt 4	10-Aug	No Closure	2-May
249,860	Action 3, Alt 5	17-Jul	No Closure	13-Apr

There would be little difference in the biological benefits of **Alternatives 1 (No Action)-5,** since the establishment of a minimum size limit would not be very restrictive on the commercial harvest of gray triggerfish. A minimum size limit of 12 inches FL for North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** would provide slightly greater spawning opportunities for gray triggerfish, relative to no action (**Alternative 1**). A minimum size limit of 14 inches FL under **Alternative 4** (North Carolina, South Carolina, Georgia, and east Florida), and **Preferred Alternative 5** (east Florida only) would provide the greatest spawning opportunities among the alternatives considered. Therefore, biological benefits would be greatest for **Alternative 4**, followed by **Preferred Alternative 5**, **Preferred Alternative 3**, **Alternative 2**, and **Alternative 1** (**No Action**) for the commercial sector.

<u>Recreational Sector</u>

A recreational ACL of 367,303 lbs ww was implemented for the South Atlantic gray triggerfish recreational sector in the Comprehensive ACL Amendment on April 16, 2012 (SAFMC 2011c). However, this ACL was based on Marine Recreational Fisheries Statistics Survey (MRFSS) data, and the recreational survey method was recently modified and changed to the Marine Recreational Information Program (MRIP). Effective July 17, 2013, Regulatory Amendment 13 (SAFMC 2013a) revised the gray triggerfish recreational ACL using MRIP data, which resulted in a recreational ACL of 353,638 lbs ww. **Table 4.4.11** shows the proposed recreational ACLs for gray triggerfish based on the ABC for gray triggerfish specified under **Preferred Sub-alternative 4a** in **Action 2**. Applying the proposed alternatives in **Action 3** to that ABC would result in the ACLs listed in **Table 4.4.11.** Recreational landings from 2007 to 2012 are provided for comparison. Recreational landings for 2011-2012 would not have exceeded the proposed ACLs under **Alternatives 2-5** of **Action 3**.

Table 4.4.11. Annual recreational landings for gray triggerfish in the South Atlantic (2007-2012) compared with the current recreational ACL and the proposed commercial ACLs from Action 3.

Year	Landings (lbs ww)	Act 3 Alt 1	% of Alt 1	Act 3 Alt 2	% of Alt 2	Act 3 Alt 3	% of Alt 3	Act 3 Alt 4	% of Alt 4	Action 3 Alt 5	% of Alt 5
2007	490,370	353,638	139%	404,675	121%	384,441	128%	364,207	135%	323,740	151%
2008	587,697	353,638	166%	404,675	145%	384,441	153%	364,207	161%	323,740	182%
2009	537,773	353,638	152%	404,675	133%	384,441	140%	364,207	148%	323,740	166%
2010	462,836	353,638	131%	404,675	114%	384,441	120%	364,207	127%	323,740	143%
2011	355,817	353,638	101%	404,675	88%	384,441	93%	364,207	98%	323,740	110%
2012	351,030	353,638	99%	404,675	87%	384,441	91%	364,207	96%	323,740	108%

Source: SEFSC ACL Data (November 2013).
***Note. An ACL was not established for gray triggerfish until 2012.**

The average length of gray triggerfish increased during the period 2008 to 2012 (**Table 4.4.12** and **Figure 4.4.2**). Changes in fish size over time can influence the reduction of landings estimated from changes in the minimum size limit. To control for this impact, only data from the previous three years (2010-2012) were used for size limit analysis. These are also the three most recent fishing years, which most likely represent future landings.

Table 4.4.12. Average fork length of gray triggerfish for the South Atlantic recreational sector, 2008-2012.

Year	Average Fork Length (inches)	n
2008	13.4	832
2009	13.5	1,055
2010	13.6	1,863
2011	13.8	1,487
2012	13.8	1490

Source: MRIP and headboat survey.

Figure 4.4.3 shows the distribution of length information from the Florida east coast based on data from MRIP intercepts. Headboat length data were not included since there is no information on location of catch in federal and state waters.

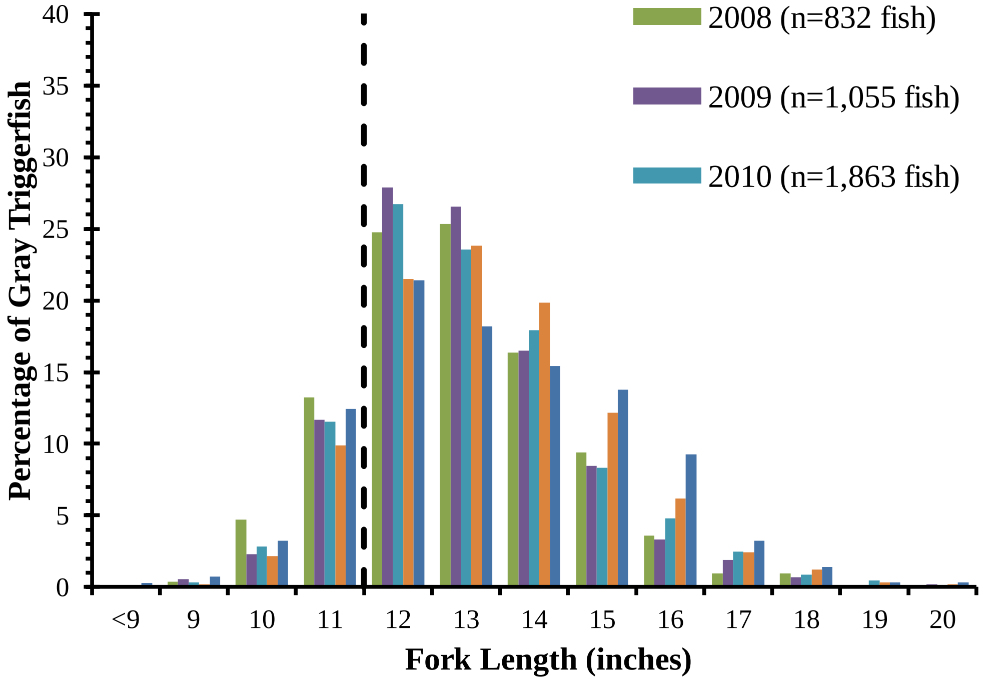

Figure 4.4.2. Distribution of South Atlantic gray triggerfish lengths by year from the recreational sector, 2008-2012.
MRIP and headboat data are included. Dashed line represents 12 inches fork length.

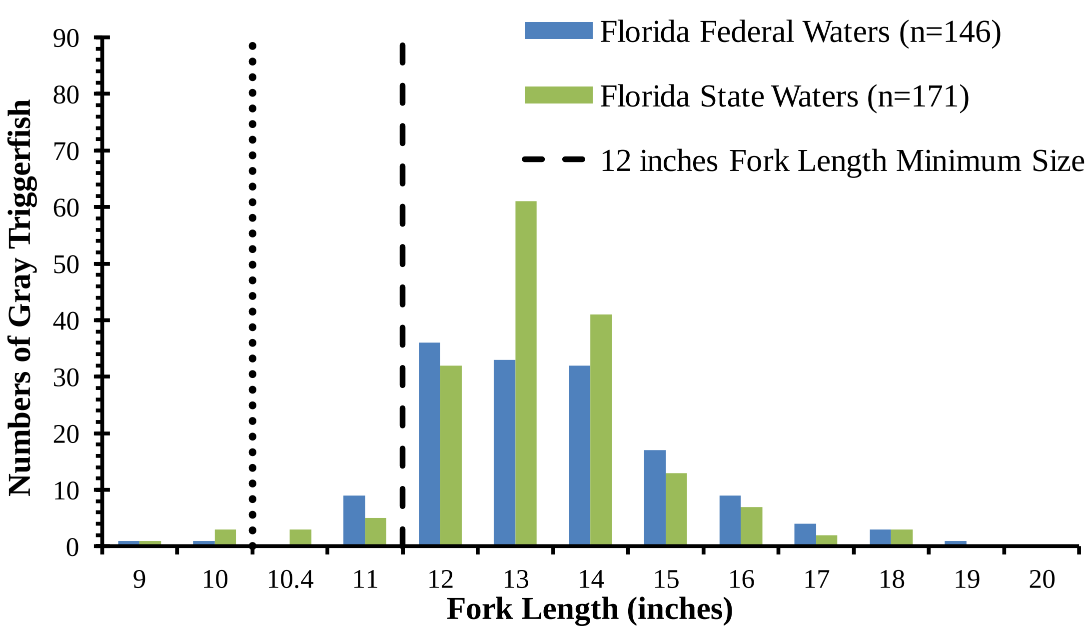

Figure 4.4.3. Distribution of Florida east coast gray triggerfish lengths from the recreational sector separated by catches in federal and state waters, 2010-2012.
Dotted line represents 10 inches fork length.

Alternative 2 would change the minimum size limit in federal waters off the east coast of Florida from 12 inches TL to 12 inches FL. This would be an increase from 10.46 inches FL to 12 inches FL. The percent reduction in harvest from increasing the minimum size to 12 inches FL in east Florida federal waters is shown in **Table 4.4.13.** The reduction in annual gray triggerfish landings in the South Atlantic during 2010 to 2012 resulting from a 12 inch FL minimum size limit off east Florida ranges from 0.82 to 1.06% (**Table 4.4.14**).

Table 4.4.13. Percent reduction in the South Atlantic recreational gray triggerfish landings for increasing the minimum size in Florida waters from 12 inches total length (10.46 inches FL) to 12 inches fork length (Alternative 2).

MRIP		
	Charter	Private
12 inches FL	5.3	1.5
Headboat		
January	6.3	
February	13.7	
March	7.5	
April	10.1	
May	10.9	
June	11.4	
July	10.7	
August	6.3	
September	4.5	
October	5.2	
November	3	
December	4.5	

Note: Reductions were calculated in terms of gray triggerfish weight (lb) following SERO-LAPP-2012-02. The percent reductions for MRIP were calculated for federal waters. Headboat length data did not have jurisdictional information on the catch location (federal or state waters) so the percent reductions reflect both federal and state waters combined. Monthly percent reductions were calculated for headboat data since monthly samples sizes were adequate.

Table 4.4.14. Percent reduction in annual South Atlantic recreational sector gray triggerfish landings from increasing the minimum size in Florida federal waters from 12 inches TL (10.46 inches FL) to 12 inches FL.

Year	% Reduction in Total Landings
2010	0.82
2011	1.07
2012	1.06

Note: MRIP and headboat landings included.

Preferred Alternative 3 considers a minimum size limit of 12 inches FL for gray triggerfish in federal waters of North Carolina, South Carolina, and Georgia, and no change to the minimum size limit off east Florida. Currently there is no minimum size limit off North Carolina, South Carolina, and Georgia. The percent reductions in harvest by mode from increasing the minimum size to 12 inches FL (**Preferred Alternative 3**) are shown in **Table 4.4.15**.

Table 4.4.15. Percent reductions in gray triggerfish landings for the South Atlantic recreational sector by mode from implementing a 12-inch FL minimum size limit off North Carolina, South Carolina, and Georgia (**Preferred Alternative 3**).

	MRIP		Headboat
Mode	Charter	Private	Charter
12 inches FL	6.7	1.6	8

Note: Harvest reductions were calculated in terms of gray triggerfish weight (lbs ww). The percent reductions for MRIP were calculated for federal waters. Headboat length data did not have jurisdictional information on the catch location (federal or state waters). Thus, the percent reductions reflect both federal and state waters combined.

Table 4.4.16 provides the results of the annual reduction in landings for the recreational sector (all modes combined) for 2010-2012.

Table 4.4.16. Percent reduction in annual South Atlantic gray triggerfish landings for the recreational sector from implementing a 12-inch FL size limit in North Carolina, South Carolina, and Georgia federal waters.

Year	% Reduction in Total Landings
2010	2.7
2011	2.7
2012	3.7

Note: MRIP and headboat landings included.

Alternative 4 proposes a minimum size limit of 14 inches FL for the federal waters of North Carolina, South Carolina, Georgia, and east Florida. Currently there is no minimum size limit off North Carolina, South Carolina, and Georgia. However, there is a minimum size limit in federal waters of east Florida, which would be increased from 12 inches TL to 14 inches FL. Furthermore, a 14-inch FL minimum size is in place in state and federal waters of west Florida. **Tables 4.4.17** and **4.4.18** provide percent harvest reduction results.

Table 4.4.17. Percent reduction in gray triggerfish harvest generated from MRIP data for the South Atlantic recreational sector from implementing a 14-inch FL minimum size limit in federal waters of North Carolina, South Carolina, Georgia, and east Florida (Alternatives 4 and 5).

Location	Mode	
	Charter	Private
Federal FL Waters	41.8	36.8
Federal NC, SC, and GA Waters	37.1	21.4

Note: Percent reductions were calculated in terms of gray triggerfish weight (lbs).

Table 4.4.18. Percent reduction in gray triggerfish harvest generated from headboat data for the South Atlantic recreational sector from implementing a 14-inch FL minimum size limit in North Carolina, South Carolina, Georgia, and east Florida (Alternatives 4 and 5).

	Month	Reduction
FL Waters	January	47.6
	February	50.4
	March	52.4
	April	48.9
	May	45.5
	June	54.7
	July	51.9
	August	46.6
	September	36.5
	October	38.1
	November	38.9
	December	38.1
NC, SC, and GA Waters	45.1	

Note: Percent reductions were calculated in terms of gray triggerfish weight (lbs ww). Headboat length data did not have jurisdictional information on the catch location (federal or state waters) so the percent reductions reflect both federal and state waters combined.

To reflect the management change in **Alternative 4**, the percent reductions in harvest were applied to federal waters landings on the east coast of Florida and the percent reductions in harvest generated for North Carolina, South Carolina, and Georgia were applied to the federal waters landings of those three states. The reduced east Florida federal landings and reduced North Carolina, South Carolina, and Georgia federal landings were then added to the North Carolina, South Carolina, Georgia, and east Florida state water landings.

Preferred Alternative 5 would specify a 14-inch FL minimum size limit for gray triggerfish in federal waters off east Florida. If only **Preferred Alternative 5** is selected, the expected reduction in gray triggerfish recreational harvest for the South Atlantic would range from 4.9 to 6.0% (**Table 4.4.19**). If both **Preferred Alternatives 3** and **5** are selected, the reduction in gray triggerfish harvest would range from 7.5 to 9.7% (**Table 4.4.19**).

Table 4.4.19. Percent reduction in annual South Atlantic recreational sector gray triggerfish landings from implementing size limits under Alternatives 2-5 and **Preferred Alternatives 3** and **5** combined.

Year	Alt 2	Pref Alt 3	Alt 4	Pref Alt 5	Pref Alts 3 and 5
2010	0.8	2.7	22.3	4.9	7.5
2011	1.1	3.7	21.9	6.0	8.7
2012	1.1	3.7	28.0	6.0	9.7

Note: MRIP and headboat landings included.

There would be little difference in the biological benefits of **Alternatives 1 (No Action), Alternative 2,** and **Preferred Alternative 3** since the establishment of a 12 inch FL minimum size limit under **Alternative 2** and **Preferred Alternative 3** would do little to restrict commercial or recreational harvest of gray triggerfish in the South Atlantic. A minimum size limit of 12 inch FL for North Carolina, South Carolina, and Georgia under **Preferred Alternative 3** would provide slightly greater spawning opportunities for gray triggerfish, relative to no action (**Alternative 1**). A minimum size limit of 14 inches FL under **Alternative 4** (North Carolina, South Carolina, Georgia, and east Florida), and **Preferred Alternative 5** (east Florida only) would provide the greatest spawning opportunities of the alternatives considered. Therefore, biological benefits would be greatest for **Alternative 4**, followed by **Preferred Alternatives 3** and **5** combined, **Preferred Alternative 5, Preferred Alternative 3, Alternative 2**, and **Alternative 1** (**No Action**) for the recreational sector.

In terms of discard mortality, the absence of a minimum size limit would seem most biologically beneficial. However, as mentioned previously, gray triggerfish experience low discard mortality (12.5%) and the latter was taken into account when calculating percent reductions in harvest as a result of the proposed changes. Therefore, discard mortality is not expected to result in negative biological impacts.

Modifying minimum size limits for gray triggerfish would not have an impact on habitat or HAPCs or protected species. Each alternative, regardless of the one selected, is unlikely to have adverse effects on listed coral species, large whales, or any DPS of Atlantic sturgeon. Previous ESA consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect listed coral species, large whales, or any DPS of Atlantic sturgeon. For the species that may interact with the fishery (i.e., sea turtles and smalltooth sawfish), there is likely to be no additional biological benefit from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between these ESA-listed species and the fishery. For both sectors, the biological benefits to sea turtles and smalltooth sawfish are likely to be greatest from **Alternative 4**. This alternative is the most restrictive and if it ultimately reduces the overall effort in the fishery, the likelihood of interaction between these species and the fishery as a whole may decrease. However, if the alternative simply displaces effort and does not reduce it, **Alternative 4** may have very little biological benefit for these species. Following the same rationale, **Alternative 2**, **Preferred Alternative 3,** and **Preferred Alternative 5** are likely to be similar in their overall benefit to the species, which is likely to be less biologically beneficial than **Alternative 4**.

4.4.2 Economic Effects

Alternative 1 (No Action) would have no added adverse or beneficial economic impact. **Alternative 1 (No Action)** and **Sub-alternatives 2a** and **2b** would have the same economic impact on commercial and recreational fishermen of North Carolina, South Carolina, and Georgia. **Preferred Sub-alternatives 3a** and **3b** would have the second smallest adverse economic impact on commercial and recreational fishermen of North Carolina, South Carolina, and Georgia but no added economic impact on commercial or recreational fishermen of Florida. **Sub-alternatives 4a** and **4b** would have the largest adverse economic impact because it would establish the largest minimum size limit in the largest area. **Preferred Sub-alternative 5a** and **5b** would have the same adverse economic impact on commercial and recreational fishermen of Florida as **Sub-alternatives 4a** and **4b**, but no added impact on those of North Carolina, South Carolina, or Georgia because it only applies to Florida.

It is estimated that **Preferred Sub-alternative 3a** would reduce baseline commercial landings of the North Carolina, South Carolina, and Georgia from 1% to 3% and **Preferred Sub-alternative 5a** would reduce baseline commercial landings in Florida from 14% to 22% (see **Appendix I**). The combined impact of **Actions 3** and **4** is expected to be a net increase in annual commercial landings of gray triggerfish by weight and value in the South Atlantic Region; however, there would be a net beneficial impact in North Carolina, South Carolina, and Georgia and a net adverse impact in Florida. The net annual increase of dockside revenues from gray triggerfish landings in North Carolina, South Carolina, and Georgia would range from $22,548 to $27,064 if the states' combined landings represent 76% of the total and from $29,363 to $37,020 if the states' landings represent 86% of the total. The net annual decrease of dockside revenues from gray triggerfish landings in Florida would range from $4,087 to $6,803 if 14% of the landings occur in Florida or from $7,012 to $11,662 if 24% of total landings are in Florida.

It is estimated that **Preferred Sub-alternative 3b** and **Preferred Sub-alternative 5b** would reduce annual recreational landings of gray triggerfish from 12,394 to 16,984 lbs ww and from 22,493 to 27,542 lbs ww, respectively. If North Carolina, South Carolina, and Georgia recreational fishermen harvest gray triggerfish in federal waters north of Florida, their combined losses would be the economic losses from decreases of 12,394 to 16,984 lbs ww. Similarly, if Florida recreational fishermen stay in federal waters off Florida, their annual economic losses would be from the reduction of 22,493 lbs ww to 27,542 lbs ww of gray triggerfish they could no longer land.

4.4.3 Social Effects

Gray triggerfish is an increasingly important commercial and recreational species, with growing effort and market demand associated with closures for other species. Gray triggerfish is an important part of the commercial sector of the snapper grouper fishery in the communities of Murrells Inlet, Little River, and Charleston in South Carolina; Mayport and St. Augustine in north Florida; and the North Carolina communities of Winnabow, Beaufort, Morehead City, Shallotte, and Sneads Ferry (**Figure 3.3.26**). Although commercial fishermen in these communities likely do not depend completely on gray triggerfish to maintain their operations, the species is an important part of the catch combination for fishing trips, particularly those targeting vermilion snapper. Any management changes that affect the commercial sector could affect crew and vessel owners, and associated businesses in the communities.

Gray triggerfish is also a popular menu item at restaurants in coastal communities in the South Atlantic. As with other regional species, gray triggerfish is marketed as a unique regional dish that contributes to the overall experience of visiting a coastal community. Changes that restrict or modify access for the commercial sector could also affect availability of gray triggerfish for restaurants, which are associated with tourism and local economies in many coastal areas. Particularly with the expansion of the local food movement and the increase in culinary tourism, consistent availability of locally caught species is important to many restaurant owners and chefs, and associated staff and businesses. Additionally, gray triggerfish has grown in popularity for the recreational sector, and is an important target species in private and for-hire trips for many recreational anglers, including coastal residents and tourists visiting a coastal area. **Section 3.3.2** includes information about the important recreational fishing communities in the South Atlantic that could be affected by changes in gray triggerfish management measures.

Different regulations among states and between state and federal waters can have negative consequences by reducing compliance and making enforcement difficult. Changing the minimum size limit to measure in fork length under **Alternative 2** to be consistent with the east Florida minimum size limit requirements in state waters would be beneficial to commercial (**Sub-alternative 2a**) and recreational (**Sub-alternative 2b**) fishermen in Florida waters, by removing inconsistency between the state and federal requirements that would continue under **Alternative 1 (No Action)**. Establishing a minimum size limit for federal waters of North Carolina, South Carolina, and Georgia (**Alternative 3** and **Alternative 4**) would make the federal regulations consistent for the EEZ of all the South Atlantic states for commercial (**Preferred Sub-alternative 3a** and **Sub-alternative 4a**) and recreational (**Preferred Sub-alternative 3b** and **Sub-alternative 4b**) fishermen. Further, a 14-inch FL minimum size limit specified in **Alternative 4** for recreational (**Sub-alternative 4b**) and commercial fishermen (**Sub-alternative 4a**) for all states would allow for consistent regulations in the Gulf of Mexico and South Atlantic; inconsistent regulations are particularly troublesome for both recreational and commercial fishermen in the Florida Keys. **Preferred Alternative 5** would also remove the inconsistency between federal regulations for commercial (**Preferred Sub-alternative 5a**) and recreational (**Preferred Sub-alternative 5b**) fishermen working in both the Gulf of Mexico and South Atlantic, but would be inconsistent with Florida's current minimum size requirement in state waters. Overall, consistency among state and federal regulations is a common concern and request from commercial and recreational fishermen and enforcement.

Preferred Alternative 3, Preferred Sub-alternatives 3a/**3b**, and **Alternative 4, Sub-alternatives 4a**/**4b** could have some negative effects on recreational and commercial fishermen harvesting gray triggerfish in the EEZ of states that currently do not have size limits by reducing the number of fish that can be kept. Because **Alternative 1 (No Action), Alternative 2, Sub-alternatives 2a** and **2b,** and **Alternative 5, Preferred Sub-alternatives 5a**/**5b** would not implement minimum size limits for the states without a size limit, there would be no expected effects on commercial or recreational fishermen targeting gray triggerfish in North Carolina, South Carolina, and Georgia.

Some social effects of minimum size limits would be associated with the positive and negative biological effects of minimum size limits on the gray triggerfish stock (**Section 4.4.1**). Positive effects of allowing only fish of a certain size that are caught in the South Atlantic EEZ to be landed could help maintain sustainability of harvest and the health of the stock, which would be beneficial to recreational and commercial fishermen in the long term. Negative effects of potential increases in discard mortality due to a newly established size limit in North Carolina, South Carolina, and Georgia under **Alternative 3, Preferred Sub-alternatives 3a/3b** and **Alternative 4, Sub-alternatives 4a/4b**, compared to allowing all fish to be landed in those states under **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 5, Preferred Sub-alternatives 5a/5b,** could affect the stock and in turn, commercial and recreational fishing opportunities. Florida fishermen would experience increased discards under **Preferred Alternative 5**. However, survival of released gray triggerfish is estimated to be very high (SEDAR 32 determined the mid-range of discard mortality to be 12.5%) and larger minimum size limits could have minimal negative effects on the stock.

Implementation of a minimum size limit for the EEZ off North Carolina, South Carolina, and Georgia would likely have more impact on recreational fishermen and for-hire businesses targeting gray triggerfish. Under **Preferred Alternative 3, Preferred Sub-alternatives 3a/3b** a small reduction in recreational landings is expected if the 12-inch FL minimum size is required for states that currently do not have a minimum size requirement (**Table 4.4.18**). However, under **Alternative 4**, recreational landings are expected to be reduced substantially if a 14-inch FL minimum size requirement was implemented (**Table 4.4.20**). For recreational fishermen targeting gray triggerfish in Florida, the increase in the minimum size limit under **Alternative 4** and **Preferred Alternative 5, Preferred Sub-alternatives 5a/5b** could change fishing behavior and opportunities to land gray triggerfish caught by recreational fishermen. However, the reduction in recreational landings estimated under **Preferred Sub-alternatives 3a, 3b, 5a,** and **5b** is not as high (**Table 4.4.21**), and would have less negative effects on recreational fishermen and for-hire trips that target gray triggerfish than under **Alternative 4**.

4.4.4 Administrative Effects

Beneficial administrative effects would be expected from **Alternative 2**, **Preferred Alternative 3**, **Alternative 4**, and **Preferred Alternative 5** when compared with **Alternative 1** (**No Action**). Alternatives that specify a consistent minimum size limits in state and federal waters throughout the South Atlantic Council's jurisdiction would help the public avoid confusion with regulations and aid law enforcement. **Alternative 4** and **Preferred Alternative 5** would avoid confusion with regulations and aid law enforcement by specifying the same minimum size limit (14 inches TL) that is specified in federal waters of the Gulf of Mexico and in state waters of west Florida. Administrative impacts on the agency associated with the action alternatives would be incurred by rulemaking, outreach, education and enforcement.

4.5 Action 5. Establish a commercial split season for gray triggerfish

4.5.1 Biological Effects

> ***Alternatives for Action 5***
>
> **Alternative 1 (No Action)**. The commercial fishing year for gray triggerfish is the calendar year (January 1- December 31). The commercial ACL is allocated for the entire year.
>
> **Preferred Alternative 2**. Allocate the directed commercial gray triggerfish ACL into two quotas: 50% to the period January 1 through June 30 and 50% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.
>
> **Alternative 3.** Allocate the directed commercial gray triggerfish ACL into two quotas: 40% to the period January 1 through June 30 and 60% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

Action 5 would divide the commercial fishing season for gray triggerfish into two time periods. The purpose of **Action 5** would be to provide opportunities to fish for gray triggerfish throughout South Atlantic and throughout the calendar year. With the specification of an ACL for gray triggerfish through the Comprehensive ACL Amendment in 2012 (SAFMC 2011c), and Regulatory Amendment 13 in 2013 (SAFMC 2013a), in-season closures have taken place when the ACLs have been met. In 2012, when the commercial ACL was 305,262 lbs ww, commercial harvest of gray triggerfish closed on September 11, 2012, but was reopened from December 12 to December 19. In 2013, the ACL was decreased to 272,880 lbs ww, and commercial harvest for gray triggerfish was closed on July 7, and reopened from October 18 to November 14. **Action 3** proposes commercial ACLs for gray triggerfish based on the preferred alternative for ABC (**Preferred Sub-alternative 4d**) in **Action 2**.

Alternative 1 (No Action) would maintain the current 12-month time period for harvest of the commercial ACL. **Table 4.5.1** shows the expected dates the commercial ACLs proposed in **Action 3** would be met, assuming a 12-inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14-inch FL minimum size limit is put into place for east Florida under (**Preferred Alternatives 3** and **5** under **Action 4**).

Table 4.5.1. Expected dates the gray triggerfish ACL based on Action 3 alternatives is expected to be met under Action 5, Alternative 1 (No Action), assuming a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida under (Preferred Alternatives 3 and 5 under Action 4).

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	5-Aug	No Closure	27-Apr
312,325	Action 3, Alt 2	29-Aug	No Closure	19-May
296,709	Action 3, Alt 3	18-Aug	No Closure	9-May
281,093	Action 3, Alt 4	10-Aug	No Closure	2-May
249,860	Action 3, Alt 5	17-Jul	No Closure	13-Apr

Preferred Alternative 2 and **Alternative 3** would allocate the directed commercial gray triggerfish ACL into seasonal quotas. By dividing the commercial ACL into two six-month fishing quotas, fishermen would be given the opportunity to fish for gray triggerfish at the beginning of the year and during the summer. The divided commercial quota would provide fishermen in the northern and southern areas of the South Atlantic a chance to fish for gray triggerfish when weather conditions are favorable in their respective areas.

Preferred Alternative 2 would allocate 50% of the commercial gray triggerfish ACL to January 1 through June 30, and 50% to July 1 through December 31. As a result, the current commercial ACL or proposed commercial ACLs in **Action 3** would be divided into two seasonal quotas of equal amounts (**Table 4.5.2**). For **Alternative 1 (No Action)** the two seasonal quotas would be 136,440 lbs ww. For the ACLs proposed under **Action 3**, the two seasonal quotas would range from 124,930 lbs ww to 156,163 lbs ww. Any remaining quota from season 1 would transfer to season 2 but any remaining ACL from season 2 would not be carried forward.

Table 4.5.2. Expected dates the gray triggerfish semi-annual quotas (based on ACL alternatives in Action 3) would have been met for January-June and July-December split seasons (**Preferred Alternative 2)**, assuming a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (**Preferred Alternatives 3** and **5** under Action 4).

ACL (lbs ww)	January-June			
	ACL Alternative	Mean	L95%	U95%
136,440	Current ACL	20-Mar	No Closure	18-Feb
156,162	Action 3, Alt 2	9-Apr	No Closure	25-Feb
148,354	Action 3, Alt 3	31-Mar	No Closure	22-Feb
140,546	Action 3, Alt 4	24-Mar	No Closure	19-Feb
124,930	Action 3, Alt 5	9-Mar	No Closure	14-Feb

ACL (lbs ww)	July-December			
	ACL Alternative	Mean	L95%	U95%
136,440	Current ACL	21-Sep	27-Nov	30-Aug
156,162	Action 3, Alt 2	30-Sep	No Closure	5-Sep
148,354	Action 3, Alt 3	26-Sep	21-Dec	3-Sep
140,546	Action 3, Alt 4	23-Sep	3-Dec	1-Sep
124,930	Action 3, Alt 5	17-Sep	15-Nov	25-Aug

* Unused quota from January-June would roll over to July-December.
** Landings during September-December 2012 are assumed to be similar to those of 2008-2011.

The expected dates that the split season quotas would be met (**Table 4.5.2**) assume that the preferred alternatives for the minimum size limits from **Action 4** would be in place. Under **Preferred Alternative 2**, there is little difference in the expected closure dates of gray triggerfish for the different ACL alternatives under **Action 3**. If the seasonal quotas were 136,440 lbs ww (based on current ACL), the expected dates that a commercial closure would occur for gray triggerfish would be mid-March during season 1. The 136,440 lbs ww quota for January-June would not have been met in 2008 or 2009. During the second season, the 136,440 lbs ww quota would likely be met in late September. The expected dates that split season quotas would be met based on proposed ACL alternatives from **Action 3** would be similar (**Table 4.5.2**). For the January-June season, the expected dates that the split season quota would be met range from March 9 to April 9. For the July-December season, the dates the split season quota would be met range from September 17 to September 30.

An examination of landings during 2009-2011 reveals that 40% of the commercial landings were during January-June, and 60% were during July-December (**Table 4.5.3**). **Alternative 3** would allocate the seasonal quotas of gray triggerfish according to the monthly distribution of landings shown in **Table 4.5.3** where 40% of the commercial gray triggerfish ACL would go to January 1 through June 30, and 60% to July 1 through December 31. As a result, the current commercial ACL of 272,880 lbs ww would be divided into two seasonal quotas of 109,152 lbs ww and 163,728 lbs ww. The proposed commercial ACLs under **Action 3** would be divided in a similar manner. Any remaining quota from season 1 would transfer to season 2, but any remaining quota from season 2 would not be carried forward.

Table 4.5.3. Percentage of commercial gray triggerfish landings by month during 2008-2011.

Month	Percent
January	9%
February	7%
March	6%
April	5%
May	7%
June	6%
July	6%
August	10%
September	13%
October	14%
November	11%
December	6%

Source: SEFSC ALS data.

The expected dates that the split season quotas would be met under **Alternative 3** assume that the preferred alternatives for the minimum size limits from **Action 4** would be in place. If the season 1 quota were 109,152 lbs ww (based on current ACL), the expected dates that a commercial closure would occur for gray triggerfish would be in late February based on 2011 and 2012 landings. The expected dates that split season quotas would be met based on proposed ACL alternatives from **Action 3** would be similar (**Table 4.5.4**). For the January-June season, the expected dates that the split season quota would be met range from February 21 to March 9. For the July-December season, the dates the split season quota would be met range from September 27 to October 5.

Table 4.5.4. Expected dates the gray triggerfish semi-annual quotas (based on ACL alternatives in Action 3) would have been met for January-June and July-December split seasons (**Alternative 3)**, assuming a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (Preferred Alternatives 3 and 5 under Action 4).

ACL (lbs ww)	January-June			
	ACL Alternative	Mean	L95%	U95%
109,152	Current ACL	25-Feb	No Closure	8-Feb
124,930	Action 3, Alt 2	9-Mar	No Closure	14-Feb
118,684	Action 3, Alt 3	4-Mar	No Closure	12-Feb
112,437	Action 3, Alt 4	27-Feb	No Closure	9-Feb
99,944	Action 3, Alt 5	21-Feb	No Closure	5-Feb

ACL (lbs ww)	July-December			
	ACL Alternative	Mean	L95%	U95%
163,728	Current ACL	3-Oct	No Closure	7-Sep
187,395	Action 3, Alt 2	15-Oct	No Closure	15-Sep
178,025	Action 3, Alt 3	10-Oct	No Closure	12-Sep
168,656	Action 3, Alt 4	5-Oct	No Closure	9-Sep
149,916	Action 3, Alt 5	27-Sep	25-Dec	3-Sep

The biological impacts of a split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** are likely to be neutral since overall harvest would be limited to the sector ACL and split-season quotas, and AMs would be triggered if the ACL or quotas were exceeded. Dividing the ACL into two time periods could result in gray triggerfish being open for a short period of time, and possibly encourage derby conditions to a greater extent than **Alternative 1 (No Action) (Tables 4.5.2** and **4.5.4)**. Similarly, due to a very short season 1 fishing season under **Alternative 3**, derby conditions in season 1 would be expected to be more pronounced than in season 2. Discards of gray triggerfish would be expected after quotas are met under **Preferred Alternative 2** and **Alternative 3** due to fishermen targeting co-occurring species. However, the magnitude of discards would be expected to be similar under the two alternatives. Furthermore, survival of discarded gray triggerfish is estimated to be very high (about 88%). Thus, any negative effects from alternatives that might result in an increase in regulatory discards would be expected to be minor. **Preferred Alternative 2** and **Alternative 3** would establish fishing seasons that have opening and closing dates similar to vermilion snapper. Since gray triggerfish and vermilion snapper are co-occurring species that are caught together, **Preferred Alternative 2** and **Alternative 3** could reduce bycatch of both species. Split season quotas would allow fishermen in different regions to target gray triggerfish when weather is good in their area. Therefore, alternatives that divide the ACL into two time period quotas would allow for a greater opportunity among all areas to catch gray triggerfish. Furthermore, dividing the ACL into two seasons would allow fishermen to target gray triggerfish in summer when historical catches have been the best.

Establishing a split season for commercial gray triggerfish will not result in impacts to EFH, HAPCs or protected resources. Regardless of the alternative selected, none of them are anticipated to have adverse effects on listed coral species, large whales, or any DPS of Atlantic sturgeon. Previous ESA consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect listed coral species, large whales, or any DPS of Atlantic sturgeon. Regardless of the alternative selected, this action is not anticipated to increase the potential for interactions with smalltooth sawfish. However, the biological impact of these alternatives on sea turtles is unclear. **Alternative 1 (No Action)** may be the most beneficial if it reduces the likelihood of a derby condition developing during sea turtle nesting season. Sea turtles nest along the east coast of the United States from April-October, with peak nesting occurring from May-July. Sea turtle nesting brings gravid females closer to shore where they are more susceptible to interaction with snapper grouper fishing gear. Strictly based on the number of months fishing is projected to occur during sea turtle nesting season, **Preferred Alternative 2** and **Alternative 3** may have similar biological effects. For **Preferred Alternative 2,** the projected closure date of season 1 would likely be sometime in March. This would overlap slightly with sea turtle nesting season. Season 2 would likely close sometime in September; overlapping with sea turtle nesting season by 3 months, including 1 peak nesting month. For **Alternative 3,** the projected closure date for season 1 would likely be late-February or early-March. Under **Alternative 3**, season 1 would likely overlap with sea turtle nesting season only slightly, if at all. Season 2 would likely close sometime in October; overlapping with sea turtle nesting season by 4 months, including 1 peak nesting month. However, the opening months of season 2 might see greater fishing effort if pent up demand leads to derby conditions. This greater fishing effort at the beginning of season 2 (right in the middle of peak sea turtle nesting season) might offset any biological benefits gained by the fishery closing in season 1 prior to the beginning of sea turtle nesting. Conversely, if the 60% allocation for season 2, lessens the likelihood of derby fishing during sea turtle nesting months by extending fishing over a longer period, this alternative may be more biologically beneficial. If it does not, then both **Preferred Alternative 2** and **Alternative 3** are likely to have similar biological benefits.

4.5.2 Economic Effects

The 2012 commercial season for gray triggerfish was open for a total of 260 days and the 2013 season for a total of 204 days. The following analysis uses the shorter open season in 2013 to assess the potential economic effects of the alternatives.

As of December 31, 2013, 305,856 lbs ww of gray triggerfish had been landed commercially in the South Atlantic (NMFS SERO: http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/commercial_sa/index.html), which is higher than the ACL of 272,880 lbs ww. The above landings as of December 31 divided by the 204 days the season was open suggests an average daily catch in 2013 of approximately 1,499 lbs ww per day. For the season to have remained open for the entire year (365 days), the average daily catch rate would have had to be approximately 748 lbs ww based on the current commercial ACL of 272,880 lbs ww. However, consideration must be given to the other ACLs that could result from the various alternatives of **Action 3**. **Table 4.5.5** is a synthesis of the mean estimated lengths of the gray triggerfish seasons based on the alternatives of **Action 5** (**Tables 4.5.1**, **4.5.2**, and **4.5.4**), given the various alternatives of **Action 3** and assuming at 14 inch FL size limit for east Florida, and a 12 inch FL size limit for North Carolina, South Carolina, and Georgia (**Preferred Alternatives 3** and **5** under **Action 4**).

Table 4.5.5. Estimated length of the commercial gray triggerfish season for Action 5 alternatives based on Action 3 alternatives for setting the ACL for gray triggerfish. Action 3 ACLs are listed in lbs ww.

		Day Season Would Close				
		Action 3				
Action 5	Season	Alternative 1 (ACL = 272,880)	Alternative 2 (ACL = 312,325)	Alternative 3 (ACL = 296,709)	Alternative 4 (ACL = 281,093)	Alternative 5 (ACL = 249,860)
Alt. 1	Jan 1 - Dec 31	5-Aug	29-Aug	18-Aug	10-Aug	17-Jul
Preferred Alt. 2	Jan 1 - Jun 30	20-Mar	9-Apr	31-Mar	24-Mar	9-Mar
	Jul 1 - Dec 31	21-Sep	30-Sep	26-Sep	23-Sep	17-Sep
Alt. 3	Jan 1 - Jun 30	25-Feb	9-Mar	4-Mar	27-Feb	21-Feb
	Jul 1 - Dec 31	3-Oct	15-Oct	10-Oct	5-Oct	27-Sep

Whether a single 12-month season or two 6-month seasons, annual commercial landings are capped by the commercial ACL. This action would affect the rate of commercial landings, but likely would not affect the annual total. Although it is unknown how having split seasons for gray triggerfish would actually affect future fishing behavior, it may reduce the current average monthly rate from January through June and increase the current average monthly rate from July through December.

Split seasons for a snapper grouper species is not new. Vermilion snapper currently is managed under a split season scenario, similar to the one proposed by **Preferred Alternative 2** and **Alternative 3**. Between 2011 and 2014, the first vermilion snapper split season that began on January 1, closed between February 13th and April 19th (http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/commercial_sa/historical/index.html, accessed on April 14, 2014.)

Commercial fishermen may target gray triggerfish in the beginning of the year and begin to target shallow water groupers as well after that season opens on May 1. **Preferred Alternative 2** and **Alternative 3** could result in the first season for gray triggerfish closing before the opening of the shallow water grouper season. It is not possible to determine accurately what the economic effects of closing the gray triggerfish first season would be prior to the opening of the shallow water grouper season, as this scenario has not occurred in the past. Historically, fishermen who target gray triggerfish also fish for vermilion snapper and shallow water groupers. As it is very likely that the first split season for gray triggerfish would close prior to the May 1 start of the shallow water grouper season, at least some snapper grouper commercial fishermen would not be able to participate in other snapper grouper complex fisheries between the date of the closure and May 1st. If commercial harvest of gray triggerfish is closed, commercial fishermen would either have to target other snapper grouper species or other species that they are allowed to harvest or stay in port.

The second split season is less likely to experience the direct negative economic effects from the first split season discussed above, as trips that land gray triggerfish from July through December tend to have lower landings of the species and increased quantities of other snapper grouper species such as black sea bass, vermilion snapper, and shallow water groupers. By reserving 50% (**Preferred Alternative 2**) or 60% (**Alternative 3**) of the commercial ACL for the second split season, it is likely that participants in the second season would see the second split season last longer than the past closure date of September 11, 2012 (later reopened From December 12 to December 19) or July 7, 2013 (later reopened from October 28 to November 14). A longer second split season would result in fewer discards and trips that are potentially more profitable the longer the season continues.

In summary, there would be no difference in annual economic impacts among **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Alternative 3** because there would be no change in annual total landings and dockside revenues, assuming all of the ACL is caught each year and the price of gray triggerfish remains relatively constant. **Preferred Alternative 2** and **Alternative 3** redistribute when fishing and landings of gray triggerfish can occur through the year. The degree of economic effects depends primarily on the timing of the closures in relationship to other seasonal closures. For the first split season, **Alternative 1 (No Action)** would be the status quo as no closure would be expected as is currently the case. **Preferred Alternative 2** is expected to have a minor in-season direct negative economic effect; however, **Alternative 3** is expected to have even greater direct negative economic effects due to the predicted timing of seasonal closures, potentially leaving at least some snapper grouper commercial fishermen with no species to target. The second split season is expected to close prior to the end of the calendar year, however, **Alternative 1 (No Action)** would have the season close sooner than either **Preferred Alternative 2** or **Alternative 3**, resulting in greater direct negative economic effects. Because **Alternative 3** would extend the second split season longer than **Preferred Alternative 2**, it is expected to have a greater positive direct economic benefit.

4.5.3 Social Effects

Gray triggerfish is an increasingly important commercial species, with growing effort and market demand that are likely associated with closures for other species, as discussed in **Section 4.4.3**. The effects on the commercial fleet due to changing the gray triggerfish commercial fishing year into split seasons would depend on the ACL and the rate of catch. Under **Actions 2** and **3**, the ACL for gray triggerfish could be increased or decreased, which would affect how a split season would provide positive or negative effects on commercial harvesters. If the commercial ACL ever needed to be lowered in the future, this would be expected to result in shorter available fishing time in a full-year season or split seasons, and could generate (or perpetuate) derby conditions. In addition to concerns about safety at sea that arise from the race to fish, a derby could result in a large amount of gray triggerfish on the market in a very short period of time. This may cause reduced market value and lower product quality, and the bust-and-boom nature of the commercial gray triggerfish sector may hinder business stability and steady job opportunities for captain and crew.

Additionally, management changes that affect the commercial fleet's access to gray triggerfish could have some effects on the associated restaurants and fish houses that sell the popular species in coastal communities. The broad effects of this are described in detail in **Section 4.4.3**.

A split season under **Preferred Alternative 2** or **Alternative 3** would likely be beneficial to commercial fishermen harvesting gray triggerfish in North Carolina and South Carolina. Because the current fishing year starts in January 1 (**Alternative 1 (No Action)**), fishermen in North Carolina and South Carolina sometimes have limited or no access to gray triggerfish in the early months due to weather, or could risk unsafe conditions to fish. A split season under **Preferred Alternative 2** or **Alternative 3** would likely increase access to the commercial ACL for North Carolina and South Carolina, which would be beneficial to commercial businesses in these areas. Additionally, as noted in

Section 4.5.1, a split season for gray triggerfish under **Preferred Alternative 2** or **Alternative 3** could reduce discards of vermilion snapper because the two species are commonly caught together. This could improve trip efficiency and help reduce regulatory discards for vessels catching vermilion snapper. When compared to **Alternative 1 (No Action)** minor social benefits are expected from **Preferred Alternative 2** or **Alternative 3**. The proposed 40%-60% split in the gray triggerfish commercial ACL for the two fishing seasons under **Alternative 3** reflects recent harvest patterns for the species, and would be expected to result in fewer changes for the commercial fleet than under **Preferred Alternative 2**, which could impose some limited access to the commercial ACL during the second part of the year.

4.5.4 Administrative Effects

Alternative 1 (**No Action)** would have fewer administrative impacts than **Preferred Alternative 2** or **Alternative 3** because only one quota would need to be monitored. Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Alternative 3** would increase the administrative impacts in the form of rulemaking, outreach, education, monitoring, and enforcement. However, these impacts are not expected to be significant.

4.6 Action 6. Establish a commercial trip limit for gray triggerfish

4.6.1 Biological Effects

Alternatives for Action 6

Alternative 1 (No Action). There is no commercial trip limit for gray triggerfish in the South Atlantic region.

Preferred Alternative 2. Establish a commercial trip limit for gray triggerfish in the South Atlantic region.
- **Sub-alternative 2a.** 500 pounds whole weight (lbs ww)
- **Preferred Sub-alternative 2b.** 1,000 lbs ww
- **Sub-alternative 2c.** 1,500 lbs ww

Alternative 3. When 75% of the gray triggerfish commercial ACL is met or is projected to be met, the trip limit is reduced to
- **Sub-alternative 3a.** 200 lbs ww
- **Sub-alternative 3b.** 500 lbs ww
- **Sub-alternative 3c.** 750 lbs ww

Alternative 1 (No Action) would not establish a trip limit for gray triggerfish. Currently, the commercial ACL is 272,880 lbs ww. Based on 2012 landings data, the 272,880 lbs ww commercial ACL would have been met in late July, and the 312,325 lbs ww commercial ACL would have been met in mid-August (**Table 4.6.1**). In 2012, the commercial ACL was 306,262 lbs ww, and gray triggerfish was closed on September 11, 2012, but was reopened from December 12 to December 19. In 2013, the commercial ACL was 272,880 lbs ww, and gray triggerfish was closed on July 7, 2013, but was reopened from October 28 to November 14. **Table 4.4.2** shows that landings in most years would have exceeded the ACLs proposed in **Action 3** of this amendment. Thus, without a trip limit, commercial closures for gray triggerfish are expected.

Table 4.6.1. Projected quota closure dates for the 2014 fishing season for the commercial sector of gray triggerfish under Alternative 1 (No Action) for the current commercial ACL of 272,880 lbs ww, and proposed commercial ACLs under Action 3.

ACL (lbs ww)	Alternative	Mean	L95%	U95%
272,880	Current ACL	26-Jul	No Closure	21-Apr
312,325	Action 3, Alt 2	18-Aug	No Closure	12-May
296,709	Action 3, Alt 3	9-Aug	No Closure	3-May
281,093	Action 3, Alt 4	1-Aug	No Closure	25-Apr
249,860	Action 3, Alt 5	8-Jul	No Closure	7-Apr

The effects of trip limits proposed in **Preferred Alternative 2** and **Alternative 3** for 2008-2012 landings are based on logbook data. **Preferred Alternative 2** and associated sub-alternatives would establish commercial trip limits ranging from 500 lbs ww to 1,500 lbs ww. Landings information from 2012 (**Table 4.6.2**) show that about 8% of the trips had landings greater than 500 lbs ww (**Sub-alternative 2a**), 2% of the trips had landings greater than 1,000 lbs ww (**Preferred Sub-alternative 2b**), and less than 1% of the trips had landings greater than 1,500 lbs ww (**Sub-alternative 2c**). Thus, commercial closures would still be expected under **Sub-alternatives 2a-2c**.

Table 4.6.2. Trip limit, number of trips, percentage of trips greater than trip limit, and harvest reduction provided by trip limit for 2012.

Trip Limit (lbs ww)	2012		
	# Trips	% Trips	Harvest Reduction
0	1,702	100.00%	100.00%
100	652	38.31%	65.24%
112	616	36.19%	62.53%
150	505	29.67%	55.02%
175	441	25.91%	50.81%
200	394	23.15%	47.09%
224	364	21.39%	43.84%
250	323	18.98%	40.66%
300	268	15.75%	35.40%
337	239	14.04%	32.10%
500	143	8.40%	21.31%
600	111	6.52%	16.74%
700	80	4.70%	13.24%
800	66	3.88%	10.67%
900	48	2.82%	8.69%
1,000	39	2.29%	7.16%
1,100	28	1.65%	5.98%
1,200	22	1.29%	5.08%
1,300	18	1.06%	4.36%
1,400	15	0.88%	3.76%
1,500	14	0.82%	3.24%
1,600	9	0.53%	2.89%
1,700	8	0.47%	2.58%
1,800	6	0.35%	2.32%
1,900	4	0.24%	2.13%
2,000	3	0.18%	2.00%

Source: Coastal logbook data from June 2013.

There has been a shift towards increased targeting of gray triggerfish in the commercial snapper grouper fishery in recent years (**Figure 4.6.1**). Mean catch per trip increased from 142 lbs/trip to 225 lbs/trip between 2009-2013. This change in catch was considered in estimating when a trip limit would be expected to be met in 2014.

Using the SEFSC commercial logbook, the impacts of various trip limit alternatives for the commercial South Atlantic gray triggerfish portion of the snapper grouper fishery were explored by replacing trips with harvest exceeding the trip limit with the trip limit level harvest. Trip level landings of gray triggerfish were summarized from captain reported logbooks assuming both "gray triggerfish" and "triggerfish, unclassified" were gray triggerfish, as this is consistent with the ACL monitoring of the stock. Trip limits above 500 lbs ww had little impact upon gray triggerfish harvest (**Table 4.6.3**).

Table 4.6.3. Commercial gray triggerfish percent of status quo harvest, by month, under various proposed trip limits, as 3-year average of 2011-2013.

TRIP LIMIT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1500-lb	99%	100%	95%	97%	96%	94%	100%	100%	100%	89%	98%	99%	98%
1000-lb	96%	95%	85%	86%	93%	92%	99%	99%	99%	79%	94%	96%	93%
750-lb	90%	90%	76%	75%	90%	89%	98%	99%	95%	73%	88%	89%	87%
500-lb	78%	77%	62%	60%	83%	83%	95%	95%	89%	63%	80%	74%	77%
300-lb	60%	59%	46%	43%	70%	71%	85%	87%	79%	54%	73%	53%	61%
200-lb	46%	45%	36%	32%	57%	62%	73%	78%	70%	45%	67%	40%	49%
100-lb	27%	27%	21%	19%	38%	44%	53%	63%	56%	31%	60%	24%	31%

Source: SEFSC Commercial Logbook (Nov 2013).
Note: 2013 data are currently incomplete.

Evaluation of trip limit impacts on season length accounted for the recent trends in landings by fitting a seasonal autoregressive integrated moving average model (SARIMA) to commercial catch-per-day and forward projecting one year (see **Appendix G**). Analysis for trip limit alternatives assumes a 12- inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14- inch FL minimum size limit is put into place for east Florida (preferred alternatives in **Action 4**).

Tables 4.6.4 to **4.6.8** show the dates that the commercial ACLs proposed in **Action 3** would be expected to be met under the proposed alternatives of **Action 6**. The tables include the analysis for the trip limit scenarios (**Sub-alternatives 3a-3c**) as well as the sub-alternatives that would incorporate a step-down trip limit when 75% of the ACL is met.

Under **Action 3**, **Alternative 1 (No Action)** and **Preferred Alternative 2** under **Action 5**, the commercial ACL of 272,880 lbs ww would be divided into two quotas (136,440 lbs ww) for a January-June and July-December season. With this quota, a 500 lbs ww trip limit (**Sub-alternative 2a**) would be expected to extend the January-June commercial fishing season by almost two months, a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by about a week, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would be expected to extend the fishing season by about one day (**Table 4.6.4**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by almost two months (**Sub-alternative 3a**), about three weeks (**Sub-alternative 3b**), and about a week (**Sub-alternative 3c**). The July-December fishing season would be expected to be extended by four days with a 500 lbs ww trip limit (**Sub-alternative 2a**), a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by about a day, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have no effect (**Table 4.6.4**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by three weeks (**Sub-alternative 3a**), two days (**Sub-alternative 3b**), and one day (**Sub-alternative 3c**).

Table 4.6.4. Commercial gray triggerfish projected mean closure dates for the preferred split season alternative in Action 5, with 95% confidence limits, under a variety of trip limit scenarios for the current commercial ACL of **272,880 lbs ww** (Action 3 Alternative 1). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

		Jan-June 136,440 lbs ww			July-Dec 136,440 lbs ww		
Alt	**Trip Limit**	**Mean**	**L95%**	**U95%**	**Mean**	**L95%**	**U95%**
1	No trip limit	17-Mar	No Closure	16-Feb	18-Sep	22-Nov	26-Aug
2c	1500-lb trip limit	18-Mar	No Closure	17-Feb	18-Sep	26-Nov	26-Aug
2b	1000-lb trip limit	25-Mar	No Closure	19-Feb	19-Sep	5-Dec	27-Aug
	750-lb trip limit	7-Apr	No Closure	22-Feb	20-Sep	21-Dec	27-Aug
2a	500-lb trip limit	11-May	No Closure	3-Mar	22-Sep	No Closure	29-Aug
	300-lb trip limit	27-Jun	No Closure	8-Apr	29-Sep	No Closure	3-Sep
	200-lb trip limit	No Closure	No Closure	19-May	14-Oct	No Closure	9-Sep
	100-lb trip limit	No Closure	No Closure	No Closure	17-Nov	No Closure	25-Sep
3a	200-lb trip limit @ 75% ACL	13-May	No Closure	3-Mar	24-Sep	No Closure	29-Aug
3b	500-lb trip limit @ 75% ACL	1-Apr	No Closure	20-Feb	20-Sep	7-Dec	27-Aug
3c	750-lb trip limit @ 75% ACL	24-Mar	No Closure	18-Feb	19-Sep	29-Nov	26-Aug

Under **Action 3**, **Alternative 2**, and **Preferred Alternative 2** under **Action 5**, the 312,325 lbs ww commercial ACL would be divided into two quotas (156,162 lbs gw) for a January-June and July-December season. With this quota, a 500 lbs ww trip limit (**Sub-alternative 2a**) would be expected to extend the January-June commercial fishing season by about two months, a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by about two weeks, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would be expected to extend the fishing season by about four days (**Table 4.6.5**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by almost two months (**Sub-alternative 3a**), about one month (**Sub-alternative 3b**), and about two weeks (**Sub-alternative 3c**). The July-December fishing season would be expected to be extended by about a week with a 500 lbs ww trip limit (**Sub-alternative 2a**), a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by about a day, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have no effect (**Table 4.6.5**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by about a week (**Sub-alternative 3a**), two days (**Sub-alternative 3b**), and one day (**Sub-alternative 3c**).

Table 4.6.5. Commercial gray triggerfish projected mean closure dates for the preferred split season alternative in Action 5, with 95% confidence limits, under a variety of trip limit scenarios for the proposed commercial ACL of **312,325 lbs ww** (Action 3 Alternative 2). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

		Jan-June 156,162 lbs ww			July-Dec 156,162 lbs ww		
Alt	**Trip Limit**	**Mean**	**L95%**	**U95%**	**Mean**	**L95%**	**U95%**
1	No trip limit	4-Apr	No Closure	23-Feb	26-Sep	26-Dec	2-Sep
2c	1500-lb trip limit	8-Apr	No Closure	24-Feb	26-Sep	No Closure	2-Sep
2b	1000-lb trip limit	20-Apr	No Closure	26-Feb	27-Sep	No Closure	2-Sep
	750-lb trip limit	6-May	No Closure	2-Mar	28-Sep	No Closure	3-Sep
2a	500-lb trip limit	4-Jun	No Closure	19-Mar	2-Oct	No Closure	5-Sep
	300-lb trip limit	No Closure	No Closure	3-May	16-Oct	No Closure	10-Sep
	200-lb trip limit	No Closure	No Closure	6-Jun	3-Nov	No Closure	17-Sep
	100-lb trip limit	No Closure	No Closure	No Closure	12-Dec	No Closure	9-Oct
3a	200-lb trip limit @ 75% ACL	1-Jun	No Closure	19-Mar	4-Oct	No Closure	6-Sep
3b	500-lb trip limit @ 75% ACL	2-May	No Closure	27-Feb	28-Sep	No Closure	3-Sep
3c	750-lb trip limit @ 75% ACL	19-Apr	No Closure	25-Feb	27-Sep	No Closure	2-Sep

Under **Action 3**, **Alternative 3**, and **Preferred Alternative 2** under **Action 5**, the 296,709 lbs ww commercial ACL would be divided into two quotas (148,354 lbs gw) for a January-June and July-December season. With this quota, a 500 lbs ww trip limit (**Sub-alternative 2a**) would be expected to extend the January-June commercial fishing season by about two months, a 1,000 lbs ww trip limit would extend the season by about two weeks (**Preferred Sub-alternative 2b**) and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have been expected to extend the fishing season by about one day (**Table 4.6.6**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by about two months (**Sub-alternative 3a**), about three weeks (**Sub-alternative 3b**), and a little over a week (**Sub-alternative 3c**). The July-December fishing season would be expected to be extended by five days with a 500 lbs ww trip limit (**Sub-alternative 2a**), a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by about a day, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have no effect (**Table 4.6.6**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by about a week (**Sub-alternative 3a**), two days (**Sub-alternative 3b**), and one day (**Sub-alternative 3c**).

Table 4.6.6. Commercial gray triggerfish projected mean closure dates for the preferred split season alternative in Action 5, with 95% confidence limits, under a variety of trip limit scenarios for the current commercial ACL of **296,709 lbs ww** (Action 3, Alternative 3). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

		Jan-June 148,354 lbs ww			July-Dec 148,354 lbs ww		
Alt	**Trip Limit**	**Mean**	**L95%**	**U95%**	**Mean**	**L95%**	**U95%**
1	No trip limit	27-Mar	No Closure	21-Feb	23-Sep	8-Dec	30-Aug
2c	1500-lb trip limit	30-Mar	No Closure	21-Feb	23-Sep	19-Dec	31-Aug
2b	1000-lb trip limit	9-Apr	No Closure	23-Feb	24-Sep	No Closure	31-Aug
	750-lb trip limit	26-Apr	No Closure	26-Feb	25-Sep	No Closure	31-Aug
2a	500-lb trip limit	26-May	No Closure	13-Mar	28-Sep	No Closure	2-Sep
	300-lb trip limit	No Closure	No Closure	24-Apr	9-Oct	No Closure	7-Sep
	200-lb trip limit	No Closure	No Closure	30-May	27-Oct	No Closure	14-Sep
	100-lb trip limit	No Closure	No Closure	No Closure	27-Nov	No Closure	1-Oct
3a	200-lb trip limit @ 75% ACL	24-May	No Closure	13-Mar	29-Sep	No Closure	3-Sep
3b	500-lb trip limit @ 75% ACL	20-Apr	No Closure	24-Feb	25-Sep	No Closure	31-Aug
3c	750-lb trip limit @ 75% ACL	8-Apr	No Closure	22-Feb	24-Sep	22-Dec	31-Aug

Under **Action 3**, **Alternative 4** and **Preferred Alternative 2** under **Action 5** the 281,093 lbs ww commercial ACL would be divided into two quotas (140,546 lbs gw) for a January-June and July-December season. With this quota, a 500 lbs ww trip limit (**Sub-alternative 2a**) would be expected to extend the commercial fishing season by over two months, a 1,000 lbs ww trip limit would extend the season by little over a week (**Preferred Sub-alternative 2b**) and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have been expected to extend the fishing season by about two days (**Table 4.6.7**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by almost two months (**Sub-alternative 3a**), about three weeks (**Sub-alternative 3b**), and about a week (**Sub-alternative 3c**). The July-December fishing season would be expected to be extended by four days with a 500 lbs ww trip limit (**Sub-alternative 2a**), a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would have no effect, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have no effect (**Table 4.6.7**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by five days (**Sub-alternative 3a**), one day (**Sub-alternative 3b**), and **Sub-alternative 3c** would have no effect.

Table 4.6.7. Commercial gray triggerfish projected mean closure dates for the preferred split season alternative in Action 5, with 95% confidence limits, under a variety of trip limit scenarios for the current commercial ACL of **281,093 lbs ww** (Action 3, Alternative 4). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

		Jan-June 140,546 lbs ww			July-Dec 140,546 lbs ww		
Alt	**Trip Limit**	**Mean**	**L95%**	**U95%**	**Mean**	**L95%**	**U95%**
1	No trip limit	20-Mar	No Closure	18-Feb	20-Sep	26-Nov	28-Aug
2c	1500-lb trip limit	22-Mar	No Closure	18-Feb	20-Sep	1-Dec	28-Aug
2b	1000-lb trip limit	29-Mar	No Closure	20-Feb	20-Sep	15-Dec	28-Aug
	750-lb trip limit	14-Apr	No Closure	23-Feb	21-Sep	31-Dec	28-Aug
2a	500-lb trip limit	16-May	No Closure	7-Mar	24-Sep	No Closure	30-Aug
	300-lb trip limit	No Closure	No Closure	14-Apr	2-Oct	No Closure	4-Sep
	200-lb trip limit	No Closure	No Closure	23-May	19-Oct	No Closure	11-Sep
	100-lb trip limit	No Closure	No Closure	No Closure	20-Nov	No Closure	27-Sep
3a	200-lb trip limit @ 75% ACL	16-May	No Closure	6-Mar	25-Sep	No Closure	31-Aug
3b	500-lb trip limit @ 75% ACL	7-Apr	No Closure	21-Feb	21-Sep	17-Dec	28-Aug
3c	750-lb trip limit @ 75% ACL	28-Mar	No Closure	19-Feb	20-Sep	6-Dec	28-Aug

Under **Action 3**, **Alternative 5,** and **Preferred Alternative 2** under **Action 5**, the 249,860 lbs ww commercial ACL would be divided into two quotas (124,930 lbs gw) for a January-June and July-December season. With this quota, a 500 lbs ww trip limit (**Sub-alternative 2a**) would be expected to extend the commercial fishing season by about seven weeks, a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would extend the season by little over a week and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have been expected to extend the fishing season by about one day (**Table 4.6.8**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by about seven weeks (**Sub-alternative 3a**), 12 days (**Sub-alternative 3b**), and about 5 days (**Sub-alternative 3c**). The July-December fishing season would be expected to be extended by three days with a 500 lbs ww trip limit (**Sub-alternative 2a**), a 1,000 lbs ww trip limit (**Preferred Sub-alternative 2b**) would have no effect, and a 1,500 lbs ww trip limit (**Sub-alternative 2c**) would have no effect (**Table 4.6.8**). The step down approach proposed in **Alternative 3** and associated sub-alternatives would be expected to extend the season by five days (**Sub-alternative 3a**), one day (**Sub-alternative 3b**), and **Sub-alternative 3c** would have no effect.

Table 4.6.8. Commercial gray triggerfish projected mean closure dates for the preferred split season alternative in Action 5, with 95% confidence limits, under a variety of trip limit scenarios for the proposed commercial ACL of **249,860 lbs ww** (Action 3 Alternative 5). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

		Jan-June 124,930 lbs ww			July-Dec 124,930 lbs ww		
Alt	**Trip Limit**	**Mean**	**L95%**	**U95%**	**Mean**	**L95%**	**U95%**
1	No trip limit	6-Mar	No Closure	12-Feb	14-Sep	10-Nov	22-Aug
2c	1500-lb trip limit	7-Mar	No Closure	13-Feb	14-Sep	14-Nov	22-Aug
2b	1000-lb trip limit	13-Mar	No Closure	14-Feb	14-Sep	20-Nov	22-Aug
	750-lb trip limit	22-Mar	No Closure	17-Feb	15-Sep	26-Nov	23-Aug
2a	500-lb trip limit	24-Apr	No Closure	25-Feb	17-Sep	18-Dec	24-Aug
	300-lb trip limit	11-Jun	No Closure	25-Mar	23-Sep	No Closure	29-Aug
	200-lb trip limit	No Closure	No Closure	8-May	2-Oct	No Closure	5-Sep
	100-lb trip limit	No Closure	No Closure	No Closure	7-Nov	No Closure	19-Sep
3a	200-lb trip limit @ 75% ACL	29-Apr	No Closure	25-Feb	19-Sep	6-Dec	25-Aug
3b	500-lb trip limit @ 75% ACL	18-Mar	No Closure	15-Feb	15-Sep	22-Nov	23-Aug
3c	750-lb trip limit @ 75% ACL	11-Mar	No Closure	14-Feb	14-Sep	18-Nov	22-Aug

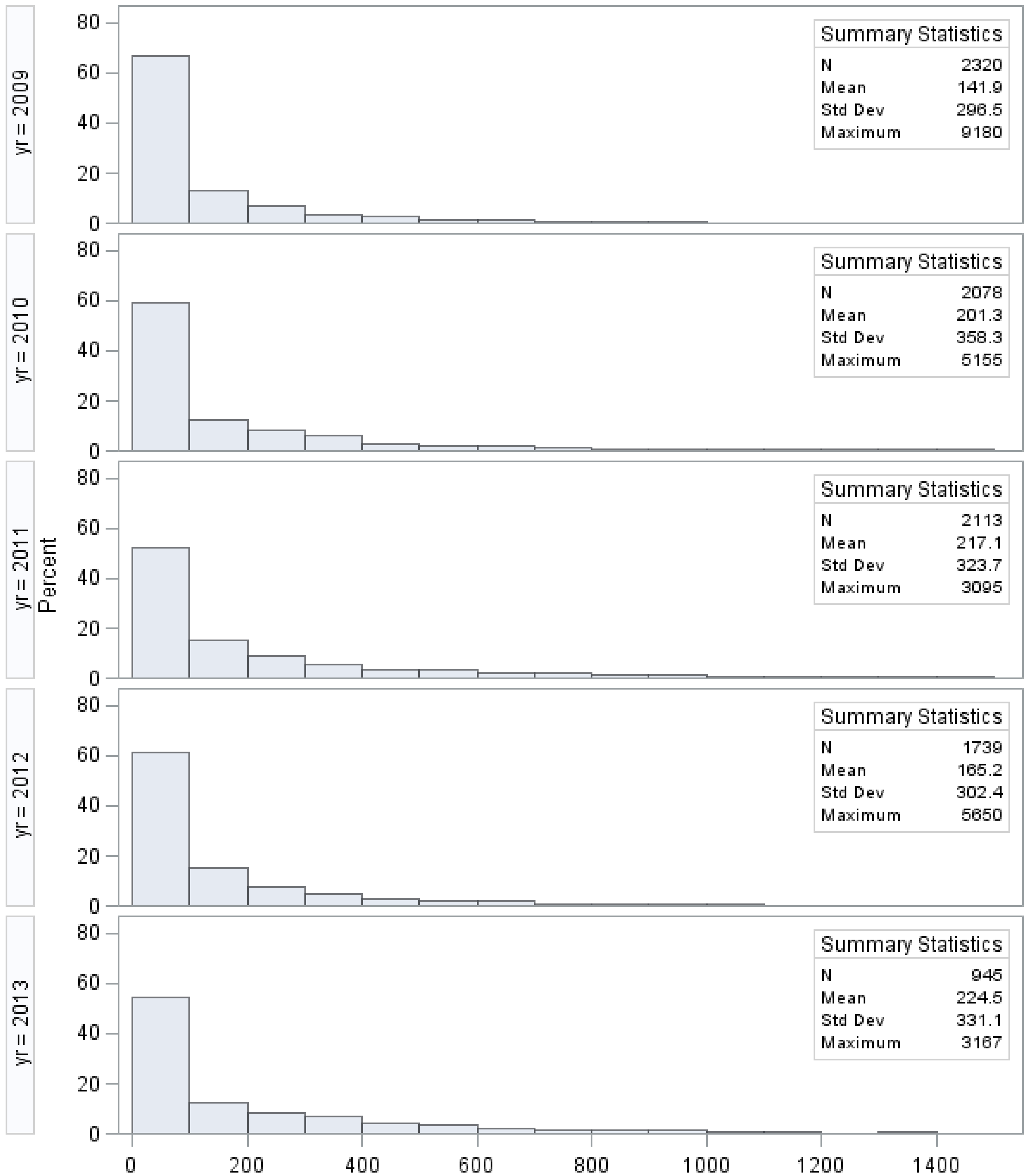

Figure 4.6.1. Gray triggerfish commercial catch per trip 2009-2013.
Note 2013 data are incomplete. Source: SEFSC Commercial Logbook (Nov 2013).

The biological effects of **Alternatives 1 (No Action), Preferred Alternative 2** (and its sub-alternatives)**,** and **Alternative 3** (and its sub-alternatives) would be expected to be neutral because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded. **Alternative 1 (No Action)** could present a greater biological risk to gray triggerfish in terms of exceeding the ACL than **Alternatives 2 (Preferred)** and **3** since no trip limit would be in place to slow down the rate of harvest and help ensure the ACL is not exceeded. However, improvements have been made to the quota monitoring system, and the South Atlantic Council has approved a Dealer Reporting Amendment (effective August 7, 2014), which should enhance data reporting. Therefore, any biological benefits associated with trip limits would be expected to be small. Larger trip limits would not constrain catch and would result in the ACL being met earlier in the year than smaller trip limits. Early closures of gray triggerfish could result in increased bycatch of gray triggerfish when fishermen target co-occur species such as vermilion snapper and black sea bass. However, release mortality of gray triggerfish is considered to be low. An ongoing stock assessment for gray triggerfish in the South Atlantic estimates that 87.5% of released fish survive. Thus, commercial closures associated with meeting the ACL are not expected to negatively affect the gray triggerfish stock due to bycatch.

Establishing a commercial trip limit is not expected to have any impact on EFH, HAPCs, or protected species. Regardless of the alternative selected, none is anticipated to have adverse effects on listed coral species, large whales, or any DPS of Atlantic sturgeon. Previous ESA consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect listed coral species, large whales, or any DPS of Atlantic sturgeon. For the species that may interact with the fishery (i.e., sea turtles and smalltooth sawfish), there is likely to be no additional biological benefit from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between these ESA-listed species and the fishery. The impacts from **Alternatives 2 (Preferred)** and **3,** and associated sub-alternatives, on sea turtles and smalltooth sawfish are unclear. Since few commercial trips that landed gray triggerfish landed more than 500 lbs ww per trip from 2009-2013, it is likely that **Preferred Alternative 2** and its sub-alternatives would have little impact on landings of gray triggerfish. If so, it is likely that regardless of the trip limit selected, the risk of interactions between the fishery, sea turtles, and smalltooth sawfish would be largely unchanged. Thus, the biological benefits to the species from **Alternatives 1 (No Action) and 2 (Preferred)** are likely to be the same. If the lower trip limits of **Alternative 3** and its sub-alternatives is selected, and effort is reduced as a result, this alternative may have the greatest biological benefits for sea turtles and smalltooth sawfish by potentially reducing the likelihood of interactions between these species an the fishery. However, if this alternative simply lengthens the fishing season and does not actually reduce fishing effort, **Alternative 3** may have the same overall biological benefits as the other alternatives.

4.6.2 Economic Effects

Commercial trip limits, in general, are not economically efficient because they limit vessels from benefiting from economies of scale. They have a tendency to increase some fishing trip costs when a trip must stop targeting a specific species because its trip limit has been reached. Unless a vessel that has reached its limit of the targeted fish can easily move into targeting a different species on the same trip, trip costs associated with the species where the limit has been reached will increase because it will require more annual trips by vessels to catch the ACL. Depending on vessel characteristics and the distance required to travel to fish, a trip limit that is too low could result in targeted trips being cancelled altogether if the vessel cannot target other species on the same trip.

If the entire commercial ACL of gray triggerfish is caught in a single fishing year and fishermen are able to continue to have profitable trips at the same rate, none of the alternatives or sub-alternatives of

Action 6 would result in positive or negative economic changes from the status quo. Thus, relative to **Alternative 1 (No Action)** the economic effects of the proposed alternatives would be minimal. However, it is not possible to estimate the number of trips that might be foregone should a trip limit be set too low to be deemed profitable. Additionally, lower trip limits would require more trips to land the ACL. The additional trip costs associated with the "extended season" trips would reduce the profits attributable to the fishery. A mitigating factor that could offset some of the additional trip costs would be if the ex-vessel price per pound of the species goes up because there would be fewer fish on the market.

In 2012, 8.4% of commercial trips landed more than 500 lbs ww per trip of gray triggerfish, 2.29% of trips landed more than 1,000 lbs ww, and 0.82% of trips landed more than 1,500 lbs ww (**Table 4.6.2**). However, the effects of **Action 6** must be analyzed given the potential effects of **Actions 3, 4,** and **5**. To determine the alternatives that would have the least negative overall economic effects are those which would extend the length of the season by the fewest days. **Table 4.6.9** takes into account the preferred alternatives of **Actions 4** and **5**, all alternatives of **Action 3** with alternatives and sub-alternatives of **Action 6**.

Table 4.6.9. The number of additional days the commercial gray triggerfish is projected to last beyond Action 6, Alternative 1 (No Action) using the mean closure dates for the preferred split season alternative in Action 5, under a variety of trip limit scenarios for the proposed commercial ACL (Action 3 alternatives). Analysis assumes a 12 inch FL minimum size limit is put into place for North Carolina, South Carolina, and Georgia, and a 14 inch FL minimum size limit is put into place for east Florida (preferred alternatives in Action 4).

	Action 5 Preferred Alt 2: January 1 - June 30						**Action 5 Preferred Alt 2: July 1 - December 31**					
	Action 6 sub-alternatives						**Action 6 sub-alternatives**					
Action 3 ACLs (lbs ww)	2a	**Pref 2b**	2c	3a	3b	3c	2a	**Pref 2b**	2c	3a	3b	3c
Alt 1 (272,880)	55	**8**	1	57	15	7	4	**1**	0	6	6	1
Alt 2 (312,325)	60	**16**	4	57	27	15	7	**1**	0	9	2	1
Alt 3 (296,709)	60	**13**	3	58	24	12	5	**1**	0	6	2	1
Alt 4 (281,093)	57	**9**	2	57	18	8	4	**0**	0	5	1	0
Alt 5 (249,860)	49	**7**	1	54	12	5	3	**0**	0	5	1	0

NOTE: Data presented are based on **Tables 4.6.4-4.6.8**.

Given preferred alternatives for **Action 4** (size limits) and **Action 5** (split commercial seasons), the first commercial split season would be more affected by trip limits for gray triggerfish compared to the second season. The differential effect may be due to trips that occur in the first commercial season result in a greater number of pounds per trip because shallow water groupers are closed from January 1st through April 30th each year, leaving fishermen fewer species to target than in the second commercial split season.

Consequently, compared to **Alternative 1 (No Action)**, **Sub-alternatives 2a**, **Preferred 2b** and **2c** are expected to extend the first commercial season for gray triggerfish, but at differential rates, regardless of the ACL selected for gray triggerfish in **Action 3**. Allowing a 500 lbs ww trip limit (**Sub-**

alternative 2a) would extend the season by 49 to 60 days compared to **Alternative 1 (No Action). Preferred Sub-alternative 2b** (1,000 lbs ww trip limit) is projected to extend the season by 7 to 16 days, while **Sub-alternative 2c** (1,500 lbs ww trip limit) is expected to extend the season 1 to 4 days, respectively compared to **Alternative 1 (No Action)**. Since **Preferred Sub-Alternative 2b** would only extend the fishing season by 7 to 16 days, the economic effect of this alternative when compared to **Alternative 1 (No Action)** would not be significant.

The second commercial season for gray triggerfish is expected not to be as impacted by the proposed trip limits as much as the first commercial season. Compared to **Alternative 1 (No Action)**, **Sub-alternative 2a** and **Preferred Sub-alternative 2b** are expected to extend the second commercial season for gray triggerfish, but to a much lesser degree, regardless of the ACL selected for gray triggerfish in **Action 3**. Allowing a 500 lbs ww trip limit (**Sub-alternative 2a**) would extend the season by 3 to 7 days compared to **Alternative 1 (No Action)**. **Preferred Sub-alternative 2b** (1,000 lbs ww trip limit) is projected to extend the season by 0 or 1 day. While **Sub-alternative 2c** (1,500 lbs ww trip limit) is not expected to extend the season at all compared to **Alternative 1 (No Action)**.

It is reasonable to expect that larger vessels that make longer trips could have landings greater than 500, 1,000 or 1,500 lbs ww. If so, **Sub-alternative 2a** would have the largest adverse economic effect on individual commercial fishermen with historically larger landings per trip, followed in turn by **Preferred Sub-alternatives 2b** and **2c**. **Alternative 1 (No Action)** would have no adverse economic impact beyond that baseline.

In general, implementing the trip limits after 75% of the ACL has been taken as proposed by the sub-alternatives of **Alternative 3** are projected to extend the first commercial fishing season more days than the second fishing season (**Table 4.6.9**). In the first commercial season, a 200 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 54 to 58 days (**Sub-alternative 3a**) compared to no trip limits. Similarly, a 500 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 12 to 27 days (**Sub-alternative 3b**), and a 750 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 5 to 15 days (**Sub-alternative 3c**), compared to no trip limits as in **Alternative 1 (No Action)**.

In the second commercial season, the sub-alternatives of **Alternative 3** would have a much smaller effect in terms of extending the season. A 200 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 5 to 9 days (**Sub-alternative 3a**) compared to no trip limits. Similarly, a 500 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 1 to 6 days (**Sub-alternative 3b**), and a 750 lbs ww trip limit after 75% of the ACL has been taken is projected to extend the season by 0 or 1 day (**Sub-alternative 3c**), compared to no trip limits as in **Alternative 1 (No Action)**.

Within each of the two seasons, the alternatives/sub-alternatives of **Action 6** have the same order of economic effects in terms of the probability that any given gray triggerfish trip limit would be profitable. **Alternative 1 (No Action)** is the alternative that gives the greatest probability of having any given trip be profitable. **Alternative 3** is the same as **Alternative 1 (No Action)** until 75% of the ACL is taken. After that, the decreasing probability of a profitable trip would be by **Alternative 2, Sub-alternative 2c**; **Alternative 3**, **Sub-alternative 3c**; **Alternative 2, Preferred Sub-alternative 2b**;

Alternative 3, Sub-alternative 3b; **Alternative 2, Sub-alternative 2a**; and **Alternative 3, Sub-alternative 3a** as compared to **Alternative 1 (No Action)**.

4.6.3 Social Effects

As noted in **Section 4.4.3**, gray triggerfish is an increasingly important commercial species in the South Atlantic region. Communities identified in **Figure 3.3.26** would be expected to experience a combination of positive and negative effects if a commercial trip limit is established. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Alternative 3** could reduce the risk of derby conditions and associated negative impacts that can occur due to an in-season closure or payback provision if the ACL is exceeded. A more restrictive trip limit is more likely to slow the rate of harvest and lengthen the season than a less restrictive trip limit, unless vessels do not currently harvest over a proposed limit. The 500 lbs ww limit proposed under **Sub-alternative 2a** is the most restrictive under **Preferred Alternative 2**, but a low percentage of trips exceed 500 lbs ww of gray triggerfish at this time (**Table 4.6.1**). Very few trips exceed the 1,000 lbs ww (**Preferred Sub-alternative 2b**) and less than 1% exceed 1,500 lbs ww (**Sub-alternative 2c**) (**Table 4.6.1**). Since **Preferred Sub-Alternative 2b** would only extend the fishing season by 7 to 16 days, the social effect of this alternative when compared to **Alternative 1 (No Action)** would not be significant. The typical low poundage of gray triggerfish is likely attributed to the multi-species catch of many snapper grouper commercial trips. In addition to gray triggerfish, a commercial vessel is likely to also target several other snapper grouper species along with coastal migratory pelagic species on one trip. Therefore, a trip with low poundage of one particular species is not necessarily an inefficient trip.

A longer open season could be beneficial to the commercial fleet and to end users of gray triggerfish (restaurant owners, fish houses, and consumers) by improving consistency of availability. Incorporating the proposed ACL that would result from **Action 3**, the proposed minimum size limits in **Action 4**, and the proposed split seasons in **Action 5**, **Table 4.6.3** shows, however, that the trip limits in **Preferred Alternative 2** and step-down in **Alternative 3** would be expected to lengthen the season by a few days, if any. When the expected season lengths in **Table 4.6.3** are compared with expected seasons when just incorporating the proposed ACL that would result from **Action 3**, the proposed minimum size limits in **Action 4,** and the proposed split seasons in **Action 5** without any trip limits (**Alternative 1 (No Action**) in **Table 4.5.2**, the estimates suggest that trip limits would contribute little to extending the season, and longer availability of gray triggerfish on the market. A lower trip limit as under **Sub-alternative 2c** would be expected to help lengthen the season more than the higher trip limits under **Sub-alternative 2a** and **Preferred Sub-alternative 2b** (**Table 4.6.4**).

The step-down trip limit when 75% of the commercial ACL is met under **Alternative 3** would allow commercial trips to continue fishing for other species, but with a bycatch allowance for any gray triggerfish caught on the trips. **Sub-alternatives 3a-3c** would help to reduce discards of gray triggerfish and could help extend the season. Overall, the social benefits to the commercial fleet, associated businesses, and communities would likely be maximized as a result of some trade-off between season length and efficiency of fishing trips under a trip limit under **Preferred Alternative 2** and a step-down provision under **Alternative 3**.

4.6.4 Administrative Effects

Alternative 1 (No Action) would have less administrative impacts than **Alternatives 2 (Preferred)** and **3**. Administrative impacts associated with **Alternatives 2 (Preferred)** and **3** would come in the form of rulemaking, outreach, education, monitoring, and enforcement. NMFS has implemented trip limits for other snapper grouper species and the impacts associated with **Alternative 2 (Preferred)** and **3** are expected to be minor.

Chapter 5. Reasoning for Council's Choice of Preferred Alternatives

5.1 Action 1. Update the South Atlantic Council's Acceptable Biological Catch (ABC) Control Rule

Snapper Grouper Advisory Panel (AP) Comments and Recommendations

The Snapper Grouper AP discussed Amendment 29 at their November 2013 meeting and again in May 2014. When the AP initially discussed the amendment, a single action was proposed to update the acceptable biological catch (ABC) control rule and apply the updated rule to select unassessed snapper grouper species. Hence, the AP made no recommendations specific to the current Action 1. However, the AP commented on the appropriateness of the ABC control rule update under Action 2 below.

> ***Alternatives for Action 1***
>
> **Alternative 1 (No Action).** Utilize the South Atlantic Council's ABC control rule as adopted in the Comprehensive Annual Catch Limit (ACL) Amendment to specify ABCs for snapper grouper species.
>
> **Preferred Alternative 2.** Adopt the SSC's recommended approach to determine ABC values for Only Reliable Catch Stocks (ORCS). This approach will become Level 4 of the ABC Control Rule and the existing Level 4 will be renumbered as Level 5.

Law Enforcement Advisory Panel (LEAP) Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee (SSC) Comments and Recommendations

The South Atlantic Fishery Management Council's (South Atlantic Council) SSC met in April 2013 to complete their recommendations for how to incorporate the "Only Reliable Catch Stocks" (ORCS) methodology described in Berskson et al. (2011) into the South Atlantic Council's ABC control rule. The ORCS Workshop Report is contained in **Appendix H**. The SSC discussed modifications to the ABC control rule to: 1) adopt the ORCS method for setting ABC for catch-only stocks, and 2) create a new tier to accommodate unassessed stocks that do not qualify for application of the ORCS method (i.e., stocks without reliable catch series). The SSC recommended that the ORCS method be used for Tier 4 of the ABC Control Rule, and that a new Tier 5 based on application of the Decision Tree Approach be created for stocks that do not fit the criteria for Tier 4. Application of the ORCS method to set ABC for several unassessed South Atlantic stocks was completed during this workshop and development of Amendment 29 was begun shortly thereafter.

The SSC met again in May 2014 and discussed the proposed action in Amendment 29. The SSC's recommendations, directly from their May 2014 final report, are below:

Although a few members expressed concern and one member requested his position be presented as a minority report (see below), the SSC reaffirmed its consensus opinion regarding application of the ORCS methodology and the catch level recommendations contained in Amendment 29. Further, the SSC confirmed that the ORCS approach as applied for Amendment 29 still represents the best scientific information available and considered the associated catch level recommendations appropriate for management. The minority position on the application of the ORCS approach for development of the catch level recommendations contained in Amendment 29 is presented below.

SSC Minority Report:

"The methodology used by the SAFMC's ORCS Workshop (i.e., the choice of catch statistics and associated scalars) for application of the ORCS approach does not provide a sufficient uncertainty buffer between the OFL proxy and ABC within the tiered control rule structure. Combining the use of maximum value for the summary statistic and a scalar greater than one would seem to provide less of a buffer for uncertainty than that prescribed for species at higher tiers. This is not logical or appropriate. Therefore, application of the ORCS approach as described in Amendment 29 no longer represents the best available science and the associated catch level recommendations should not be used for fisheries management. It appeared that at least some SSC members were willing to stay with the current approach knowing that all of our control rules would be reexamined during the October meeting."

South Atlantic Council's Choice for Preferred Alternative

The South Atlantic Council acknowledges the methodology for arriving at an ABC for unassessed species will continue to evolve. The levels of risk and uncertainty will likely diminish over time as new approaches are developed and tested. Moreover, the South Atlantic Council stated that an adaptive management approach would ensure that fishing levels are set in a manner that balances risk and uncertainty and the South Atlantic Council is willing to apply this management approach to unassessed species. The SSC will be evaluating the ABC control rule in October 2014 to determine how well the risk of overfishing is being estimated, how the rebuilding plan targets or schedules for rebuilding stocks are being met, and whether the ABC control rule in its current form is working to address the needs of management. Hence, the South Atlantic Council decided to move forward with the proposed revisions to the ABC control rule as recommended by the SSC with the understanding that further revisions may be warranted in the future. Therefore, **Preferred Alternative 2** best meets the purpose of updating the ABC control rule based on the SSC's recommendation as best scientific information available at this time, and also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Fishery Conservation and Management (Magnuson-Stevens) Act and other applicable law.

5.2 Action 2. Apply the revised ABC control rule to select unassessed snapper grouper species

Alternatives for Action 2

Alternative 1 (No Action). ABCs for select unassessed snapper grouper species are based on the current ABC Control Rule.

Preferred Alternative 2. Assign a risk tolerance scalar to stocks deemed by the SSC to be under low risk of overexploitation (scalar = 2):

- **Sub-alternative 2a.** Apply a risk tolerance scalar of 0.75.
- **Preferred Sub-alternative 2b.** Apply a risk tolerance scalar of 0.90.

Preferred Alternative 3. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderate risk of overexploitation (scalar = 1.5):

- **Sub-alternative 3a.** Apply a risk tolerance scalar of 0.75.
- **Preferred Sub-alternative 3b.** Apply a risk tolerance scalar of 0.80.

Preferred Alternative 4. Assign a risk tolerance scalar to stocks deemed by the SSC to be under moderately high risk of overexploitation (scalar = 1.25):

- **Sub-alternative 4a.** Apply a risk tolerance scalar of 0.70.
- **Sub-alternative 4b.** Apply a risk tolerance scalar of 0.75.
- **Sub-alternative 4c.** Apply a risk tolerance scalar of 0.50.
- **Preferred Sub-alternative 4d.** Apply a risk tolerance scalar of 0.70 for rock hind, tomtate, white grunt and gray triggerfish and 0.50 for scamp.

Snapper Grouper Advisory Panel Comments and Recommendations

During their November 2013 meeting, the AP received an overview of the actions and alternatives included in Amendment 29. At that time, the actions and alternatives were structured differently than they currently are. The AP approved a motion supporting **Sub-alternative 2d** as the preferred sub-alternative under **Action 2**:

Sub-alternative 2d. Use 0.90 (catch statistic x scalar) for stocks with low risk of overexploitation, 0.80 (catch statistic x scalar) for stocks with moderate risk of overexploitation, and 0.70 (catch statistic x scalar) stocks with moderately high risk of overexploitation.

Once re-structured, this sub-alternative became the current South Atlantic Council-preferred **Sub-alternatives 2b** and **3b** and the former South Atlantic Council-preferred **Sub-alternative 4a**. The latter was de-selected as a preferred at the June 2014 South Atlantic Council meeting due to concerns over the scamp stock (see Council's Choice for Preferred Alternative below).

During their November 2013 meeting, the AP also approved a motion to consider a 0.50 risk tolerance level for hogfish. Subsequently, the South Atlantic Council chose to exclude hogfish from Amendment 29 pending the completion of a stock assessment.

At their May 2014 meeting, when the AP again had the opportunity to discuss Amendment 29, and they approved following motion:

THE AP SUPPORTS THE WORK OF THE SSC AND THE ORCS WORKGROUP AND SUPPORTS THE COUNCIL'S PREFERREDS FOR ACTION 2.

Law Enforcement Advisory Panel Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee Comments and Recommendations

At their May 2014 meeting, the SSC was asked to comment specifically on how to best arrive at an ABC for white grunt given that the SSC assigned a different risk of overexploitation to the "north" and "south" portions of the South Atlantic stock and management at this time remains based on a single stock. The South Atlantic Council proposed using the most conservative risk of overexploitation scalar and applying it to both the "north" and "south" portions of the stock and requested the SSC provide guidance on whether two separate ACLs are needed for this species. The SSC agreed with the South Atlantic Council's proposed approach until a stock assessment can be conducted and the issue of stock structure can be fully explored.

South Atlantic Council's Choice for Preferred Alternative

While the South Atlantic Council reviewed this amendment at their June 2014 meeting with the intent to approve it for formal review, a concern arose regarding the risk tolerance level for scamp. The South Atlantic Council's preferred alternatives under this action would have applied a risk tolerance scalar of 0.90 for stocks with low risk of overexploitation, 0.80 for stocks with moderate risk of overexploitation, and 0.70 for stocks with moderately high risk of overexploitation. However, a Snapper Grouper Committee member questioned the application of the same risk tolerance scalar to both tomtate and scamp. He maintained that scamp are not as abundant as they once were and he expressed concern about the species possibly being overfished. The South Atlantic Council Chair agreed and stated the concern with scamp has been voiced a number of times at the South Atlantic Council level based on trends in the fishery-independent survey catch per unit effort, etc. Additionally, the South Atlantic Council had been requesting that scamp be placed on the stock assessment schedule for a number of years and, while scamp is now on the Southeast Data Assessment and Review schedule, it may be moved down the list or removed altogether due to changing priorities and staffing issues with assessment scientists.

Based on this rationale, the South Atlantic Council directed staff to add a sub-alternative to this action that would keep the risk tolerance level at 0.70 for the rest of the species under a moderately high risk of overexploitation (tomtate, white grunt, gray triggerfish, and rock hind) but place it at 0.50 for scamp. The South Atlantic Council then approved selecting this newly created alternative as their preferred, in addition to the previous preferreds for species under low and moderate risk of overexploitation.

The South Atlantic Council concluded that **Preferred Sub-alternatives 2b**, **3b**, and **4d** best meet the purpose of adjusting the ACLs for select unassessed snapper grouper species based on the best scientific information available and taking into consideration the South Atlantic Council's risk tolerance for the management of these stocks. **Preferred Sub-alternatives 2b**, **3b**, and **4d** 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.

5.3 Action 3. Establish ACLs for select unassessed snapper grouper species

Alternatives for Action 3

1. (No Action). ACL=OY=Current ABC

2. ACL=OY=Proposed ABC
   - **Preferred 2a.** Snappers Complex
   - **Preferred 2b.** Grunts Complex
   - **Preferred 2c.** Shallow Water Grouper
   - **Preferred 2d.** Bar Jack
   - **Preferred 2e.** Atlantic Spadefish
   - 2f. Scamp
   - **Preferred 2g.** Gray Triggerfish

3. ACL=OY=0.95*Proposed ABC
   - 3a. Snappers Complex
   - 3b. Grunts Complex
   - 3c. Shallow Water Grouper
   - 3d. Bar Jack
   - 3e. Atlantic Spadefish
   - 3f. Scamp
   - 3g. Gray Triggerfish

4. ACL=OY=0.90*Proposed ABC
   - 4a. Snappers Complex
   - 4b. Grunts Complex
   - 4c. Shallow Water Grouper
   - 4d. Bar Jack
   - 4e. Atlantic Spadefish
   - **Preferred 4f. Scamp**
   - 4g. Gray Triggerfish

5. ACL=OY=0.80*Proposed ABC
   - 5a. Snappers Complex
   - 5b. Grunts Complex
   - 5c. Shallow Water Grouper
   - 5d. Bar Jack
   - 5e. Atlantic Spadefish
   - 5f. Scamp
   - 5g. Gray Triggerfish

Snapper Grouper Advisory Panel Comments and Recommendations

At their May 2014 meeting, the AP recommended Alternative 2 as preferred:
Alternative 2. ACL=OY=Proposed ABC

Law Enforcement Advisory Panel Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee Comments and Recommendations

The South Atlantic Council's SSC did not have specific recommendations for revising the ACLs for unassessed snapper grouper species. In the past, the SSC has stated that since ACLs are a management limit, it is not appropriate for them to offer guidance on the level at which they should be set.

South Atlantic Council's Choice for Preferred Alternative

Initially, the South Atlantic Council had selected to establish the ACL for all species addressed in this amendment at the same level as the proposed ABC (that which resulted from application of the ORCS approach in Action 2). However, due to concern for scamp described in **Section 5.2** above, at their June 2014 meeting, the South Atlantic Council selected to set the ACL for that species below the recommended ABC. Thus, the South Atlantic Council directed staff to maintain the ACL at the same levels as the ABC for the rest of the unassessed snapper grouper species addressed in this amendment, but set the ACL for scamp at 80% of its ABC. To accomplish this in a manner that would maintain the South Atlantic Council's original intent while allowing the flexibility to set ACLs for different species at different levels, alternatives under this action were restructured. Thus, former **Preferred Alternative 2** became **Preferred Sub-alternatives 2a-2e** and **Preferred Sub-alternative 2g**. To address the ACL for scamp, the South Atlantic Council selected **Sub-alternative 5f** as an additional preferred.

However, at their September 2014 meeting, public testimony resulted in an additional change to the preferred alternative for scamp. According to fishermen, setting the ACL at 80% of the ABC would increase the likelihood that the ACL would be reached and an in-season closure would occur. Even though the proposed ACL for this species has not been reached, landings have come close to it. Hence, to prevent negative socio-economic impacts while still taking a more conservative approach to setting the ACL for scamp for the reasons mentioned above, the South Atlantic Council selected **Sub-alternative 4f** as preferred to set the ACL for scamp at 90% of the proposed ABC.

The South Atlantic Council concluded that **Preferred Sub-alternatives 2a-2e**, **2g**, and **4f** best meet the purpose of revising ACLs for unassessed snapper grouper species based on the best available scientific information. The preferred sub-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.

5.4 Action 4. Modify the minimum size limit for gray triggerfish

Alternatives for Action 4

Alternative 1 (No Action). The minimum size limit is 12 inches TL in federal waters off the east coast of Florida and 12 inches FL in state waters off the east coast of Florida.

Alternative 2. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off the east coast of Florida.
- **Sub-alternative 2a.** The minimum size limit applies to the commercial sector.
- **Sub-alternative 2b.** The minimum size limit applies to the recreational sector.

Preferred Alternative 3. Specify a minimum size limit for gray triggerfish of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia.
- **Preferred Sub-alternative 3a.** The minimum size limit applies to the commercial sector.
- **Preferred Sub-alternative 3b.** The minimum size limit applies to the recreational sector.

Alternative 4. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off North Carolina, South Carolina, Georgia, and the east coast of Florida.
- **Sub-alternative 4a.** The minimum size limit applies to the commercial sector.
- **Sub-alternative 4b.** The minimum size limit applies to the recreational sector.

Preferred Alternative 5. Specify a minimum size limit for gray triggerfish of 14 inches fork length (FL) in federal waters off the east coast of Florida.
- **Preferred Sub-alternative 5a.** The minimum size limit applies to the commercial sector.
- **Preferred Sub-alternative 5b.** The minimum size limit applies to the recreational sector.

Snapper Grouper Advisory Panel Comments and Recommendations

At their November 2013 meeting, the AP approved a motion to recommend to the South Atlantic Council that the minimum size limit for gray triggerfish be set at 14 inches fork length (FL) in federal waters off North Carolina, South Carolina, Georgia, and east Florida.

In May 2014, the AP approved motions to recommend **Alternatives 2** and **3** (and their sub-alternatives) as preferreds. This combination of preferred alternatives would result in a minimum size limit of 12 inches FL for gray triggerfish in federal waters off the South Atlantic states for both the commercial and recreational sectors.

Law Enforcement Advisory Panel Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee Comments and Recommendations

At their May 2014 meeting, the SSC commented that the change in size limit for gray triggerfish would affect the selectivity in future projections. They recommended that this change in selectivity be addressed when projections are developed after the next stock assessment.

South Atlantic Council's Choice for Preferred Alternative

An action to impose a minimum size limit on gray triggerfish off the Carolinas and Georgia was originally considered in Regulatory Amendment 14 to the Snapper Grouper FMP. At that time, however, the stock assessment for gray triggerfish was underway and the South Atlantic Council decided to remove the gray triggerfish size limit action from the amendment pending completion of the stock assessment. The latter, however, was delayed significantly due to inconsistencies in the age data. The South Atlantic Council then chose to address management of gray triggerfish in Amendment 29, and an action to change the measurement method of gray triggerfish to be consistent between state and federal waters off east Florida was initially included. Prior to public hearings, the South Atlantic Council opted to consider not only addressing measurement inconsistencies off Florida, but also imposing a minimum size limit off the rest of the South Atlantic states. The Snapper Grouper AP originally recommended specifying a 14-inch FL minimum size limit for federal waters under the South Atlantic Council's jurisdiction (see above). Therefore, that alternative was added to the amendment to obtain public comment. However, the South Atlantic Council indicated **Alternative 3** as their preferred while they sought public comment. That alternative proposed a 12-inch FL minimum size limit in federal waters off the four South Atlantic states. In general, the public supported a minimum size limit of 12 inches FL but there were concerns over increased regulatory discards. There was also some public support for a 14-inch FL size limit.

At the March 2014 South Atlantic Council meeting, the Florida representative on the South Atlantic Council requested that an alternative be added to implement a 14-inch FL minimum size limit only off the east coast of Florida. The intent was to bring consistency to Florida regulations since a 14-inch FL minimum size limit for gray triggerfish is already in place for the west coast of Florida and having different size limits for each coast is problematic, particularly in the Florida Keys. In order to accommodate different minimum size limits off Florida versus the rest of the South Atlantic states, **Preferred Alternative 3** was modified to exclude the state of Florida.

After much discussion at the Snapper Grouper Committee level, the South Atlantic Council ultimately selected **Alternatives 3** and **5** as preferreds. The combination of these two alternatives would result in a minimum size limit of 12 inches FL in federal waters off North Carolina, South Carolina, and Georgia, and a 14-inch FL minimum size limit off the east coast of Florida.

The South Atlantic Council concluded that **Preferred Alternative 3** and **Preferred Alternative 5** best meet the purpose of revising management measures for gray triggerfish to ensure overfishing does not occur pending the completion of the stock assessment. **Preferred Alternative 3** and **Preferred Alternative 5** 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.

5.5 Action 5. Establish a commercial split season for gray triggerfish

> ### *Alternatives for Action 5*
>
> **Alternative 1 (No Action)**. The commercial fishing year for gray triggerfish is the calendar year (January 1- December 31). The commercial ACL is allocated for the entire year.
>
> **Preferred Alternative 2**. Allocate the directed commercial gray triggerfish ACL into two quotas: 50% to the period January 1 through June 30 and 50% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.
>
> **Alternative 3.** Allocate the directed commercial gray triggerfish ACL into two quotas: 40% to the period January 1 through June 30 and 60% to the period July 1 through December 31. Any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward.

Snapper Grouper Advisory Panel Comments and Recommendations

At their November 2013 meeting, the AP recommended that the South Atlantic Council choose **Alternative 2** as preferred:

> **Alternative 2.** Allocate the directed commercial gray triggerfish ACL 50% to the period January 1 through June 30 and 50% to the period July 1 through December 31. Any remaining ACL from season 1 would transfer to season 2. Any remaining ACL from season 2 would not be carried forward.

In addition, the AP recommended that the South Atlantic Council consider a spawning season closure for the commercial sector. At their May 2014 meeting, the AP reiterated their support for **Alternative 2**.

Law Enforcement Advisory Panel Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee Comments and Recommendations

The SSC did not have specific guidance or recommendations as this is a management action.

South Atlantic Council's Choice for Preferred Alternative

During their September 2013 meeting, the South Atlantic Council gave direction to staff to include actions proposing a split commercial season and trip limits for gray triggerfish in Amendment 29. The rationale behind that request was to align the commercial harvest of gray triggerfish with that of vermilion snapper, as these are two species that are commonly caught together and, according to fishermen, such "lining up" of the commercial seasons would minimize discard mortality and potentially ensure a more constant supply of fish on the market. The South Atlantic Council responded to fishermen's concerns by selecting **Preferred Alternative 2** to establish a commercial split season for gray triggerfish that would coincide with that which is currently in place for vermilion snapper. Economic analyses for this action (**Section 4.5.2**); however, suggest that a commercial split season for gray triggerfish could also result in closure of commercial harvest for gray triggerfish before other snapper grouper species are open for harvest on May 1. Moreover, "it is not possible to determine accurately what the economic effects of closing the gray triggerfish first season would be prior to the opening of the shallow water grouper season, as this scenario has not occurred in the past" (see **Section 4.5.2**). Nevertheless, the South Atlantic

Council opted to move forward to establish a commercial split season for gray triggerfish as fishermen have requested. Therefore, **Preferred Alternative 2** best meets the need to lengthen to commercial season for gray triggerfish while diminishing and/or preventing derby conditions and 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.

5.6 Action 6. Establish a commercial trip limit for gray triggerfish

Alternatives for Action 6

Alternative 1 (No Action). There is no commercial trip limit for gray triggerfish in the South Atlantic region.

Preferred Alternative 2. Establish a commercial trip limit for gray triggerfish in the South Atlantic region.
- **Sub-alternative 2a.** 500 pounds whole weight (lbs ww)
- **Preferred Sub-alternative 2b.** 1,000 lbs ww
- **Sub-alternative 2c.** 1,500 lbs ww

Alternative 3. When 75% of the gray triggerfish commercial ACL is met or is projected to be met, the trip limit is reduced to
- **Sub-alternative 3a.** 200 lbs ww
- **Sub-alternative 3b.** 500 lbs ww
- **Sub-alternative 3c.** 750 lbs ww

Snapper Grouper Advisory Panel Comments and Recommendations

At their November 2013 meeting, the AP recommended that the South Atlantic Council consider including step-down trip limit alternatives when a portion of the gray triggerfish commercial ACL (75% or 85%) was met or projected to be met. In addition, the AP recommended a trip limit of 1,000 lbs ww (**Sub-alternative 2b**).

In May 2014, the AP reiterated their support for a 1,000- lb ww trip limit, but also recommended a step-down to 500 lbs ww when 75% of the commercial ACL is met or projected to be met (**Sub-alternative 3b**).

Law Enforcement Advisory Panel Comments and Recommendations

The LEAP received an overview of the actions contained in Amendment 29 at their March 2014 meeting. The LEAP was encouraged to comment on the amendment, as appropriate. However, the LEAP made no comments or recommendations.

Scientific and Statistical Committee Comments and Recommendations

The SSC offered no comments or recommendations on this action.

South Atlantic Council's Choice for Preferred Alternative

As mentioned in **Section 5.5** above, the South Atlantic Council opted to establish commercial management measures for gray triggerfish in an effort to lengthen the commercial season and in response to fishermen's suggestions. The South Atlantic Council routinely uses trip limits to control the commercial harvest and lengthen seasons. While the South Atlantic Council considered structuring the commercial trip limit in the same manner as that for vermilion snapper (step-down once 75% of the ACL is met), they determined it would not be feasible if gray triggerfish were to remain a target species. That is, a trip-limit step down would have to be low (about 200 lbs ww), to affect season length. However, such a low trip limit is not profitable for some vessels (large vessels and those home-ported far from fishing grounds) and gray triggerfish would essentially become a bycatch species. Therefore, the South Atlantic Council determined **Preferred Sub-alternative 2b** would best meet the intent to lengthen the commercial season for gray triggerfish while minimizing derby conditions. **Preferred Sub-alternative 2b** 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.

Chapter 6. Cumulative Effects

As directed by the Council on Environmental Quality (CEQ) regulations, federal agencies are mandated to assess not only the indirect and direct impacts, but also the cumulative impacts of actions. The CEQ regulations define 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 CFR 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect occurs when the combined effects are greater than the sum of the individual effects.

Bass et al. (2001) presents a five-step process for the analysis of cumulative impacts in an Environmental Assessment in which the following criteria must be identified:

- The area in which the effects of the proposed action will occur.
- The impacts that are expected in that area from the proposed action.
- Other past, present, and reasonably foreseeable actions that have or are expected to have impacts in the area.
- The impacts or expected impacts from these other actions.
- The overall impact that can be expected if the individual impacts are allowed to accumulate.

The area in which the effects of the proposed action will occur.

The area in which the effects of the proposed action would occur include the federal 200-nautical mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West; specifically, the exclusive economic zone of the South Atlantic region. Maps depicting the affected area are presented in **Section 1.3**.

The impacts that are expected in that area from the proposed action.

Amendment 29 proposes actions to: (1) update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Stocks" (ORCS); (2) adjust ABCs, (3) revise annual catch limits (ACLs) based on adjusted ABCs; and (4) establish management measures for gray triggerfish in federal waters of the South Atlantic region. Management measures considered for gray triggerfish include minimum size limits, trip limits, and creating a split season for the commercial sector.

Other past, present, and reasonably foreseeable actions that have or are expected to have impacts in the area, and the impacts or expected impacts from these other actions.

Snapper Grouper Fishery

The snapper grouper fishery has been highly managed and subject to many regulatory changes. The reader is referred to **Appendix D. History of Management** for past regulatory activity for the snapper grouper fishery. Past regulatory activities that relate to actions contained within Amendment 29 include: Comprehensive ACL Amendment (2011c) and Regulatory Amendment 13 (SAFMC 2013a) to the Snapper Grouper FMP (SAFMC 2013b), which contain actions that would have impacts on the entire snapper grouper fishery. Regulatory Amendment 6 to the Snapper Grouper FMP (SAFMC 1994) established a 12- inch total length size limit for gray triggerfish in federal waters off east Florida.

Recently approved and implemented actions include changes to the ACLs for vermilion snapper, red porgy, yellowtail snapper, and black sea bass based on recent assessments. The Joint Generic Dealer Reporting Amendment affects dealers in eight fishery management plans (FMPs) including the Snapper Grouper FMP. The amendment, which became effective on August 7, 2014, requires that dealers report landings information electronically on a weekly basis to improve the timeliness and accuracy of landings data. The South Atlantic Headboat Reporting Amendment (SAFMC 2014), which was implemented on January 27, 2014, requires that all federally permitted headboats on the South Atlantic report their landings information electronically, and on a weekly basis in order to improve the timeliness and accuracy of harvest data. Amendment 27 to the Snapper Grouper FMP, which was implemented on January 27, 2014, allows captains and crew of for-hire vessels to retain bag limit quantities of all snapper grouper species, and updates the Snapper Grouper Framework Process to allow for expedited changes to harvest levels, and accountability measures (AMs).

Reasonable foreseeable actions related to the snapper grouper fishery include the development of Amendment 36 to the Snapper Grouper FMP, which considers the establishment of Special Management Zones to provide protection to spawning areas for snapper grouper species including speckled hind and warsaw grouper. Amendment 26 to the Snapper Grouper FMP (Comprehensive Ecosystem-Based Amendment 3) proposes changes to the bycatch data collection programs in all the fisheries in the South Atlantic. An emergency rule effective April 17, 2014, addressed the 2013 overfishing and overfished determination for blueline tilefish. The emergency rule temporarily set the blueline tilefish ACL at the equilibrium yield at 75%F_{MSY} = 224,100 pounds whole weight (lbs ww); applied the allocations for blueline tilefish to the 224,100 lbs ww ACL (commercial = 112,207 lbs ww and recreational = 111,893 lbs ww); and adjusted the Deepwater Complex accordingly. Amendment 32 to the Snapper Grouper FMP would modify harvest levels and management measures to end overfishing of blueline tilefish. This amendment would also remove blueline tilefish from the Deepwater Complex. Amendment 33 to the Snapper Grouper FMP would require fillets of snapper grouper species lawfully harvested from The Bahamas to be brought into the United States through the Atlantic exclusive economic zone (EEZ), to have the skin intact. Regulatory Amendment 14 to the Snapper Grouper FMP would modify the commercial and recreational fishing years for greater amberjack and black sea bass; modify trip limits for gag; and revise the recreational AMs for black sea bass and vermilion snapper. The South Atlantic Council sent Regulatory Amendment 14 to NMFS for formal review on January 15, 2014. The proposed rule published on April 25, 2014, and comment period ended on May 27, 2014. Regulatory Amendment 16 would consider the removal and/or modification of the prohibition on the use of black sea bass pots annually from November 1 through April 30. **Appendix D** lists the history of management including amendments, which are under development and may impact aspects of the snapper grouper fishery. Besides Amendment 29, there are no amendments currently in development that would impact gray triggerfish specifically.

<u>Stressors outside of South Atlantic Council Management</u>

Deepwater Horizon

On April 20, 2010, an explosion occurred on the Deepwater Horizon MC252 oil rig, resulting in the release of an estimated 4.9 million barrels of oil into the Gulf. In addition, 1.84 million gallons of Corexit 9500A dispersant were applied as part of the effort to constrain the spill. The cumulative effects from the oil spill and response may not be known for several years.

The oil spill affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil is dispersed on the surface, and because of the heavy use of dispersants, oil is also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are more persistent in the environment and can be transported hundreds of miles. Oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. Zooplankton that feed on algae could also be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

The highest concern is that the oil spill may have impacted spawning success of species that spawn in the summer months, either by reducing spawning activity or by reducing survival of the eggs and larvae. Effects on the physical environment, such as low oxygen, could lead to impacts on the ability of larvae and post-larvae to survive, even if they never encounter oil. In addition, effects of oil exposure may create sub-lethal effects on the eggs, larva, and early life stages. The stressors could potentially be additive, and each stressor may increase the susceptibility to the harmful effects of the other.

The oil from the spill site was not been detected in the South Atlantic region, and does not likely pose a threat to the South Atlantic species addressed in this amendment. However, the effects of the oil spill on snapper grouper species would be taken into consideration in future SEDAR assessments. Indirect and inter-related effects on the biological and ecological environment of the snapper grouper fishery in concert with the Deepwater Horizon MC252 oil spill are not well understood. Changes in the population size structure could result from shifting fishing effort to specific geographic segments of populations, combined with any anthropogenically-induced natural mortality that may occur from the impacts of the oil spill. The impacts on the food web from phytoplankton, to zooplankton, to mollusks, to top predators may be significant in the future.

Climate Change

The Environmental Protection Agency's climate change webpage (http://www.epa.gov/climatechange/) provides basic background information on measured or anticipated effects from global climate change. A compilation of scientific information on climate change can be found in the United Nations Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007). Those findings are incorporated here by reference and are summarized. Global climate change can affect marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise, and through increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions may affect a wide range of organisms and ecosystems. These influences could affect biological factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. Currently, the level of impacts cannot be quantified, nor is the time frame known in which these impacts would occur. These climate changes could have significant effects on southeastern fisheries; however, the extent of these effects is not known at this time (IPCC 2007).

In the southeast, general impacts of climate change have been predicted through modeling, with few studies on specific effects to species. Warming sea temperature trends in the southeast have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Higher water temperatures may also allow invasive species to establish communities in areas they may not have been able to survive previously. Climate change may contribute to this increase by increasing rainfall that in turn increases nutrient input from rivers. This increased nutrient load causes algal blooms that, when decomposing, reduce oxygen in the water (Needham et al. 2012; Kennedy et al. 2002). Other potential impacts of climate change to the southeast include increases in hurricanes, decreases in salinity, altered circulation patterns, and sea level rise. The combination of warmer water and expansion of salt marshes inland with sea-level rise may increase productivity of estuarine-dependent species in the short term. However, in the long term, this increased productivity may be temporary because of loss of fishery habitats due to wetland loss (Kennedy et al. 2002). Actions from this amendment are not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing.

However, at this time, the level of impacts on snapper grouper species cannot be quantified, nor is the time frame known in which these impacts would occur.

Weather Variables

Hurricane season is from June 1 to November 30, and accounts for 97% of all tropical activity affecting the Atlantic basin. These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Although these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes.

The overall impact that can be expected if the individual impacts are allowed to accumulate.

Amendment 29 proposes actions to: (1) update the South Atlantic Fishery Management Council's (South Atlantic Council) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Stocks" (ORCS); (2) adjust ABCs, (3) revise annual catch limits (ACLs) based on adjusted ABCs; and (4) establish management measures for gray triggerfish in federal waters of the South Atlantic region. Management measures considered for gray triggerfish include minimum size limits, trip limits, and creating a split season for the commercial sector. This change would indirectly benefit the biological environment since an approved scientific methodology would be adopted to specify ABCs for snapper grouper species that have not been assessed but for which there are reliable catch statistics. If the South Atlantic Council selects the risk tolerance scalar to achieve the most conservative values of ABC, biological impacts would be minimized. However, while conservative ABCs may provide the greatest biological benefit to the species, higher ABCs would not be expected to negatively impact the stock as long as harvest is maintained at sustainable levels and overfishing does not occur.

Management measures for gray triggerfish include modifying size limits, trip limits, and creating a split season. These measures are intended to slow harvest of gray triggerfish. The cumulative impacts of the actions in the Amendment 29 in conjunction with past, present, and reasonably foreseeable management, as well as other documented stressors are not expected to be significant.

The proposed actions would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places as these are not in the South Atlantic EEZ. This action is not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic EEZ. The proposed actions are not likely to cause loss or destruction of these national marine sanctuaries because the actions are not expected to result in appreciable changes to current fishing practices.

Monitoring

The effects of the proposed action 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. The proposed action relates to the harvest of indigenous species in the Atlantic, and the activity being altered does not itself introduce non-indigenous species, and is not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these actions do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

Socio-economic

The actions in Amendment 29 are expected to increase annual commercial landings of bar jack and both annual commercial and recreational landings of gray triggerfish in the South Atlantic Region and change access to the gray triggerfish resource. The overall cumulative social and economic effects are expected to be associated with changes in fishing opportunities due to changes in ACLs and the minimum size limit for gray triggerfish and the creation of two 6-month commercial seasons and a commercial trip limit for gray triggerfish in combination with existing regulations that also affect those opportunities.

Any action has economic and social costs and benefits. The above increases in commercial and recreational landings would economically and socially benefit fishermen, families and communities, but with added economic and social costs associated with longer and/or more fishing trips. The seasonal, trip-limit and size-limit changes in commercial fishing for gray triggerfish may economically and socially cost fishermen, families, and communities by reducing average landings per trip of gray triggerfish; however, those changes may also benefit fishermen, seafood dealers, consumers, families, and communities by expanding the number of months that gray triggerfish is commercially available. Moreover, the changes in commercial fishing for gray triggerfish are expected to improve the stream of benefits over time. However, the net economic and social impacts of the actions are not expected to be equal across the South Atlantic Region. Net annual commercial landings of gray triggerfish are expected to decline, while those in North Carolina, South Carolina, and Georgia are expected to increase.

The commercial and recreational fishing sectors of the snapper grouper fishery have seen significant changes in regulatory actions with limited entry and attempts to pursue other types of management that may seem too restrictive (i.e., individual fishing quotas), as well as closure of waters through the placement of marine protected areas. Furthermore, almost all individuals or businesses with snapper grouper commercial and for-hire fishing permits also hold at least one (and usually multiple) additional commercial or for-hire permits to maintain the opportunity to participate in other fisheries. Commercial fishermen, for-hire vessel owners and crew, and private recreational anglers commonly participate in multiple fisheries throughout the year. Even within the snapper grouper fishery, effort can shift from one species or species complex to another due to environmental, economic, or regulatory changes. Overall, changes in management of one species or species complex in the snapper grouper fishery can impact effort and harvest of another species and/or complex (in the snapper grouper fishery or in another fishery) because of multi-fishery participation that is characteristic in the South Atlantic Region.

With the prior adoption of ACLs and associated AMs, early closures of some species are occurring that can change fishing behavior by fishermen switching to target alternative species in the snapper grouper and other fisheries. If those alternative choices are limited, fishermen are limited in their ability to adapt to and mitigate for regulatory change, which is a primary benefit of multi-fishery participation. With declining fishing options, commercial and for-hire fishermen may need to turn to alternative employment and make changes in personal and household consumption and production that can have further economic and social impacts that extend to the larger community. However, there is insufficient information to determine and assess the magnitude of specific cumulative impacts that could result from switching or other alternative behaviors.

Chapter 7. List of Preparers

Table 7.1.1. List of preparers of the document.

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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, Eco=Economics

Table 7.1.2. List of interdisciplinary plan team members for the document.

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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, Eco=Economics

Chapter 8. Agencies and Persons Consulted

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List of Agencies, Organizations, and Persons Consulted
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SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
SAFMC Information and Education Advisory Panel
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 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

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Appendix A. Considered But Rejected Alternatives

This section describes actions and alternatives that the South Atlantic Fishery Management Council (South Atlantic Council) considered in developing Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Amendment 29), but decided not to pursue. The description of each alternative is followed by a summary statement of why it was eliminated from Amendment 29.

There are no actions or alternatives that were considered but eliminated from further analysis.

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 federal waters 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 fisheries data.

Marine Recreational Information Program (MRIP): Survey operated by NMFS in cooperation with states that collects marine recreational fisheries data. It replaced the MRFSS survey.

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.

Median: The midpoint of a frequency distribution of observed values or quantities, such that there is an equal probability of falling above or below it.

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 advice to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fishery 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 a 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; maintaining 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 the 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 as 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 and presents more complete and detailed information describing the South Atlantic ecosystem and the impact of fisheries on the environment. This FEP updated information on designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern; expanded descriptions of biology and status of managed species; presented information that will support ecosystem considerations for managed species; and described the social and economic characteristics of the fisheries in the region. In addition, it expanded 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. It 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 updated EFH and EFH-HAPC information and addressed the Final EFH Rule (e.g., GIS presented for all EFH and EFH-HAPCs). Management actions implemented in CE-BA 1 established 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.

The Fishery Ecosystem Plan, slated to be revised every 5 years, will again be the vehicle to update and refine information supporting designation and future review of EFH and EFH-HAPCs for managed species. Planning for the update is being conducted in cooperation with the Habitat Advisory Panel during the fall and winter of 2013 with initiation during 2014.

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 addressed non-regulatory updates for existing EFH and EFH- HAPC information and addressed the spatial requirements of the Final EFH Rule (i.e., GIS presented for all EFH and EFH-HAPCs). Actions in this amendment included modifications in the management of the following: octocorals; special management zones (SMZs) off the coast of South Carolina; and sea turtle release gear requirements for snapper grouper fishermen. The amendment also designated essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPCs).

CE-BA 2 established annual catch limits (ACL) for octocorals in the South Atlantic as well as modifying the Fishery Management Unit (FMU) for octocorals to remove octocorals off the coast of Florida from the FMU (SAFMC 2011). The amendment also limited the possession of managed species in the SMZs off South Carolina to the recreational bag limit for snapper grouper and coastal migratory pelagic species; modified sea turtle release gear requirements for the snapper grouper fishery based upon freeboard height of vessels; amends Council fishery management plans (FMPs) to designate or modify EFH and EFH-HAPCs, including the FMP for Pelagic Sargassum Habitat; amended the Coral FMP to designate EFH for deepwater Coral HAPCs designated under CE-BA 1; and amended the Snapper Grouper FMP to designate EFH-HAPCs for golden and blueline tilefish and the deepwater Marine Protected Areas. The final rule was published in the federal register on December 30, 2011, and regulations became effective on January 30, 2012.

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 development of the FEP and CE-BA as well as coordinate with partners on other regional efforts.

Integrated Ocean Observing System (IOOS) and Southeast Coastal and Ocean Observing Regional Association (SECOORA)

The Integrated Ocean Observing System (IOOS®) is a partnership among federal, regional, academic, and private sector parties that works to provide new tools and forecasts to improve safety, enhance the economy, and protect our environment. IOOS supplies critical information about our Nation's oceans, coasts, and Great Lakes. Scientists working to understand climate change, governments adapting to changes in the Arctic, municipalities monitoring local water quality, and industries affected by coastal and marine spatial planning all have the same need: reliable, timely, and sustained access to data and information that inform decision making. Improving access to key marine data and information supports several purposes. IOOS data sustain national defense, marine commerce, and navigation safety. Scientists use these data to issue weather, climate, and marine forecasts. IOOS data are also used to make decisions for energy siting and production, economic development, and ecosystem-based resource management. Emergency managers and health officials need IOOS information to make decisions about public safety. Teachers and government officials rely on IOOS data for public outreach, training, and education.

SECOORA is one of 11 Regional Associations established nationwide through the US IOOS whose primary source of funding is through a 5-year cooperative agreement titled "Coordinated Monitoring, Prediction, and Assessment to Support Decision-Makers Needs for Coastal and Ocean Data and Tools". However, SECOORA was recently awarded funding via a NOAA Regional Ocean Partnership grant through the Governors' South Atlantic Alliance. SECOORA is the regional solution to integrating coastal and ocean observing data in the Southeast United States to inform decision makers and the general public. The SECOORA region encompasses 4 states, over 42 million people, and spans the coastal ocean from North Carolina to the west Coast of Florida and is creating customized products to address these thematic areas: Marine Operations; Coastal Hazards; Ecosystems, Water Quality, Living Marine Resources; and Climate Change. The Council is a voting member and Council staff was recently re-elected to serve on the Board of Directors for 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 assessments 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 with information included in the Council's Habitat and Ecosystem Web Services and Atlas to facilitate model and tool development.
- Expanding Map Services and the Regional Habitat and Ecosystem Atlas in cooperation with SECOORAs Web Services that will provide researchers access to data or products including those collected/developed by SA OOS partners.

SECOORA researchers are developing a comprehensive data portal to provide discovery of, access to, and metadata about coastal ocean observations in the southeast US. Below are various ways to access the currently available data.

One project recently funded by SECOORA initiated development of species specific habitat models that integrate remotely sensed and in situ data to enhance stock assessments for species managed by the Council. The project during 2013/2014 was initiated to address red porgy, gray triggerfish, black seabass, and vermilion snapper. Gray triggerfish and red porgy are slated for assessment through SEDAR in 2014/15 and 2015/16 respectively.

National Fish Habitat Plan and Southeast Aquatic Resource Partnership (SARP)

In addition, the Council serves on the National Habitat Board and, as a member of the Southeast Aquatic Resource Partnership (SARP), has highlighted this collaboration by including the Southeast Aquatic Habitat Plan (SAHP) 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. To date, SARP has funded 53 projects in the region through this program. This work supports conservation objectives identified in the SAHP to improve, establish, or maintain riparian zones, water quality, watershed connectivity, sediment flows, bottoms and shorelines, and fish passage, and addresses other key factors associated with the loss and degradation of fish habitats. SARP also developed the Southern Instream Flow Network (SIFN) to address the impacts of flow alterations in the Southeastern US aquatic ecosystems which leverages policy, technical experience, and scientific resources among partners based in 15 states. Maintaining appropriate flow into South Atlantic estuarine systems to support healthy inshore habitats essential to Council managed species is a major regional concern and efforts of SARP through SIFN are envisioned to enhance state and local partners ability to maintain appropriate flow rates.

Governor's South Atlantic Alliance (GSAA)

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 (GSAA). This will also provide regional guidance and resources that will address State and Council broader habitat and ecosystem conservation goals. The GSAA 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. The Alliance's 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. The GSAA Action Plan was released in December 2010 and describes the four Priority Issue Areas that were identified by the Governors to be of mutual importance to the sustainability of the region's resources: Healthy Ecosystems; Working Waterfronts; Clean Coastal and Ocean Waters; and Disaster-Resilient Communities. The goals, objectives, actions, and implementation steps for each of these priorities were further described in the GSAA Implementation Plan released in July 2011. The final Action Plan was released on December 1, 2010 and marked the beginning of intensive work by the Alliance Issue Area Technical Teams (IATTs) to develop implementation steps for the actions and objectives. The GSAA Implementation Plan was published July 6, 2011, and the Alliance has been working to implement the Plan through the IATTs and two NOAA-funded Projects. The Alliance also partners with other federal agencies, academia, non-profits, private industry, regional organizations, and others. The Alliance supports both national and state-level ocean and coastal policy by coordinating federal, state, and local entities to ensure the sustainability of the region's economic, cultural, and natural resources. The Alliance has organized itself around the founding principles outlined in the

GSAA Terms of Reference and detailed in the GSAA Business Plan. A team of natural resource managers, scientists, and information management system experts have partnered to develop a Regional Information Management System (RIMS) and recommend decision support tools that will support regional collaboration and decision-making. In addition to regional-level stakeholders, state and local coastal managers and decision makers will also be served by this project, which will enable ready access to new and existing data and information. The collection and synthesis of spatial data into a suite of visualization tools is a critical step for long-term collaborative planning in the South Atlantic region for a wide range of coastal uses. The Council's Atlas presents the spatial representations of Essential Fish Habitat, managed areas, regional fish and fish habitat distribution, and fishery operation information and it can be linked to or drawn on as a critical part of the collaboration with the RIMS.

South Atlantic Landscape Conservation Cooperative

One of the more recent collaborations is the Council's 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.

The SALCC developed a Strategic Plan through an iterative process that began in December 2011. The plan provides a simple strategy for moving forward over the next few years. An operations plan was developed under direction from the SALCC Steering Committee to redouble efforts to develop version 1.0 of a shared conservation blueprint by spring-summer of 2014. The SALCC is developing the regional blueprint to address the rapid changes in the South Atlantic including but not limited to climate change, urban growth, and increasing human demands on resources which are reshaping the landscape. While these forces cut across political and jurisdictional boundaries, the conservation community does not have a consistent cross-boundary, cross-organization plan for how to respond. The South Atlantic Conservation Blueprint will be that plan. The blueprint is envisioned to be a spatially-explicit map depicting the places and actions need to sustain South Atlantic LCC objectives in the face of future change. The steps to creating the blueprint include development of: indicators and targets (shared metrics of success); the State of the South Atlantic (past, present, and future condition of indicators); and a Conservation Blueprint. Potential ways the blueprint could be used include: finding the best places for people and organizations to work together; raising new money to implement conservation actions; guiding infrastructure development (highways, wind, urban growth, etc.); creating incentives as an alternative to regulation; bringing a landscape perspective to local adaptation efforts; and locating places and actions to build resilience after major disasters (hurricanes, oil spills, etc.). Integration of connectivity, function, and threats to river, estuarine and marine systems supporting Council managed species is supported by the SALCC and enhanced by the Council being a voting member of its Steering Committee. In addition, the Council's Regional Atlas presents spatial representations of Essential Fish Habitat, managed areas, regional fish and fish habitat distribution, and fishery operation information and it be linked to or drawn on as a critical part of the collaboration with the recently developed SALCC Conservation Planning Atlas.

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). 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 evolved, the distribution and use of GIS demands greater capabilities. The Council has continued its collaboration with FWRI in the now evolution to Web Services provided through the regional SAFMC Habitat and Ecosystem Atlas (http://ocean.floridamarine.org/safmc_atlas/) and the SAFMC Digital Dashboard (http://ocean.floridamarine.org/safmc_dashboard/). The Atlas integrates services for the following:

Species distribution and spatial presentation of regional fishery independent data from the SEAMAP-SA, MARMAP, and NOAA SEFIS systems; SAFMC Fisheries: (http://ocean.floridamarine.org/SA_Fisheries/)

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern; SAFMC EFH: (http://ocean.floridamarine.org/sa_efh/)

Spatial presentation of managed areas in the region; SAFMC Managed Areas: (http://ocean.floridamarine.org/safmc_managedareas/)

An online life history and habitat information system supporting Council managed, State managed, and other regional species was developed in cooperation with FWRI. The Ecospecies system is considered dynamic and presents, as developed, detailed individual species life history reports and provides an interactive online query capability for all species included in the system: http://atoll.floridamarine.org/EcoSpecies

Web Services System Updates:

- Essential Fish Habitat (EFH) – displays EFH and EFH-HAPCS for SAFMC managed species and NOAA Fisheries Highly Migratory Species.
- Fisheries - displays Marine Resources Monitoring, Assessment, and Prediction (MARMAP) and Southeast Area Monitoring and Assessment Program South Atlantic (SEAMAP-SA) data.
- Managed Areas - displays a variety of regulatory boundaries (SAFMC and Federal) or management boundaries within the SAFMC's jurisdiction.
- Habitat – displays habitat data collected by SEADESC, Harbor Branch Oceanographic Institute (HBOI), and Ocean Exploration dives, as well as the SEAMAP shallow and ESDIM deepwater bottom mapping projects, multibeam imagery, and scientific cruise data.
- Multibeam Bathymetry - displays a variety of multibeam data sources and scanned bathymetry charts.
- Nautical Charts – displays coastal, general, and overview nautical charts for the SAFMC's jurisdictional area.

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 tools including Special Management Zones. Pursuant to development of the Comprehensive Ecosystem-Based Amendment, the Council has taken 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 in 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 a source document to the CE-BAs. NOAA should support and build on the 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, which has served as the source document for CE-BAs, could also meet some of the 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;
5. Marine aquaculture;
6. Marine Ecosystems and Non-Native and Invasive Species: and
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. 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.

The Habitat and Environmental Protection Advisory Panel, as part of their role in providing continued policy guidance to the Council, is during 2013/14, reviewing and proposing revisions and updates to the existing policy statements and developing new ones for Council consideration. The effort is intended to enhance the value of the statements and support cooperation and collaboration with NOAA Fisheries Habitat Conservation Division and State and Federal partners in better addressing the Congressional mandates to the Council associated with designation and conservation of EFH in the region.

South Atlantic Bight Ecopath Model

The Council worked cooperatively with 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, only with significant investment of new resources through other programs will a comprehensive regional model be further developed.

The latest collaboration builds on the previous Ecopath model developed through the Sea Around Us project for the South Atlantic Bight with a focus on beginning a dialogue on the implications of potential changes in forage fish populations in the region that could be associated with environmental or climate change or changes in direct exploitation of those populations.

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 was 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 2,000 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) designated 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.
>
> Deepwater Coral HAPCs designated in Comprehensive Ecosystem-Based Amendment 1 are designated as Snapper Grouper EFH-HAPCs: Cape Lookout Coral HAPC, Cape Fear Coral HAPC, Blake Ridge Diapir Coral HAPC, Stetson-Miami Terrace Coral HAPC, and Pourtalés Terrace Coral HAPC.

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 and 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) 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 waters 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) designated 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, and 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 at that time).

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 at that time).

Pelagic *Sargassum* Habitat FMP

The Council through CEBA 2 (SAFMC 2011) designated 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; bottom longlines in the wreckfish fishery; 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.
- Established 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

- 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 gillnets 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 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 five deepwater CHAPCs:
  - Cape Lookout Lophelia Banks CHAPC;
  - Cape Fear Lophelia Banks CHAPC;
  - Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson- Miami Terrace) CHAPC;
  - Pourtales Terrace CHAPC; and
  - Blake Ridge Diapir Methane Seep CHAPC.
- Within the deepwater CHAPCs, the possession of coral species and the use of all bottom damaging gear are 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 a number of habitat policy statements which are available on the Habitat and Ecosystem section of the Council website (http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx).

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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.

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” total length (TL) 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 the exclusive economic zone (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 (1990a)	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 fishery management unit (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 vessel; -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 -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" TL limit – lane snapper -10" TL limit – vermilion snapper (recreational only) -12" TL limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers -20" TL limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers. -28" fork length (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 individual transferable quotas (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 total allowable catch (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	-Set up separate commercial TAC levels for golden tilefish and snowy grouper -Established commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper -Included 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 individual fishing quota 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 NC -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 (1994b)	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 (1997)	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 the snapper grouper (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 pounds (lbs) of snapper grouper species in any of the years -Granted non-transferable permit with 225 lb trip limit to all other vessels -Modified problems, objectives, optimum yield (OY), and overfishing definitions -Expanded Council's habitat responsibility -Allowed retention of snapper grouper species 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 (1998a)	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 the Magnuson-Stevens Act
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" TL (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" TL (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 -Specified size limits for several snapper grouper species (indicated in parentheses in inches TL): including yellowtail snapper (12), mutton snapper (16), red snapper (20); red grouper, yellowfin grouper, yellowmouth grouper, and scamp (20) -Vermilion snapper: 11" TL (recreational), 12" TL commercial -Gag: 24" TL (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April -Black grouper: 24" TL (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 snapper grouper without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runner -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
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 (1998c)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	-Identified essential fish habitat (EFH) and established habitat areas of particular concern (HAPC) for species in the snapper grouper 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 (1998d)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	-Maximum sustainable yield (MSY) proxy: goliath and Nassau grouper = 40% static spawning potential ratio (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 (minimum stock size threshold (MSST)=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (maximum fishing mortality threshold (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}
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
Amendment #12 (2000b)	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 of red porgy 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 (2003)	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 = 151,000 lbs

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.
			gutted weight (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 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" TL size limit. 4. Black Sea Bass Commercial: Commercial quota 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 sector
Amendment #14 (2007)	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 status determination criteria 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 -Reduce the effects of incidental hooking on sea turtles

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			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 status determination criteria for gag and vermilion snapper -For gag: Specify interim allocations 51% com & 49% rec; rec & com shallow water grouper spawning closure January through April; directed com quota= 352,940 lbs gw; -reduce 5-fish aggregate grouper bag limit, including tilefish species, to a 3-fish aggregate -Captain and crew on for-hire trips cannot retain the bag limit of vermilion snapper and species within the 3-fish grouper aggregate -For vermilion snapper: Specify interim allocations 68% com & 32% rec; directed com quota split Jan-June=315,523 lbs gw and 302,523 lbs gw July-Dec; reduce bag limit from 10 to 5 and a rec closed season November through March -Require dehooking tools
Amendment #19 (Comprehensive Ecosystem-Based Amendment 1; SAFMC 2009b)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	-Provide presentation of spatial information for EFH and EFH-HAPC designations under the Snapper Grouper FMP - Designation of deepwater coral HAPCs
Amendment #17A (SAFMC 2010a)	12/3/10 red snapper closure; circle hooks March 3, 2011	PR: 75 FR 49447 FR: 75 FR 76874	-Required use of non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear north of 28 deg. N latitude in the South Atlantic EEZ -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 -Prohibited harvest of 6 deepwater species seaward of 240 feet to curb bycatch of speckled hind and warsaw grouper

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 a control date for the golden tilefish portion of the snapper grouper fishery in the South Atlantic
Notice of Control Date	12/4/08	74 FR 7849	-Establishes control date for black sea bass pot sector in the South Atlantic
Regulatory Amendment #10 (SAFMC 2010c)	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 (SAFMC 2011a)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	- Establish trip limits for vermilion snapper and gag, increase trip limit for greater amberjack, and reduce bag limit for black sea bass
Regulatory Amendment #11 (2011b)	5/10/12	PR: 76 FR 78879 FR: 77 FR 27374	- Eliminate 240 ft harvest prohibition for six deepwater species
Amendment # 25 (Comprehensive ACL Amendment) (SAFMC 2011c)	4/16/12	PR: 76 FR 74757 Amended PR: 76 FR 82264 FR: 77 FR 15916	-Establish acceptable biological catch (ABC) control rules, establish ABCs, annual catch limits (ACLs), and accountability measures (AMs) for species not undergoing overfishing -Remove some species from South Atlantic FMU and designate others as ecosystem component species -Specify allocations between the commercial and, recreational sectors for species not undergoing overfishing -Limit the total mortality for federally managed species in the South Atlantic to the ACLs
Amendment #24 (SAFMC 2011d)	7/11/12	PR: 77 FR 19169 FR: 77 FR 34254	-Specify MSY, rebuilding plan (including ACLs, AMs, and OY), and allocations for red grouper
Amendment #23 (Comprehensive Ecosystem-based Amendment 2; SAFMC 2011e)	1/30/12	PR: 76 FR 69230 FR: 76 FR 82183	- Designate the Deepwater MPAs as EFH-HAPCs - Limit harvest of snapper grouper species in SC SMZs to the bag limit - Modify sea turtle release gear
Amendment #18A (SAFMC 2012a)	7/1/12	PR: 77 FR 16991 FR: 77FR3 2408	- Limit participation and effort in the black sea bass sector - Modifications to management of the black sea bass pot sector - Improve the accuracy, timing, and quantity of fisheries statistics
Amendment #20A (SAFMC 2012b)	10/26/12	PR: 77 FR 19165 FR: 77 FR 59129	-Redistribute latent shares for the wreckfish ITQ program.

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.
Regulatory Amendment #12 (SAFMC 2012c)	10/9/12	FR: 77 FR 61295	-Adjust the ACL and OY for golden tilefish -Consider specifying a commercial Annual Catch Target (ACT) -Revise recreational AMs for golden tilefish
Amendment #18B (SAFMC 2013a)	5/23/13	PR: 77 FR 75093 FR: 77 FR 23858	-Limit participation and effort in the golden tilefish commercial sector through establishment of a longline endorsement -Modify trip limits -Specify allocations for gear groups (longline and hook and line)
Regulatory Amendment #13 (SAFMC 2013b)	7/17/13	PR: 78 FR 17336 FR: 78 FR 36113	-Revise the ABCs, ACLs (including sector ACLs), and ACTs implemented by the Comprehensive ACL Amendment (SAFMC 2011c). The revisions may prevent a disjunction between the established ACLs and the landings used to determine if AMs are triggered.
Regulatory Amendment #15 (SAFMC 2013c)	9/12/13	PR: 78 FR 31511 FR: 78 FR 49183	-Modify the existing specification of OY and ACL for yellowtail snapper in the South Atlantic -Modify the existing gag commercial ACL and AM for gag that requires a closure of all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) in the South Atlantic when the gag commercial ACL is met or projected to be met
Amendment #27 (SAFMC 2014)	1/27/14	FR: 78 FR 78770	-Establish the South Atlantic Council as the responsible entity for managing Nassau grouper throughout its range including federal waters of the Gulf of Mexico -Modify the crew member limit on dual-permitted snapper grouper vessels -Modify the restriction on retention of bag limit quantities of some snapper grouper species by captain and crew of for-hire vessels -Minimize regulatory delay when adjustments to snapper grouper species' ABC, ACLs, and ACTs are needed as a result of new stock assessments -Address harvest of blue runner by commercial fishermen who do not possess a South Atlantic Snapper Grouper Permit
Amendment #28 (SAFMC 2013d)	8/23/13	PR: 78 FR 25047 FR: 78 FR 44461	-Establish regulations to allow harvest of red snapper in the South Atlantic
Regulatory Amendment #18 (SAFMC 2013e)	9/5/13	PR: 78 FR 26740 FR: 78 FR 47574	-Adjust ACLs for vermilion snapper and red porgy, and remove the 4-month recreational closure for vermilion snapper

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.
Regulatory Amendment #19 (SAFMC 2013f)	ACL: 9/23/13 Pot closure: 10/23/13	PR: 78 FR 39700 FR: 78 FR 58249	-Adjust the ACL for black sea bass and implement an annual closure on the use of black sea bass pots from November 1 to April 30
Amendment #20B	TBD	TBD	-Update wreckfish ITQ according to reauthorized Magnuson-Stevens Act
Regulatory Amendment #14	TBD	PR: 79 FR 22936	-Modify the fishing year for greater amberjack -Modify the fishing year for black sea bass -Revise the AMs for vermilion snapper and black sea bass -Modify the trip limit for gag
Amendment # 26 (Comprehensive Ecosystem-Based Amendment 3)	TBD	TBD	-Modify bycatch and discard reporting for commercial and for-hire vessels
Regulatory Amendment #16	TBD	TBD	-Consider removal of the November-April prohibition on the use of black sea bass pots
Amendment #36	TBD	TBD	-Establish special management zones to enhance protection for snapper-grouper species in spawning condition including speckled hind and warsaw grouper
Amendment #22	TBD	TBD	-Establish a recreational tagging program for snapper grouper species with small ACLs
Amendment #32	TBD	TBD	-Adjust management measures and ACLs for blueline tilefish
Regulatory Amendment #20	TBD	TBD	-Adjust management measures and ACLs for snowy grouper
Regulatory Amendment #22	TBD	TBD	-Adjust management measures and ACLs for gag and wreckfish

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 #35	TBD	TBD	-Remove four species from the Snapper Grouper FMP and address golden tilefish longline endorsement issue

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Appendix E. Other Applicable Laws

1.1 Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the 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, the National Marine Fisheries Service (NMFS) 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 wait period from the time a final rule is published until it takes effect, with some exceptions. Regulatory Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 14) complies with the provisions of the APA through the South Atlantic Fishery Management Council's (South Atlantic Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this amendment will have a request for public comments, which complies with the APA, and upon publication of the final rule, there will be a 30-day wait period before the regulations are effective.

1.2 Information Quality Act (IQA)

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Amendment 28 has used the best available information and made a broad presentation thereof. The information contained in this document was developed using best available scientific information. Therefore, this document is in compliance with the IQA.

1.3 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal 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 South Atlantic 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. The South Atlantic Council believes this document is consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina. This determination will be submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

1.4 Endangered Species Act (ESA)

The ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies must 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 NMFS 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. NMFS completed a biological opinion (NMFS 2006) in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and Amendment 13C to the Snapper Grouper FMP on ESA-listed species (see **Chapter 3**). The opinion stated the fishery was not likely to adversely affect North Atlantic right whale critical habitat, seabirds, or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. See NMFS (2006) for a full discussion of impacts to smalltooth sawfish.

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was evaluated in NMFS (2006) using data from the Supplementary Discard Data Program (SDDP). Three loggerheads and three unidentified sea turtles were caught on vertical lines; one leatherback and one loggerhead were caught on bottom longlines, all were released alive. The effort reported in the program represented between approximately 5% and 14% of all South Atlantic snapper-grouper fishing effort. These data were extrapolated in NMFS (2006) to better estimate the number of interactions between the entire snapper-grouper fishery and ESA-listed sea turtles. The extrapolated estimate was used to project future interactions (**Table E-1**).

Table E-1. Three-year South Atlantic anticipated takes sea turtles in the snapper grouper fishery.

Species	Amount of Take	Total
Green	Total Take	39
	Lethal Take	14
Hawksbill	Total Take	4
	Lethal Take	3
Kemp's Ridley	Total Take	19
	Lethal Take	8
Leatherback	Total Take	25
	Lethal Take	15
Loggerhead	Total Take	202
	Lethal Take	67

Source: NMFS 2006. NMFS (National Marine Fisheries Service). 2006. Endangered Species Act Section 7 consultation on the continued authorization of snapper grouper fishing under the Snapper Grouper FMP and Proposed Amendment 13C. Biological Opinion. June 7.

The SDDP does not provide data on recreational fishing interactions with ESA-listed sea turtle species. However, anecdotal information indicates that recreational fishermen occasionally take sea turtles with hook-and-line gear. The biological opinion also used the extrapolated data from the SDDP to estimate the magnitude of recreational fishing on sea turtles (**Table E-1**).

Regulations implemented through Amendment 15B to the Snapper Grouper FMP (74 FR 31225; June 30, 2009) required all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles and smalltooth sawfish. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles and smalltooth sawfish.

Subsequent to the June 7, 2006, biological opinion, elkhorn and staghorn coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened. In a consultation memorandum dated July 9, 2007, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery is not likely to adversely affect these *Acropora* species. On November 26, 2008, an *Acropora* critical habitat was designated. In a consultation memorandum dated December 2, 2008, NMFS concluded the continued authorization of the snapper grouper fishery is not likely to adversely affect *Acropora* critical habitat.

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine distinct population segments (DPSs) (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper-grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic (NWA) DPS, which remains listed as threatened. Five DPSs of Atlantic sturgeon were also listed since the completion of the 2006 biological opinion. In a consultation memorandum dated February 15, 2012, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery is not likely to adversely affect the Atlantic sturgeon. The February 15, 2012, memorandum also stated that because the 2006 biological opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the NWA DPS, the opinion's conclusion that the fishery is not likely to jeopardize the continued existence of loggerhead sea turtles remains valid.

On July 10, 2014, NMFS published its final rule designating critical habitat for the Northwest Atlantic Ocean (NWA) loggerhead sea turtle DPS (79 FR 39856). The Final Rule designated 38 marine areas within the Atlantic Ocean and Gulf of Mexico that contained the primary constituent elements (PCEs) (i.e., the physical or biological features) essential for the conservation of the loggerhead sea turtle. In a consultation memorandum dated September 16, 2014, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery would either not affect or was not likely to adversely affect any of the PCEs of loggerhead critical habitat.

On September 10, 2014, NMFS published its final rule maintaining elkhorn coral (*Acropora palmata*) and staghorn coral (*A. cervicornis*) as threatened and listing the following corals as threatened under the ESA: pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*), lobed star coral (*Orbicella annularis*), mountainous star coral (*O. faveolata*), and boulder star coral (*O. franksi*). In a consultation memorandum dated September 11, 2014, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery was not likely to adversely affect listed-*Acropora* species and was not likely to adversely affect the five newly listed species.

1.5 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 document and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 13132 is not necessary.

1.6 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, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new fishery management plan (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 Regulatory Flexibility Act. 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.

In accordance with E.O. 12866, the following is set forth by the South Atlantic Council: (1) this rule is not likely to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) this rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency; (3) this rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) this rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order; and (5) this rule is not controversial.

This amendment includes the RIR as **Appendix I**.

1.7 Executive Order 12898: Environmental Justice

E.O. 12898 requires that "to the greatest extent practicable and permitted by law…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…"

The alternatives being considered in this document are not expected to result in any disproportionate adverse human health or environmental effects to minority populations or low-income populations of Florida, North Carolina, South Carolina, or Georgia, rather the impacts would be spread across all participants in the snapper grouper fishery regardless of race or income. A detailed description of the communities impacted by the actions contained in this document and potential socioeconomic impacts of those actions are contained in **Chapters 3** and **4** of this document.

1.8 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. 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 National Recreational Fisheries Coordination 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. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this document are consistent with the directives of E.O. 12962.

1.9 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this document are consistent with the directives of E.O. 13089.

1.10 Executive Order 13158: Marine Protected Areas (MPAs)

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of Marine Protected Areas. The E.O. defined MPAs as "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein". It directs federal agencies to work closely with state, local and non- governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources".

The alternatives considered in this document are consistent with the directives of E.O. 13158.

1.11 Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs. Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted". A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans. The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline), which targets snapper grouper species are listed as part of a Category III fishery (78 FR 53336, August 29, 2013) because there have been no documented interactions between these gear and marine mammals. The black sea bass pot component of the South Atlantic snapper grouper fishery is part of the Atlantic mixed species trap/pot fishery, a Category II fishery, in the final 2014 LOF (79 FR 14418, March 14, 2014). The Atlantic mixed species trap/pot fishery designation was created in 2003 (68 FR 41725, July 15, 2003), by combining several separately listed trap/pot fisheries into a single group. This group was designated Category II as a precaution because of known interactions between marine mammals and gear similar to those included in this group. Prior to this consolidation, the black sea bass pot fishery in the South Atlantic was a part of the "U.S. Mid-Atlantic and Southeast U.S. Atlantic Black Sea Bass Trap/Pot" fishery (Category III). There has never been a documented interaction between marine mammals and black sea bass trap/pot gear in the South Atlantic. The actions in this EA are not expected to negatively impact the provisions of the MMPA.

1.12 National Environmental Policy Act (NEPA)

This document has been written and organized in a manner that meets NEPA requirements, and thus is a consolidated NEPA document, including an EA, as described in NOAA Administrative Order (NAO) 216- 6, Section 6.03.a.2.

Purpose and Need for Action

The purpose and need for this action are described in **Chapter 1**.

Alternatives

The alternatives for this action are described in **Chapter 2**.

Affected Environment

The affected environment is described in **Chapter 3**.

Impacts of the Alternatives

The impacts of the alternatives on the environment are described in **Chapter 4**.

1.13 National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The three sanctuaries in the South Atlantic exclusive economic zone are the USS Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the National Marine Sanctuaries.

1.14 Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

1.15 Regulatory Flexibility Act (RFA)

The RFA of 1980 (5 U.S.C. 601 et seq.) requires federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NMFS must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the RFA requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses, affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the RFA's provisions.

As NMFS has determined whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities, a certification to this effect will be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration.

This amendment includes the RFA as **Appendix J**.

1.16 Small Business Act (SBA)

Enacted in 1953, the SBA requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the SBA are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

1.17 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

Appendix F. Bycatch Practicability Analysis (BPA)

1.1 Population Effects for the Bycatch Species

Background

Amendment 29 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Amendment 29) considers updating the acceptable biological catch (ABC) control rule, adjusting ABCs for unassessed snapper grouper species based on the revised ABC control rule, modifying annual catch limits (ACLs) based on the revised ABCs, and modifying management measures for gray triggerfish. This amendment would modify the ABC control rule for unassesesd species using the Only Reliable Catch Stocks (ORCS) method recommended by the South Atlantic Fishery Management Council (South Atlantic Council) Scientific and Statistical Committee (SSC). There are 59 species in the snapper grouper fishery management unit (FMU), many of which co-exist with each other, and are encountered by fishers. Therefore, this BPA includes landings and discard information for species in the snapper grouper FMU, in addition to the fifteen species (Bar Jack, Margate, Red Hind, Cubera Snapper, Yellowedge Grouper, Silk Snapper, Atlantic Spadefish, Gray Snapper, Lane Snapper, Rock Hind, Tomtate, White Grunt, Scamp, Gray Triggerfish) considered in Amendment 29 (**Table 1**).

Based on methodology in *Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* (Berkson et al. 2011), the South Atlantic Council's SSC recommended an approach to compute the ABC for unassessed stocks with only reliable catch data. The approach involved selection of a "catch statistic", a scalar to denote the risk of overexploitation for the stock, and a scalar to denote the management risk level. The SSC provided the first two criteria for each stock, but the South Atlantic Council must specify their risk tolerance level for each stock. Amendment 29 proposes alternatives for the risk tolerance level for each select unassesed species including Bar Jack, Margate, Red Hind, Cubera Snapper, Yellowedge Grouper, Silk Snapper, Atlantic Spadefish, Gray Snapper, Lane Snapper, Rock Hind, Tomtate, White Grunt, Scamp, Gray Triggerfish.

Amendment 29 also proposes revising ACLs based on the adjusted ABCs. The Council added alternatives to set the ACL equal to ABC (both current and revised ABC) as well as alternatives that would provide a buffer between ABC and ACL.

Amendment 29 also proposes management measures for gray triggerfish including modifying the size limit, implementing a split season and a revised trip limit. These measures are necessary to diminish and/or prevent derby conditions, and ensure that overfishing does not occur pending a new assessment of the gray triggerfish stock in the South Atlantic region.

Commercial Sector

During 2008-2012, regulations (50 C.F.R. § 622.176) required participants in the South Atlantic snapper grouper fishery who were selected by the Science and Research Director (SRD) to maintain and submit a fishing record on forms provided by the SRD. Fishermen in the snapper grouper fishery were also required to submit logbooks with trip and effort information.

For the fifteen species in Amendment 29, commercial landings (pounds whole weight, lbs ww) during 2008-2012 were dominated by gray triggerfish (400,273 lb ww), followed by scamp (221,922 lb ww), white grunt (126,477 lbs ww), and gray snapper (113,992 lbs ww). All other species in the amendment had commercial landings of less than 100,000 lbs ww (**Table 1**). Commercial discards (number of fish) during 2008-2012 were highest for gray snapper (40,381) followed by tomate (2,441), scamp (2,204) and gray triggerfish (2,097). All other species had discards of less than 348 fish (**Table 1**). For snapper grouper species not considered in Amendment 29, commercial landings were high for yellowtail snapper, followed by vermilion snapper, greater amberjack, gag, and blueline tilefish (**Table 1**).

Currently, discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Actions that could help resolve some of these issues are currently being considered in an amendment being developed by the South Atlantic Council and the Gulf of Mexico Fishery Management Council (Gulf of Mexico Council), which would allow for commercial logbook data (including discard information) to be entered electronically.

Release mortality estimates for fish species are compiled from the most recent stock assessments using Southeast Fishery Science Center's (SEFSC) SEDAR process. With the exception of gray triggerfish, no species in this amendment has been the subject of a stock assessment and release mortality estimates have not been specified. For gray triggerfish, the commercial release mortality estimate is 12.5% (SEDAR 32 2013). See the "Finfish Bycatch Mortality" and "Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality" sections of this BPA for more details.

Recreational Sector

For the recreational sector during 2008-2012, estimates of the number of recreational discards were available from Marine Recreational Fisheries Statistical Survey (MRFSS) and the NMFS Southeast Headboat Survey. The MRFSS system classified 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.

Recent improvements have been made to the MRFSS program, now called the Marine Recreational Information Program (MRIP). Beginning in 2013, samples were drawn from a known universe of fishermen rather than randomly dialing coastal households. Other improvements have been and will be made that should result in better estimating recreational catches and the variances around those catch estimates. MRIP methods have been used to recalculate previous MRFSS estimates dating back to 1986.

During 2008-2012, information for charter trips came from two sources. Charter vessels for the snapper grouper fishery were selected to report by the SRD to maintain a fishing record for each trip, or a portion of such trips as specified by the SRD, and on forms provided by the SRD. Harvest and bycatch information was monitored by MRFSS/MRIP. Since 2000, a 10% sample of charter vessel captains were called weekly to obtain trip level information, such as date, fishing location, target species, etc. In addition, the standard dockside intercept data were collected from charter vessels and charter vessel clients were sampled through the standard random digital dialing of coastal households. Precision of charter vessel effort estimates has improved by more than 50% due to these changes (Van Voorhees et al. 2000).

Harvest from headboats was monitored by NMFS-SEFSC Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) were filled out by the headboat operators, or in some cases by NMFS approved headboat samplers based on personal communication with the captain or crew. Headboat trips were subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, and stomachs) were obtained as time allowed. Lengths of discarded fish were occasionally obtained but these data were not part of the headboat database.

During 2008-2012, private recreational landings and subsequent discards (numbers of fish, N) for species in Amendment 29 were dominated by gray snapper, white grunt, Atlantic spadefish, and gray triggerfish. For these species, discards were often much higher than the landings recorded (**Table 1**). Gray snapper catch was 1,434,333 fish with 229,482 landed and 1,204,852 listed as discards. Similar patterns are exhibited for Atlantic spadefish, white grunt, and gray triggerfish. Other species including black sea bass also show very high recreational discards with landings at 275,845 and discards of 2,598,008. In the for-hire category, charterboats landed mostly gray triggerfish (32,706) and white grunt (34,665) (**Table 1**). Discards in the charterboat category were highest for tomtate, white grunt and gray triggerfish (**Table 1**). For headboats, landings were highest for white grunt, gray triggerfish, and gray snapper. Discards for the headboat sector were highest for tomtate, white grunt and gray triggerfish (**Table 1**). For snapper grouper species not included in Amendment 29, landings and discards in all recreational categories were high for black sea bass, blue runner, yellowtail snapper, and vermilion snapper (**Table 1**).

Table 1. Mean headboat, MRIP (charter and private), and commercial estimates of landings and discards of snapper grouper species in the South Atlantic (2008-2012). Headboat, MRIP (charter and private) landings are in numbers of fish (N); commercial landings are in pounds whole weight (lbs ww). Discards represent numbers of fish that were caught and released alive. Species considered in Amendment 29 are in boldface.

Species	HEADBOAT			MRIP CHARTER			MRIP PRIVATE			COMMERCIAL	
	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Landings (lbs ww)	Discards (N)
Almaco jack	3,576	3,337	240	3,858	2,592	1,266	9,416	3,688	5,728	204,422	869
Atlantic spadefish	**158**	**128**	**30**	**236**	**188**	**48**	**267,887**	**110,718**	**157,169**	**26,936**	**0**
Banded rudderfish	19,008	16,651	2,357	5,634	3,159	2,475	13,703	6,847	6,855	60,615	142
Bank sea bass	5,788	5,788	0	2,913	691	2,222	10,413	2,393	8,020	387	4
Bar jack	**290**	**230**	**59**	**261**	**76**	**186**	**11,222**	**2,805**	**8,417**	**4,111**	**17**
Black grouper	1,622	315	1,307	9,755	1,422	8,334	31,487	7,760	23,727	50,001	2,006
Black sea bass	629,922	166,255	463,667	250,778	63,803	186,974	2,873,854	275,845	2,598,008	486,316	29,772
Black snapper	0	0	0	0	0	0	0	0	0	213	7
Blackfin snapper	119	51	68	101	101	0	1,843	1,843	0	1,616	1
Blue runner	22,821	17,484	5,337	25,885	11,601	14,284	1,325,020	610,399	714,621	227,946	854
Blueline tilefish	3,085	3,013	73	18,503	18,055	448	8,569	8,324	245	370,077	244
Coney	121	70	51	37	33	4	1,314	1,100	214	34	0
Cottonwick	17	17	0	0	0	0	148	148	0	0	0
Cubera snapper	**377**	**359**	**17**	**4**	**4**	**0**	**2,907**	**2,631**	**275**	**5,060**	**0**
Dog snapper	92	64	28	57	57	0	954	822	133	395	0
Gag	15,489	10,214	5,276	19,365	2,983	16,382	131,170	21,430	109,740	495,064	9,490
Golden tilefish	0	0	0	493	493	0	3,123	3,123	0	421,923	26
Gray snapper	**46,371**	**40,624**	**5,747**	**5,220**	**5,024**	**196**	**1,434,333**	**229,482**	**1,204,852**	**113,992**	**40,381**
Gray triggerfish*	**67,258**	**55,192**	**12,066**	**39,155**	**32,706**	**6,449**	**226,603**	**110,045**	**116,558**	**400,273**	**2,097**

Species	HEADBOAT			MRIP CHARTER			MRIP PRIVATE			COMMERCIAL	
	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Landings (lbs ww)	Discards (N)
Graysby	3,001	2,041	960	1,049	919	131	10,074	3,049	7,025	192	29
Greater amberjack	6,614	4,710	1,904	25,898	20,209	5,689	58,129	22,383	35,746	859,929	3,353
Hogfish	260	169	91	32	29	3	30,321	27,550	2,770	45,169	55
Jolthead porgy	7,050	6,913	137	2,232	2,232	0	12,594	11,869	725	3,853	11
Knobbed porgy	5,584	5,439	145	832	832	0	6,838	6,398	441	23,726	1
Lane snapper	**23,340**	**20,227**	**3,112**	**11,993**	**8,882**	**3,111**	**166,037**	**42,246**	**123,791**	**3,526**	**210**
Lesser amberjack	22	17	6	12	12	0	393	393	0	17,044	34
Longspine porgy	3	3	0	0	0	0	460	290	170	0	0
Mahogany snapper	32	30	2	0	0	0	35	35	0	30	0
Margate	**856**	**662**	**195**	**265**	**206**	**59**	**9,512**	**3,559**	**5,952**	**3,725**	**30**
Misty grouper	0	0	0	0	0	0	0	0	0	971	1
Mutton snapper	17,683	13,996	3,687	31,630	18,609	13,021	294,792	111,060	183,732	74,212	1,636
Ocean triggerfish	473	473	0	363	285	77	7,366	3,454	3,912	0	0
Queen snapper	0	0	0	1	1	0	0	0	0	3,734	107
Red grouper	11,559	1,629	9,930	9,138	3,647	5,491	81,675	31,172	50,503	367,462	3,610
Red hind	**383**	**313**	**70**	**86**	**86**	**0**	**2,588**	**928**	**1,660**	**9,865**	**88**
Red porgy	41,064	23,659	17,405	20,579	12,733	7,845	38,282	24,793	13,489	169,468	27,818
Rock hind	**2,150**	**1,509**	**642**	**132**	**92**	**40**	**4,087**	**908**	**3,179**	**15,839**	**14**
Rock sea bass	0	0	0	415	177	238	11,477	4,287	7,190	453	49
Sailors choice	123	123	0	732	23	709	32,818	14,324	18,494	0	0
Sand tilefish	1,712	895	817	4,053	484	3,568	23,983	6,091	17,891	0	238
Saucereye porgy	228	228	1	0	0	0	1,034	1,034	0	0	0

Species	HEADBOAT			MRIP CHARTER			MRIP PRIVATE			COMMERCIAL	
	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Catch (N)	Landings (N)	Discards (N)	Landings (lbs ww)	Discards (N)
Scamp	**5,602**	**3,195**	**2,407**	**4,631**	**2,771**	**1,860**	**8,852**	**5,108**	**3,745**	**221,922**	**2,204**
Schoolmaster	344	344	0	2	2	0	7,251	4,427	2,824	181	0
Scup	11,364	9,531	1,833	246	219	28	1,086	596	490	0	0
Silk Snapper	**1,371**	**1,249**	**122**	**1,379**	**1,209**	**171**	**1,141**	**153**	**988**	**11,379**	**8**
Snowy grouper	123	72	50	1,684	1,388	295	969	550	419	85,047	273
Tomtate	**119,474**	**49,453**	**70,021**	**19,269**	**11,868**	**7,401**	**331,321**	**84,819**	**246,502**	**212**	**2,441**
Vermilion snapper	282,092	176,802	105,290	63,968	41,150	22,818	169,085	70,051	99,034	1,010,587	38,174
White grunt*	**179,271**	**144,826**	**34,445**	**42,015**	**34,665**	**7,349**	**419,442**	**193,338**	**226,104**	**126,477**	**348**
Whitebone porgy	4,836	4,577	258	1,833	1,784	49	11,919	10,710	1,209	14	31
Yellowedge grouper	**7**	**4**	**3**	**27**	**27**	**0**	**44**	**44**	**0**	**16,080**	**13**
Yellowfin grouper	20	14	5	0	0	0	97	97	0	3,780	6
Yellowmouth grouper	22	17	5	15	15	0	0	0	0	290	0
Yellowtail snapper	134,179	100,724	33,454	199,283	134,871	64,412	967,208	362,141	605,067	1,123,532	90,695

Sources: MRIP data from SEFSC Recreational ACL Dataset (May 2013), Headboat data from SEFSC Headboat Logbook CRNF files (expanded; May 2013), Commercial landings data from SEFSC Commercial ACL Dataset (July 10, 2013) with discard estimates from expanded SEFSC Commercial Discard Logbook (Jun 2013).
Note: Estimates of commercial discards are highly uncertain and are for vertical line gear only.
*Commercial gray triggerfish includes "triggerfishes, unclassified" category; commercial white grunt includes "grunts, unclassified" category.
Goliath grouper, Nassau grouper, Warsaw grouper, Speckled hind, and Red snapper are excluded from Table 1 since they are prohibited species, and landings records are not available for all the years 2007-2011. Wreckfish landings are confidential.

Finfish Bycatch Mortality

Release mortality estimates are compiled from the most recent stock assessments using Southeast Fishery Science Center's SEDAR process. With the exception of gray triggerfish, no species in this amendment have been the subject of a stock assessment and do not have release mortality estimates specified. A stock assessment for gray triggerfish is underway, and the commercial and recreational release mortality estimate is 12.5% (SEDAR 32 2013).

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Species most closely associated with directed fisheries for gray triggerfish are vermilion snapper (**Table 2**, SERO-LAPP-2010-06). Gray snapper are caught with lane snapper. Fishermen could harvest one of these species and return co-occurring species to the water as "regulatory discards" (e.g., if the fish are under the size limit) or if undesirable. A portion of the discarded fish would not survive.

Table 2. Top five associated stocks and level of association (parenthesis) for snapper grouper species considered in Amendment 29, evaluated in **Table A6** of **Appendix O** in the Comprehensive ACL Amendment (SAFMC 2011). Species groups were evaluated using cluster association matrix with life history weighted equal to maximum from fishery data.

COMMON NAME	1	2	3	4	5
yellowedge grouper	snowy grouper (.4)	blueline tilefish (.24)	warsaw grouper (.17)	tilefish (.07)	silk snapper (.04)
silk snapper	yellowfin grouper (.34)	tilefish (.15)	wreckfish (.08)	snowy grouper (.07)	warsaw grouper (.03)
gray triggerfish	vermilion snapper (.38)	gag (.21)	lane snapper (.12)	red porgy (.1)	white grunt (.05)
red hind	rock hind (.24)	jolthead porgy (.15)	red grouper (.11)	whitebone porgy (.08)	tomtate (.08)
rock hind	red hind (.28)	knobbed porgy (.27)	jolthead porgy (.24)	bar jack (.06)	white grunt (.04)
tomtate	whitebone porgy (.38)	vermilion snapper (.33)	red hind (.08)	black sea bass (.08)	gray triggerfish (.02)
white grunt	jolthead porgy (.23)	red grouper (.13)	gray triggerfish (.1)	knobbed porgy (.09)	gag (.09)
bar jack	sand tilefish (.24)	jolthead porgy (.1)	knobbed porgy (.08)	rock hind (.08)	nassau grouper (.06)
gray snapper	lane snapper (.58)	yellowtail snapper (.37)	red porgy (.05)	warsaw grouper (.)	silk snapper (.)
lane snapper	gray snapper (.62)	gray triggerfish (.17)	yellowtail snapper (.11)	vermilion snapper (.06)	whitebone porgy (.02)

Sources: SERO-LAPP-2010-06.

The Preferred alternative under **Action 1** would update the ABC control rule to use the Only Reliable Catch Stocks (ORCS) approach to calculate ABC values for select unassessed stocks. Updating the ABC control rule as proposed in **Preferred Alternative 2** would not have any direct biological effects. This change would; however, indirectly effect the biological environment since an approved scientific methodology would be adopted to establish ABCs for snapper grouper species that have not been assessed but for which there are reliable catch statistics.

Action 2 would apply the revised ABC control rule (under Action 1). The SSC provided the catch statistic and risk of overexploitation for each stock, but the South Atlantic Council must specify their risk tolerance level for each stock as described in **Action 2** alternatives and associated sub-alternatives. **Preferred Sub-alternative 2b** would apply risk tolerance scalars of 0.90 for stocks with low risk of overexploitation (bar jack). **Preferred Sub-alternative 3b** would apply risk tolerance scalars of 0.80 for stocks with moderate risk of overexploitation. Finally, **Preferred Sub-alternative 4a** would use scalar of 0.70 for stocks with moderately high risk of overexploitation.

Action 3 considers alternatives that would revise ACLs based on the adjusted ABCs in Action 2. The no action alternative would not change the ACLs from the status quo, regardless of what alternative is selected in **Action 2**. **Alternative 2, Preferred Sub-alternatives 2a-2e** and **2g** would set the ACL equal to the revised ABC selected in Action 2. **Alternatives 3-5** would provide a buffer between the ACL and revised ABC. **Preferred Sub-alternative 4f** under **Alternative 4** would establish a 10% buffer between the ACL and ABC for scamp.

Action 4 considers alternatives that would modify the minimum size limit of gray triggerfish. Currently the commercial and recreational minimum size limit for South Atlantic gray triggerfish is 12 inches total length (TL) in federal waters off east Florida and 12 inches fork length (FL) in east Florida state waters (**Alternative 1**). In the Gulf of Mexico, the commercial and recreational minimum size limit is 14 inches FL in state and federal waters off west Florida. The South Atlantic Council is considering alternatives to modify the minimum size limit.

A stock assessment of South Atlantic gray triggerfish (SEDAR 32 2013) has provided an equation to estimate from TL to FL. Based on this equation, a 12- inch TL gray triggerfish is equal to a 10.46 inch FL gray triggerfish. Based on the biological analysis in Section 4 of the amendment, **Preferred Alternative 3,** which would establish a minimum size limit of 12 inches fork length off Georgia, South Carolina, and North Carolina, would provide a slight reduction in harvest rates. **Preferred Alternative 5** would specify a size limit for gray triggerfish of 14 inches fork length off east Florida.

Action 5 considers alternatives that would divide the commercial fishing season for gray triggerfish into two time periods. The purpose of **Action 5** would be to provide opportunities to fish for gray triggerfish throughout South Atlantic and throughout the calendar year. With the specification of an ACL for gray triggerfish through the Comprehensive ACL Amendment (SAFMC 2011), and Regulatory Amendment 13 in 2013 (SAFMC 2013), in-season closures have taken place when the ACLs have been met. In 2012, when the commercial ACL was 305,262 lbs ww, commercial harvest of gray triggerfish closed on September 11, 2012, and reopened for a week in December. In 2013, the ACL was increased to 272,880 lbs ww, and commercial harvest for gray triggerfish was closed on July 7 and reopened from October 18 to November 14. **Action 3** proposes commercial ACLs for gray triggerfish based on the preferred alternative for ABC (**Preferred Sub-alternative 4a**) in **Action 2**.

By dividing the commercial ACL into two six-month fishing seasons, fishermen would be given the opportunity to fish for gray triggerfish at the beginning of the year, and during the summer. The divided commercial quota would provide fishermen in the northern and southern areas of the South Atlantic a chance to fish for gray triggerfish when weather conditions are favorable in their respective areas.

Action 6 considers alternatives for trip limits for gray triggerfish **Alternative 1 (No Action)** would not establish a trip limit for gray triggerfish. Currently, the commercial ACL is 272,880 lbs ww. **Action 3** proposes commercial ACLs for gray triggerfish based on the preferred alternative for ABC (**Preferred Sub-alternative 4a**) in **Action 2**.

In 2012, the commercial ACL was 306,262 lb ww, and gray triggerfish was closed on September 11, 2012. In 2013, the commercial ACL was 272,880 lbs ww, gray triggerfish was closed on July 7, 2013, but was reopened from October 28 to November 14. Thus, without a trip limit, commercial closures for gray triggerfish are expected.

The effects of trip limits proposed in **Preferred Alternatives 2** and **3** for 2008-2012 landings are based on logbook data. **Preferred Alternative 2** and associated Sub-alternatives would establish commercial trip limits ranging from 500 lbs ww to 1,500 lbs ww. Landings information from 2012 show that about 8% of the trips had landings greater than 500 lbs ww (**Sub-alternative 2a**), 2% of the trips had landings greater than 1,000 lbs ww (**Preferred Sub-alternative 2b**), and less than 1% of the trips had landings greater than 1,500 lbs ww (**Sub-alternative 2c**). Thus, commercial closures would still be expected under **Sub-alternatives 2a-2c**.

If the commercial ACL is increased to 312,325 lbs ww based on **Preferred Sub-alternative 4a**, a 33% reduction 2012 landings would be needed. Thus, if effort were to remain at the same levels as in 2012, a trip limit of 250 lbs ww (ACL = 272,880 lbs ww) or 300 lbs ww (312,325 lbs ww) would be needed to obtain the harvest reduction needed to keep the commercial sector open all year.

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 and subsequently disrupt the ecological function of a species within the ecosystem. Species addressed in Amendment 29 are unassessed and the effects of bycatch mortality have not been specifically quantified.

As summarized in **Section 1.1** of this BPA, actions in Amendment 29 are not expected to result in significant changes in bycatch of the species in the amendment or co-occurring species. Preferred alternatives under Action 1, Action 2, and Action 3 would lead to an increase in the ACLs for most species. ACL increases would be most significant for Atlantic spadefish and gray snapper in for both the recreational and commercial sectors. Under **Action 3**, **Preferred Alternative 2**, the ACL would increase for commercial and recreational sectors of Snappers

Complex, Shallow Water Groupers Complex, bar jack, Atlantic spadefish, and gray triggerfish. The recreational ACL for the Grunts Complex would also increase. The commercial ACL for the Grunts Complex would decrease slightly as would the commercial and recreational ACLs for scamp. ACLs and AMs are in place for snapper grouper species to ensure overfishing does not occur, and expected bycatch has been taken into consideration when specifying catch levels. Although **Action 3** would result in an increase in the gray triggerfish ACL, the management measures proposed in **Actions 4-6** would reduce the rate at which the ACL would be met. Additionally, as stated in **Chapter 3,** and analyzed in detail in **Chapter 4**, the biological (and consequently ecological) effects due to changes in the bycatch would likely be negligible.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Amendment 29 is not expected to affect major changes in bycatch of other fish species. Species considered in Amendment 29 are caught with co-occurring species (**Table 2**) but previous amendments have been implemented that establish ACLs and AMs for snapper grouper species to ensure that overfishing does not occur (See Appendix D for a history of management). Therefore, bycatch and discards of closely associated species such as lane snapper, vermilion snapper, yellowfin grouper, and snowy grouper are not expected to be affected by the proposed actions in Amendment 29.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), a commercial fishery to must be placed in one of three categories, based on the relative frequency of incidental, serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent, serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional, serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)), and they must comply with any applicable take reduction plans.

The commercial hook-and-line components of the South Atlantic snapper-grouper fishery (i.e., bottom longline, bandit gear, and handline) are listed as part of a Category III fishery under the Proposed 2014 List of Fisheries (78 FR 73477; December 6, 2013) because there have been no documented interactions between these gear and marine mammals. Actions proposed in Amendment 29 are not expected to have increase interactions between fishing gear and marine mammals.

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 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 U.S. Fish and Wildlife Service data). Interaction with fisheries has not been reported as a concern for either of these species.

Increasing fishing effort has the potential to increase 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.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

The actions in Amendment 29 consider changes to ACLs for select snapper grouper species as well as management measures for gray triggerfish including modification to the size limit, trip limits, and a split season. It is likely that all four states (North Carolina, South Carolina, Georgia, and Florida) would be affected by actions in the amendment if implemented through rulemaking. Additionally, factors such as waterfront property values, availability of less expensive imports, etc. may affect economic decisions made by recreational and commercial fishermen who target these species.

Economic effects of the actions proposed in Amendment 29 are addressed in **Chapter 4**, as well as **Appendices I** (Regulatory Impact Review) and **J** (Regulatory Flexibility Act Analysis).

1.6 Changes in Fishing Practices and Behavior of Fishermen

Actions proposed in Amendment 29 could result in a modification of fishing practices by commercial and recreational fishermen. However, as discussed in **Sections 1.1** and **1.2** of this BPA, the magnitude of discards is not expected to be significantly affected by the proposed actions. It is difficult to quantify any of the measures in terms of reducing discards until bycatch has been monitored over several years. Commercial and recreational bycatch information is collected by NMFS, and that information will continue to be analyzed to determine what changes, if any, have taken place in terms of fishing practices and fishing behavior as a result of the actions implemented through this amendment.

Social effects of actions proposed in Amendment 29 are addressed in **Chapter 4** of this document. **Section 3.3.3** includes information on environmental justice.

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is ongoing to understand the effectiveness of proposed management measures and their effect on bycatch. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. 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 SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Further, The Joint Commercial Logbook Reporting Amendment is being developed by the South Atlantic Council and the Gulf of Mexico Council, which would require electronic reporting of landings information by federally-permitted commercial vessels to increase the timeliness and accuracy of landings and discard data.

Recreational discards are obtained from MRIP and logbooks from the NMFS headboat program. Additional data collection activities for the recreational sector are being considered by the South Atlantic Council that could allow for a better monitoring of snapper grouper bycatch in the future. Some observer information has been provided by Marine Fisheries Initiative and Cooperative Research Programs (CRP), but more is desired for the snapper grouper fishery. In December 2012, the Southeast Region Headboat Survey underwent a transition from paper logbooks to electronic logbooks, which is expected to improve the quality of data in that sector. As of January 1, 2013, the paper logbook form has been replaced by a new electronic logbook. The form is available through a password protected Web site on the internet, which can be accessed by personal computer, computer tablet, or “smart phone”. The South Atlantic Council approved the For-Hire Amendment at their March 2013 meeting, which was approved and implemented in January 2014. This amendment requires weekly electronic reporting by the headboat sector.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Harris and Stephen (2005) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. conducted a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

In the spring 2010, Archipelago Marine Research Ltd. worked with North Carolina Sea Grant and several South Atlantic Unlimited Snapper Grouper Permit holders to test the effectiveness of electronic video monitoring to measure catch and bycatch. A total of 93 trips were monitored with video monitoring, 34 by self-reported fishing logbooks, and 5 by observers. Comparisons between electronic video monitoring data and observer data showed that video monitoring was a reliable source of catch and bycatch data.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Marine Fisheries Initiative, Saltonstall-Kennedy program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate 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

The preferred management measures and any changes in economic, social, or cultural values are discussed in **Chapter 4** of Amendment 29. Further analysis can be found in **Appendices I** (Regulatory Impact Review) and **J** (Regulatory Flexibility Act Analysis).

1.9 Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from the action in Amendment 29 are expected to be negligible and discussed in **Chapter 3**. Economic and social effects of the actions proposed in Amendment 29 are addressed in **Chapter 4**.

1.10 Social Effects

The social effects of all the measures are described in **Chapter 4** of Amendment 29.

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, measures proposed in Amendment 29 consider updating the ABC control rule, adjusting ABCs for unassessed snapper grouper species based on the revised ABC control rule, and modifying management measures for gray triggerfish. As summarized in **Section 1.1** of this BPA, most actions in Amendment 29 are not expected to result in significant changes in bycatch of the species impacted by this amendment, or co-occurring species. Furthermore, Amendment 29 is not expected to affect major changes in bycatch of other fish species.

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Appendix G. Recreational Size Limit Analysis for Gray Triggerfish

Change the measurement method of gray triggerfish in the recreational sector to have consistency between state and federal waters.

Currently, the recreational minimum size limit for South Atlantic gray triggerfish is 12 inches total length (TL) in federal waters and 12 inches fork length (FL) in east Florida state waters. The Council is considering increasing the size limit from 12 inches TL to 12 inches FL in federal waters.

A recent stock assessment of South Atlantic gray triggerfish (SEDAR 32) is currently underway and provided the conversion equation to go from TL to FL (Table G-1). Using the conversion equation a 12 inch TL gray triggerfish converts to a 10.46 inch FL gray triggerfish.

Table G-1. Meristic conversions for South Atlantic gray triggerfish. Source: SEDAR 32.

Conversion	Model
Total Length (mm) to Fork Length (mm)	Total Length = 1.19*(Fork Length) – 11.42

SEDAR 32 determined the midrange of discard mortality to be 12.5%. In this analysis discard mortality was assumed to be 12.5%.

Recreational Sector

An ACL of 367,303 pounds whole weight (lbs ww) was implemented for the South Atlantic gray triggerfish recreational sector in the Comprehensive Annual Catch Limit Amendment on April 16, 2012. However, this ACL was based on Marine Recreational Fisheries Statistics Survey (MRFSS) data, and the recreational survey method was recently modified and changed to the Marine Recreational Information Program (MRIP). Regulatory Amendment 13 revised the gray triggerfish ACL using MRIP data which resulted in an ACL of 353,638 lbs ww. **Table G-2** provides historic recreational landings from 2008 to 2012 and compares them to the MRIP ACL. Historic landings would have exceeded the ACL however the most recent landings (2012) did not exceed the ACL.

Table G-2. Annual South Atlantic gray triggerfish recreational landings by area from 2008 to 2012. MRIP landings were provided with the headboat landings and compared to their respective ACLs in the "ACL %" column.

Year	NC, SC, and GA Federal Landings	NC, SC, and GA State Landings	Florida Federal	Florida State	Total Landings	ACL	ACL %
2008	348,934	3,113	77,467	126,958	556,471	353,638	157
2009	243,331	17,569	68,415	198,495	527,809	353,638	149
2010	213,784	62,387	115,909	70,555	462,636	353,638	131
2011	144,715	10,241	120,575	80,795	356,327	353,638	101
2012	202,868	25,241	22,633	97,858	348,599	353,638	99

The lengths of South Atlantic gray triggerfish in the recreational sector came from MRIP recreational survey and headboat datasets. The recreational survey length data came from the catch effort files and the headboat data came from the biological profile files. Data were from 2008 to 2012.

The average length of gray triggerfish increased from 2008 to 2012 (**Table G-3** and **Figure G-1**). Changes in the fish size overtime can influence the reduction of landings estimated from changes in the minimum size limit. To control for this impact only data from the previous three years (2010-2012) were used for size limit analysis. There are also the three most recent fishing years which will most likely represent future landings.

Table G-3. Average fork length of gray triggerfish for the South Atlantic recreational sector for each year. The recreational data comes from MRIP and headboat.

Year	Average Fork Length (inches)	n
2008	13.4	832
2009	13.5	1055
2010	13.6	1863
2011	13.8	1487
2012	13.8	1490

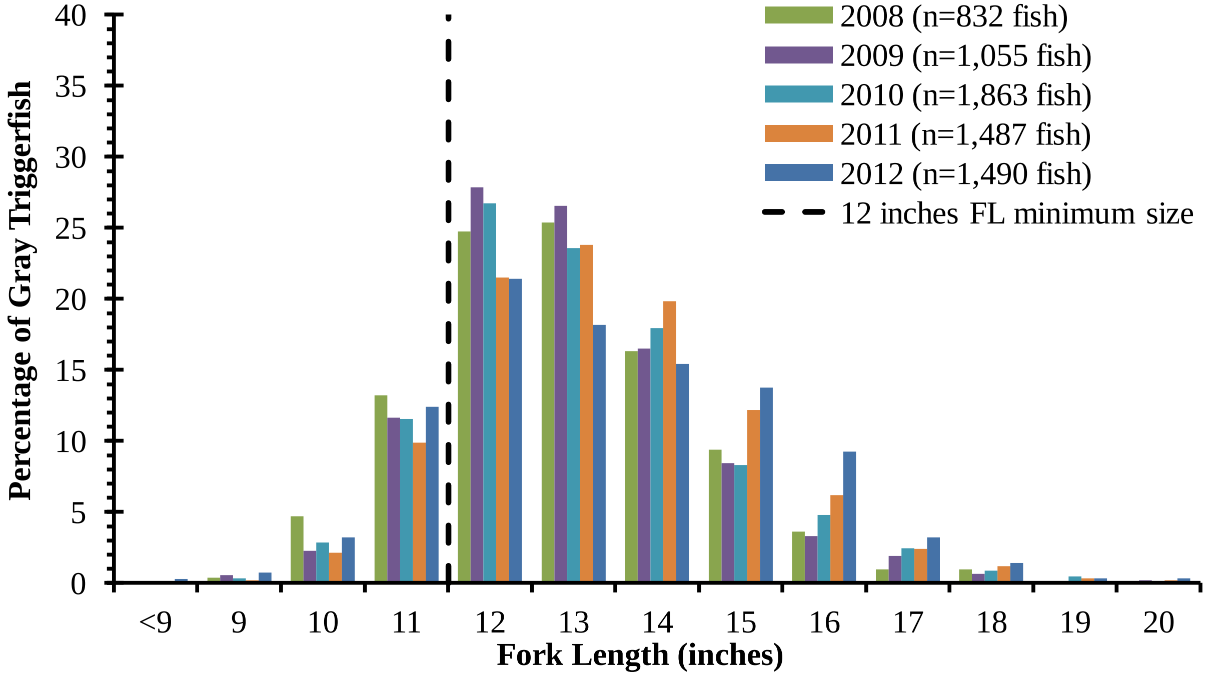

Figure G-1. Distribution of South Atlantic gray triggerfish lengths by year from the recreational sector. The data comes from 2008 to 2012 and contains both MRIP and headboat data.

Alternative 2

Alternative 2 changes the minimum size limit in federal waters of the east coast of Florida from 12 inches TL to 12 inches FL. This would be a change of a 10.46 inches FL to an increase to 12 inches FL.

The data were filtered so only length data from the east coast of Florida remained. From 2010-2012 there were lengths available for 146 gray triggerfish (75 in the charter sector and 71 in the private sector) in federal waters for the MRIP dataset. The headboat data was for the entire east coast of Florida, since federal and state waters fishing location information is not available, and contained lengths for 2,882 gray triggerfish.

The percent reduction from increasing the minimum size to 12 inches FL was calculated from the length data. The lengths were converted to weight and the reductions were calculated in terms of weight. Additional information on the details on calculating the percent reductions can be found at SERO-LAPP-2012-02. Since the MRIP length data had location details of state and federal waters the MRIP reductions were calculated specifically with data from federal waters. Figure 2 displays the lengths in federal versus state waters of east Florida. Additionally, the MRIP reductions were calculated for both private and charter sectors. Since location of harvest (federal vs. state waters) was not available for headboat the reductions generated from the headboat data were for the entire east coast of Florida. Monthly percent reductions were not possible with the MRIP dataset because the monthly sample sizes were small (<30 fish).

However, the monthly percent reductions were possible for the headboat dataset because each month had large samples sizes (>30 fish). Table G-4 provides the percent reduction results.

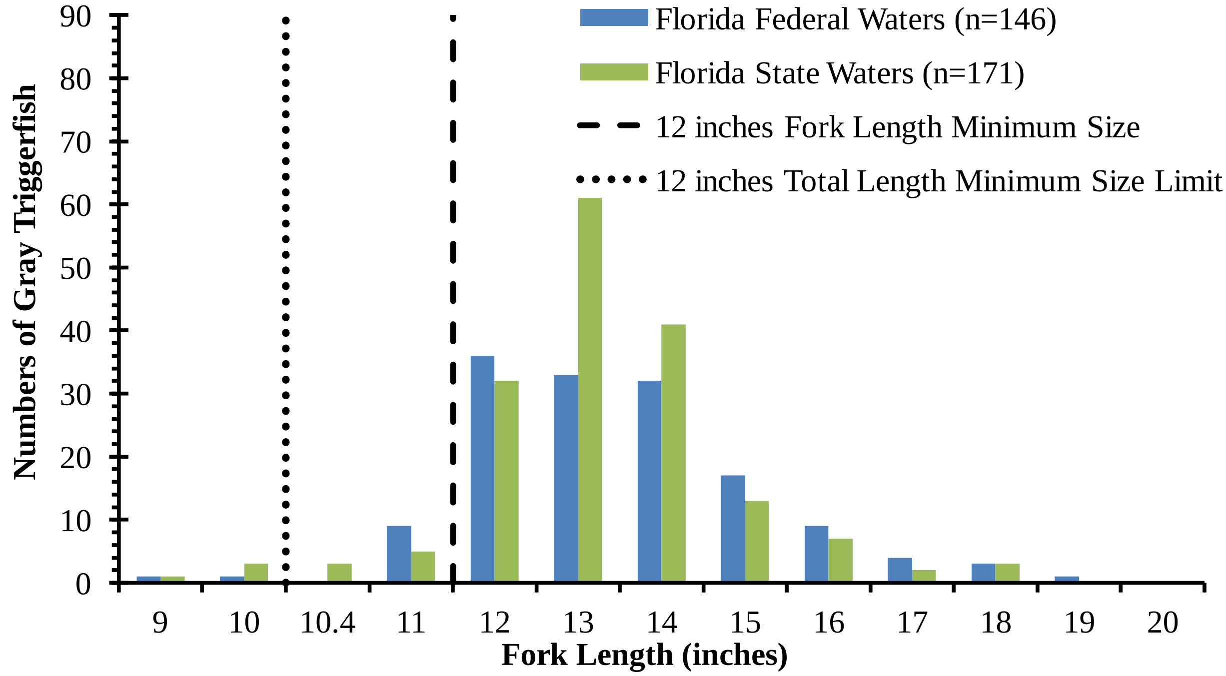

Figure G-2. Distribution of Florida east coast gray triggerfish lengths from the recreational sector separated by catches in federal and state waters. The data comes from 2010 to 2012 MRIP intercepts. The headboat length data was not included since it does not have information on location of catch in federal and state waters.

Table G-4. Percent reductions in South Atlantic recreational gray triggerfish landings for increasing the minimum size in Florida waters from 12 inches total length (10.46 inches FL) to 12 inches fork length.

MRIP		
	Charter	Private
12 inches FL	5.3	1.5
Headboat		
Month	Charter	
1	6.3	
2	13.7	
3	7.5	
4	10.1	

5	10.9
6	11.4
7	10.7
8	6.3
9	4.5
10	5.2
11	3
12	4.5

The reductions were calculated in terms of gray triggerfish weight (lbs) following SERO-LAPP-2012-02. The percent reductions for MRIP were calculated for federal waters. Headboat length data did have jurisdictional information on the catch location (federal or state waters) so the percent reductions reflect both federal and state waters combined. Monthly percent reductions were calculated for headboat data because there was sufficient samples sizes for each month.

Headboat landings, like the headboat length data, did not include the location of catch from federal or state waters. However, headboat catch-effort files (CRNF files) do have information on catch in federal or state waters. The headboat intercept file was used to determine the annual ratio of gray triggerfish caught in federal versus state waters. Then that ratio was applied to the annual headboat landings to separate them into state and federal waters.

To reflect the management change in **Alternative 2** the percent reductions were only applied to South Atlantic gray triggerfish landings from east of Florida in federal waters. Then the reduced Florida federal landings were then added to the Florida state water landings and the North Carolina, South Carolina, and Georgia gray triggerfish landings. This calculation was done for the annual landings from 2010 to 2012, and Table G-5 provides the results of the overall reduction of landings.

Table G-5. Percent reductions in annual South Atlantic recreational sector gray triggerfish landings from increasing the minimum size in Florida federal waters from 12 inches TL (10.46 inches FL) to 12 inches FL. The recreational landings include MRIP landings combined with headboat landings.

Year	% Reduction in Total Landings
2010	0.82
2011	1.07
2012	1.06

Alternative 3

Alternative 3 creates a minimum size limit of 12 inches FL for the federal waters off of North Carolina, South Carolina, Georgia, and east Florida. Currently there is no minimum size limit off North Carolina, South Carolina, and Georgia. However there is a minimum size limit in federal waters of Florida, which would be increased from 12 inches TL to 12 inches FL.

Alternative 3 used the same methods for Florida waters as Alternative 2, and additional analysis was conducted for implementing a 12-inch FL minimum size limit in federal waters off of North Carolina, South Carolina, and Georgia. Data from the three states were pooled and treated as one region. In South Atlantic federal waters off of North Carolina, South Carolina, and Georgia from 2010-2012 there were lengths available for 896 gray triggerfish (847 in the charter sector and 49 in the private sector) in the MRIP dataset and 712 gray triggerfish in the headboat dataset. The headboat dataset did not have information on the length of gray triggerfish caught in federal or state waters.

The percent reduction from increasing the minimum size to 12 inches FL was calculated from the length data. The lengths were converted to weight and the reductions were calculated in terms of weight. Additional information on the details on calculating the percent reductions can be found at SERO-LAPP-2012-02. Since the MRIP length data had location details of state and federal waters the MRIP reductions were calculated specifically with data from federal waters. Additionally, the MRIP reductions were calculated for both private and charter sectors. Since federal and state location was not available for headboat the reductions generated from the headboat data were for the entire coast from North Carolina to Georgia. Monthly percent reductions were not feasible with both the MRIP and headboat datasets because the majority of the months had very small samples sizes (<30 fish). **Table G-6** provides the percent reduction results.

Table G-6. Percent reductions in South Atlantic recreational sector gray triggerfish landings for implementing a minimum size limit off North Carolina, South Carolina, and Georgia waters to 12 inches FL.

	MRIP		Headboat
Mode	Charter	Private	Charter
12 inches FL	6.7	1.6	8

The reductions were calculated in terms of gray triggerfish weight (lbs). The percent reductions for MRIP were calculated for federal waters. Headboat length data did have jurisdictional information on the catch location (federal or state waters) so the percent reductions reflect both federal and state waters combined.

Headboat landings, like the headboat length data, did not include the location of catch from federal or state waters. However, headboat catch-effort files (CRNF files) do have information on catch from federal or state waters. The headboat intercept files were used to determine the annual ratio of gray triggerfish caught in federal versus state waters. Then that ratio was applied to the headboat landings to separate them into state and federal waters.

To reflect the management change in **Alternative 3** the percent reductions from **Alternative 2** were applied to federal waters on the east coast of Florida and the percent reductions generated for North Carolina, South Carolina, and Georgia were also incorporated into the analysis.

The reduced Florida federal landings and reduced North Carolina, South Carolina, and Georgia federal landings were then added to the North Carolina, South Carolina, Georgia, and Florida state water landings. This calculation was done for the annual landings from 2007 to 2011, and **Table G-7** provides the results of the overall reduction of landings.

Table G-7. Percent reductions in annual South Atlantic recreational sector gray triggerfish landings from implementing a 12 inch FL size limit in North Carolina, South Carolina, and Georgia federal waters and increasing the minimum size in Florida federal waters from 12 inches TL (10.46 inches FL) to 12 inches FL. The recreational landings include MRIP and headboat landings.

Year	% Reduction in Total Landings
2010	3.5
2011	3.7
2012	4.8

Alternative 4

Alternative 4 creates a minimum size limit of 14 inches FL for the federal waters off of North Carolina, South Carolina, Georgia, and east Florida. Currently there is no minimum size limit off North Carolina, South Carolina, and Georgia. However there is a minimum size limit in federal waters of Florida, which would be increased from 12 inches TL to 14 inches FL.

Alternative 4 used the same methods as **Alternative 3** but increased the size limit to 14 inches FL. The percent reduction from increasing the minimum size to 14 inches FL was calculated from the length data. The lengths were converted to weight and the reductions were calculated in terms of weight. Additional information on the details on calculating the percent reductions can be found at SERO-LAPP-2012-02. Since the MRIP length data had location details of state and federal waters the MRIP reductions were calculated specifically with data from federal waters (**Table G-8**). Additionally, the MRIP reductions were calculated for both private and charter sectors. Since federal and state location was not available for headboat the reductions generated from the headboat data were for the entire coast from North Carolina to Georgia (**Table G-9**). Monthly percent reductions were only feasible for headboat data from the east coast of Florida. Monthly percent reductions were not feasible for the MRIP dataset for the entire South Atlantic area and the headboat dataset from North Carolina to Georgia because the majority of the months had very small samples sizes (<30 fish).

Table G-8. Percent reductions generated from MRIP data for the South Atlantic recreational sector gray triggerfish recreational fishery for implementing a 14 inches FL minimum size limit in federal waters of North Carolina, South Carolina, Georgia, and east Florida. Percent reductions were calculated in terms of gray triggerfish weight (lbs).

Location	Mode	
	Charter	Private
Federal FL Waters	41.8	36.8
Federal NC, SC, and GA Waters	37.1	21.4

Table G-9. Percent reductions generated from headboat data for the South Atlantic recreational sector gray triggerfish recreational fishery for implementing a 14 inches FL minimum size limit in North Carolina, South Carolina, Georgia, and east Florida. Percent reductions were calculated in terms of gray triggerfish weight (lbs). Headboat length data did not have jurisdictional information on the catch location (federal or state waters) so the percent reductions reflect both federal and state waters combined.

	Month	Charter
FL Waters	1	47.6
	2	50.4
	3	52.4
	4	48.9
	5	45.5
	6	54.7
	7	51.9
	8	46.6

	9	36.5
	10	38.1
	11	38.9
	12	38.1
NC, SC, and GA Waters	45.1	

Headboat landings, like the headboat length data, did not include the location of catch from federal or state waters. However, headboat catch-effort files (CRNF files) do have information on catch from federal or state waters. The headboat catch-effort files were used to determine the annual ratio of gray triggerfish caught in federal versus state waters. Then that ratio was applied to the headboat landings to separate them into state and federal waters.

To reflect the management change in **Alternative 4** the percent reductions were applied to federal waters on the east coast of Florida and the percent reductions generated for North Carolina, South Carolina, and Georgia were applied to the federal waters of those three states. The reduced east Florida federal landings and reduced North Carolina, South Carolina, and Georgia federal landings were then added to the North Carolina, South Carolina, Georgia, and east Florida state water landings. This calculation was done for the annual landings from 2010 to 2012, and **Table G-10** provides the results of the overall reduction of landings.

Table G-10. Percent reductions in annual South Atlantic recreational sector gray triggerfish landings from implementing a 14 inch FL size limit in North Carolina, South Carolina, and Georgia federal waters and increasing the minimum size in Florida federal waters from 12 inches TL (10.46 inches FL) to 14 inches FL.

Year	% Reduction in Total Landings
2010	22.3
2011	21.9
2012	28.0

Note: MRIP and headboat landings included.

References

SERO-LAPP-2012-02. Caribbean Parrotfish Size and Trip Limits. NOAA Fisheries Service. Southeast Regional Office. St. Petersburg, Florida. March 8 12, 2012.

Appendix H. Only Reliable Catch Stocks (Berkson et al. 2011) & Scientific And Statistical Committee ORCS Workshop Final Report

NOAA Technical Memorandum NMFS-SEFSC-616

CALCULATING ACCEPTABLE BIOLOGICAL CATCH FOR STOCKS THAT HAVE RELIABLE CATCH DATA ONLY (Only Reliable Catch Stocks – ORCS)

By:
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May 2011

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May 2011

NOTICE

This report should be cited as follows:

Berkson, J., L. Barbieri, S. Cadrin, S. L. Cass-Calay, P. Crone, M. Dorn, C. Friess, D. Kobayashi, T. J. Miller, W. S. Patrick, S. Pautzke, S. Ralston, M. Trianni. 2011. Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS). NOAA Technical Memorandum NMFS-SEFSC-616, 56 P.

Copies of this report can be obtained from:

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EXECUTIVE SUMMARY

In response to the 2006 reauthorization of the Magnuson-Stevens Act (MSA), the National Marine Fisheries Service established National Standard 1 (NS1) Guidelines, which included a requirement to set an acceptable biological catch (ABC) that accounts for scientific uncertainty in the estimate of a stock's overfishing limit (OFL). This is an exceedingly difficult task for the large number of stocks for which reliable catch data are the only information available, as these stocks cannot be assessed with traditional stock assessment methods. For the purpose of this document, these stocks will be called "only reliable catch stocks" (ORCS). Despite the inherent problem of setting ABCs for ORCS, the MSA requirement remains.

At the second National SSC meeting November 10-13, 2009 in St. Thomas, USVI, an ad-hoc Working Group was established to identify, suggest, and evaluate alternative approaches for the setting of ABCs for ORCS. Working Group members represent seven of the eight SSCs, five of the six NMFS Science Centers, NMFS Headquarters, as well as a regional fishery management council, academic institutions, a state agency, and an NGO. The goal of the Working Group was to develop an approach for addressing ABCs in ORCS that could potentially be applied in all jurisdictions under a flexible framework.

This report reviews existing methods for setting catch limits for ORCS. Each approach is briefly summarized followed by a description of the required data, the major assumptions and consequent cautionary advice in utilizing the particular approach, its potential for use in a risk-based decision-making framework, the status of the approach along with examples of its implementation, and the pros and cons of using the approach as viewed by the Working Group.

The Working Group also 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.

Ultimately, the Working Group recommends that the following tiered approach be used when setting ABCs for ORCS:

- Apply depletion-based stock reduction analysis (DB-SRA) to a stock, if possible. The main limitation here is the requirement for a complete time series of historical catches, which is often not available.

- If it is not possible to apply DB-SRA, apply depletion-corrected average catch (DCAC) to a stock. DCAC's main limitation is that it is only appropriate for stocks with moderate to low natural mortality rates ($\leq 0.20\ yr^{-1}$).

- If DB-SRA and DCAC are not appropriate, apply the ORCS Working Group's Approach. The main limitation with this approach is that a number of critical decisions are required before it can be made operational. Some would also view this as an advantage, as it provides flexibility in its establishment.

- Finally, in some cases none of the above methods are practical for setting ABCs for an individual stock, as specific ORCS may not be capable of being effectively managed or monitored. In these cases, it may be best to use a stock complex approach. There are many limitations of applying a stock complex approach as described in this report, and the ORCS Working Group cautions against overusing or misusing this approach, as it may result in the converse of precautionary management, exactly what MSA was designed to avoid.

It is important to note that the methods for setting ABCs for ORCS are in various stages of development and will be better understood and improved upon over time. For that reason, a list of research recommendations is included in the report that highlights the most important activities that must be supported to make substantive progress in the future.

The Working Group emphasizes that none of the methods discussed in this report are a substitute for additional data and monitoring. Therefore, all of the methods impose a certain risk and imprecision that fisheries managers must acknowledge when using the results of these methods.

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Symbols and Abbreviations used in this Document

Δ	The expected proportional change in stock biomass from the first to the last year of the catch series in DCAC; the proportional reduction in biomass relative to K in DB-SRA
ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
AM	Accountability measure
B_*	Equilibrium biomass at some level of fishing mortality F_* in the Pella-Tomlinson production model
B_0	Virgin biomass
$B_{20\%}$	Biomass level that corresponds to 20% of the unfished biomass
B_{MSY}	Biomass that would produce MSY
B_{peak}	The ratio of B_{MSY} / K as used in DB-SRA
c	Natural variability factor used in natural mortality-based approach
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
DB-SRA	Depletion-based stock reduction analysis
DCAC	Depletion-corrected average catch
EC	Ecosystem Component
F_{MSY}	The fishing mortality that produces MSY
GMFMC	Gulf of Mexico Fishery Management Council
h	Steepness of the Beverton-Holt stock recruitment relationship
ICCAT	International Commission for the Conservation of Atlantic Tunas
K	Carrying capacity
M	Natural mortality
m	Maximum productivity (MSY) in the Pella-Tomlinson production model
MAY	Maximum average yield
MCY	Maximum constant yield
MFMT	Maximum fishing mortality threshold
MSST	Minimum stock size threshold
MSA	Magnuson-Stevens Act
MSE	Management strategy evaluation
MSY	Maximum sustainable yield
NEFMC	New England Fishery Management Council
NGO	Non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration

NPFMC	North Pacific Fishery Management Council
NS1	National Standard 1
OFL	Overfishing limit
ORCS	Only reliable catch stocks
OY	Optimum yield
P*	Risk level; Probability of overfishing
PFMC	Pacific Fishery Management Council
PGY	Pretty good yield
PSA	Productivity Susceptibility Analysis
r	Intrinsic rate of increase
R_0	Virgin recruitment
SAFMC	South Atlantic Fishery Management Council
SD	Standard deviation
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
Y_{AV}	Average catch used in natural mortality-based approach
Y_*	Annual equilibrium yield for the Pella-Tomlinson production model

Acknowledgements

Extremely helpful comments on an earlier draft were provided by E. J. Dick, Rick Methot, Joe Powers, and Erik Williams.

I. BACKGROUND

A. Requirement for ABC specifications and ACLs

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1996 required Regional Fishery Management Councils (Councils) to end overfishing and rebuild overfished stocks. It strengthened US fisheries law by putting in place firm timelines for rebuilding and specified requirements for rebuilding plans. In 2006, however, the majority of overfished stocks were still not rebuilt and overfishing continued to be a widespread problem because fishery management plans failed to sufficiently reduce exploitation rates (Rosenberg et al. 2006). As a result, Congress amended the MSA during the 2006 reauthorization with requirements for annual catch limits (ACLs) and accountability measures (AMs) for each managed fishery by fishing year 2010 for all stocks experiencing overfishing and by fishing year 2011 for all other stocks in the fishery (DOC, 2007). The reauthorized MSA further strengthened the role of science in the fishery management process by requiring that ACLs set by Councils may not exceed the fishing level recommendations of the Councils' Scientific and Statistical Committees (SSCs).

In the 2009 National Standard 1 (NS1) guidelines, the National Marine Fisheries Service (NMFS) provided specific guidance on how to comply with the new requirements of the MSA, including limit and target reference points for fisheries (NMFS, 2009) (Figure 1). The OFL is the annual estimate of the catch that would be obtained if a stock were fished at a rate producing the long-term maximum sustainable yield (MSY); overfishing occurs when catch exceeds the OFL. The ABC is the upper limit at which Councils can set the ACL. The SSCs were designated with the responsibility to set the acceptable biological catch (ABC), which is the catch level that accounts for scientific uncertainty in the estimate of the overfishing limit (OFL) and other sources of scientific uncertainty. The NS1 guidelines further require each Council, in conjunction with its SSC, to establish an ABC control rule that specifies how ABC is calculated based on the scientific uncertainty in the OFL estimate and the Council's risk policy. These requirements apply to data-rich stocks that can be assessed through quantitative stock assessment models, as well as data-poor stocks that cannot be assessed with traditional stock assessment methods. This report focuses on the ABC requirements for stocks that have only catch history data available for estimating harvest limits. We refer to these stocks here as "Only Reliable Catch Stocks" (ORCS).

B. History of dealing with ORCS

The 1998 NS1 technical guidelines (Restrepo et al. 1998) recommended that Councils "*adopt a precautionary approach to specification of [optimum yield] OY,*" stemming from the 1996 MSA requirement to end overfishing and rebuild depleted fishery resources. The precautionary approach was implemented to reduce the risk of overfishing in circumstances where scientific evidence of overfishing was not available (Restrepo et al. 1998). As it was recognized that all regions possessed data of varying states of quality for stock assessment and management purposes, subsequent guidance provided an array of precautionary control rules that could be used to set exploitation targets below the risk-neutral limits based on MSY-related benchmarks, such as the maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST) or reasonable proxies for one or both of these status determination criteria (Restrepo et al., 1998; Restrepo and Powers, 1999).

In the absence of biomass and fishing mortality reference points, the 1998 Technical Guidance (Restrepo et al., 1998) for implementing the NS1 guidelines suggested using the historical average catch from a period during which there was no evidence of declining abundance as a proxy for MSY. This recent catch would be multiplied by a scalar (ranging from 25% to 75%) based on "informed judgment" regarding the qualitative estimate of stock size relative to B_{MSY} (stock biomass at maximum sustainable yield) and MSST to obtain the limit catch, but the performance of this recommendation was never investigated (Restrepo and Powers, 1999). From discussions among members of this Working Group, however, it appears that many Councils have used a constant scalar (e.g., 50%, 75%) as their precautionary approach regardless of the stock's size relative to B_{MSY} and MSST.

C. Unique problem for ORCS

The 2009 NS1 guidelines state that the ABC should be based, when possible, on the probability of overfishing, which cannot exceed and should be less than 50 percent. The guidelines further require that "*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*". Thus, the NS1 guidance for setting ABCs is clearly directed towards stocks that can be assessed through traditional stock assessment methods. Many stocks under US federal management, however, lack current stock assessments and are not likely to be assessed in the near future, due to substantial data limitations. For example, the 2009 Report to Congress on the Status of U.S. Fisheries reported that "*272 stocks or stock complexes have overfishing thresholds not defined or applicable, or are unknown with respect to their overfishing status*".[1] In these data-limited situations, the guidelines are vague with respect to factors that could be considered for setting ABCs and simply suggest the use of reasonable proxies.

Many of the ABC control rules that are currently being developed in the regions follow a tiered approach in which the size of the buffer between the OFL and ABC increases as the level of

[1] NMFS 2009 Report to Congress on U.S. Fisheries, May 2010. Available online at http://www.nmfs.noaa.gov/sfa/statusoffisheries/sos_full28_press.pdf

scientific uncertainty increases (Witherell, 2010). Since uncertainty is expected to increase with decreasing availability of reliable data, it follows that data-poor stocks should generally have larger buffers than data-rich stocks for the same desired risk of overfishing. Without a system in place that monitors key fishery indicators and responds to changes in these indicators, scientists and managers have no means of evaluating whether any newly established catch limits for ORCS are too conservative or too liberal.

D. Catch vs. landings

These two terms are not synonymous, since catch is considered the landed catch plus the total amount of dead discard (i.e., bycatch). Too often an evaluation of historical catch becomes an examination of historical landings. Bycatch levels in other fisheries, as well as discard rates and discard mortality levels, should be discussed and factored into the evaluation of historical catch. Anecdotal information, fishermen's knowledge, and local expertise should be considered in such cases.

E. Formation of the ORCS working group

At the second National SSC meeting November 10-13, 2009 in St. Thomas, USVI, an ad-hoc Working Group was established to address the question of how to develop ABCs for data-poor fisheries under the jurisdiction of Regional Councils, where traditional stock assessment techniques cannot be applied due to data deficiencies.

The Working Group was established to identify, suggest, and evaluate alternative approaches for the setting of ABCs for ORCS. Working Group members represent seven of the eight SSCs, five of the six NMFS Science Centers, NMFS Headquarters, as well as a regional fishery management council, academic institutions, a state agency, and an NGO. The Working Group has communicated general process-related comments, as well as stock assessment and management ideas through email and teleconference.

The overriding goal of the Working Group was to develop an approach for addressing ABCs in ORCS that could potentially be applied in all jurisdictions under a flexible framework process. To this end, the Working Group reviewed existing methods that have been used both nationally and internationally to address data-deficient fisheries, and developed a hierarchy of recommended models or techniques for use in a particular fishery, given only that the fishery possesses a time-series of reliable catch data.

F. Scientific and management uncertainty in ORCS

Unlike the 1998 NS1 guidelines, the 2009 guidelines make the distinction between two types of uncertainty that are to be considered in the catch-setting process: management and scientific. Management uncertainty arises from uncertainty in quantifying the true catch amount and uncertainty in the ability of managers to limit actual catches to the ACL. Councils have the flexibility to account for management uncertainty by setting an annual catch target (ACT) at or below ACL. Scientific uncertainty has been discussed earlier, and deals with the estimate of the OFL and ABC.

While the two types of uncertainty are distinct, they are not independent because the realized catch affects abundance and consequently, future OFLs, which then feed back into ACLs (Shertzer et al. 2008). It is not always possible to distinguish between scientific and management uncertainty, especially in the case of ORCS, where total catches may be highly uncertain because of missing information regarding bycatch and discard mortality, affecting both scientific and management uncertainty. The NS1 guidelines allow for both scientific and management uncertainty to be incorporated into a single control rule, but ABCs by definition address only scientific uncertainty, which is the scope of this report.

G. Incorporating risk

It is the responsibility of stock assessment scientists and the SSCs to determine the level of scientific uncertainty that exists in an assessment or estimated level of sustainable yield, but it is the role of the Councils to determine the acceptable risk of overfishing given the scientific uncertainty. When the probability distribution around the OFL estimate can be computed and characterized, the median estimate of the OFL implies a risk level of 50 percent, which is the level of risk the NS1 guidelines state is not to be exceeded in setting ABC. When the OFL and its statistical distribution can be estimated, probability-based methods can be used to compute the ABC that corresponds to the Council-desired risk of overfishing (e.g., Prager and Shertzer 2010). In the case of most ORCS, quantitative estimates of reference points from assessment models are unavailable, and formal risk statements cannot be made because the uncertainty is often not quantifiable. In those cases, an adaptive approach to developing ABCs that involves monitoring key fishery indicators may need to be adopted.

H. Report outline

The report is divided into seven primary sections:

- Section I, which you are currently reading, provides background on ORCS, the need to set ABCs, and the difficulties specific to ORCS.

- Section II reviews existing national and international methods that are currently in use or in the process of being further developed. Each approach is briefly summarized followed by a description of the required data, the major assumptions and consequent cautionary advice in utilizing the particular approach, its potential for use in a risk-based decision-making framework, the status of the approach along with examples of its implementation, and finally, the pros and cons of using the approach as viewed by the Working Group.

- Section III introduces a new approach for setting ABCs for ORCS developed by the authors of this paper.

- Section IV examines the suitability of the previously described methods for setting ABCs for stock complexes and presents any necessary modifications, additional assumptions, or important caveats that need be considered prior to applying each approach to stock complexes.

- Section V provides a discussion of the topics raised in this paper.

- Section VI provides research recommendations to further our ability to understand, set ABCs for, and manage ORCS.

- The final section, Section VII, puts forth a set of recommendations to Councils and SSCs for moving forward in addressing the 2006 MSA mandate, under the 2009 NS1 guidelines, for ORCS.

II. REVIEW OF METHODS

A. Scalar approaches

1. Summary of approach

Scalar approaches involve specification of future catch by using simple scalar multipliers applied to current or historical catch patterns. The primary reference for this approach is Restrepo et al. (1998) who formalized the concept in their Technical Guidance document for the 1998 National Standard 1. Scalar approaches were presented in the sections of the document specifying catch targets and catch limits in data-poor situations (this is henceforth termed the Restrepo approach). Although Restrepo et al. (1998) is the primary citation for this particular set of scalar tiers, it is quite likely that the concept was widely used historically in fishery management. The Restrepo approach proposed scalar multipliers for catch targets ranging from 0.25 to 0.75, depending on the estimated stock status at the time. For example, if the stock was overfished and hence below the MSST, then the catch multiplier for the Restrepo approach was 0.25 with the intent to reduce fishing effort and allow the stock to rebuild. If the stock was above B_{MSY}, the multiplier was 0.75, which reflected the precautionary buffer between the catch target and catch limit, with the catch limit being status-quo catch levels in a presumed healthy fishery. For intermediate stock conditions the multiplier was 0.5.

2. Data needs

The Restrepo approach uses an average catch. In the original document this was defined as the average catch during a time period, not necessarily the most recent, for which there is evidence of stable abundance. Ideally, there should be no quantitative or qualitative evidence of declining or increasing abundance trends in the selected time period. We note that approaches for deriving catch recommendations for stocks with decreasing trends are developed in sections II.E and F of this report. In an optimal situation there is an adequate catch data stream to objectively identify such a time period, and may vary temporally in location and span for particular stocks and fisheries. Since it was realized that stock status information is not available in many data-poor cases, it was suggested to explore several definitions of recent catch such as the mean or median catch during the last 5, 10, or 15 years. In minimal data situations, the Restrepo approach could be applied to a single year of fishery catch data, but this is obviously a tenuous application unless the single year of data was highly significant for some reason. A logical extension of the variable scalar multiplier would be to similarly reduce the value for shorter catch data streams owing to likely greater uncertainty.

3. Informed judgment

Some type of expert or otherwise informed judgment is required for the Restrepo approach if stock status information is lacking, which would likely be the case for any potential application of the approach. This judgment is critical because an overfished determination can result in catch limits that are adjusted downward to a third of what could conceivably be taken if stock status was not judged to be in an overfished condition. Such a declaration of stock status is generally difficult even with strong quantitative support. Scientific judgments should be supported with as much objective analysis as possible. Careful examination of all available biological and fishery indicators is warranted. Even if a formal stock assessment is lacking, a diverse assemblage of data (including qualitative and anecdotal information) can be evaluated in a meta-framework to infer stock status (e.g., Porch et al., 2006). The Restrepo et al. document mentions a variety of similar alternative approaches such as informed judgments, Delphi approaches, qualitative approaches, expert opinions, and consensus-building methods. In addition, Bayesian statistical methodology is an appropriate tool for heterogeneous data and variable prior knowledge.

4. Caveats

The primary assumptions of the Restrepo approach are that the fishery is at or near a sustainable equilibrium, the stock is stable, and some qualitative determination of stock status is possible. However, without adequate information, it can be difficult to judge stock status, and, likewise, without a protracted period of near-constant and/or sustainable fishing effort and catches, it can be difficult to verify stability. If fishing effort is highly variable or if a fishery is in development or experiencing overfishing, then the catch data stream will be problematic for the Restrepo approach.

5. Risk assignment

Restrepo et al. (1998) conducted simulation modeling to explore what an appropriate default target catch control rule for data-adequate stocks might look like and found that fishing at 75% F_{MSY} resulted in equilibrium yields of 94% MSY or higher and equilibrium biomass levels between 125% and 131% of B_{MSY} while reducing the probability that the stock would decline to ½ B_{MSY}. Based on these results, the recommended default target control rule became fishing at 75% F_{MSY}. The data-poor proxy of this default rule for stocks judged to be above B_{MSY} thus became 75% of recent catch. Additional risk can be built into the approach by simply reducing the scalar multipliers. This is analogous to the catch limit and catch target differential multipliers in the 1998 technical guidance document. Biological and/or fishery information can be incorporated into the approach by using natural mortality rate or risk assessments like the PSA (productivity susceptibility analysis; Patrick et al., 2009; 2010) inputs to the scalar specification. These potential improvements will be discussed in forthcoming sections of text.

6. Status of approach

The Restrepo approach and variants thereof are used in the management of many fisheries across the nation. Scalar multipliers range from 0.25 to 0.75 consistent with the original guidance. There is considerable variability in the time window of recent catch ranging from 1 year to 18 years. The location of this recent catch time window also varies considerably from recent years to over 30 years into the past. As pointed out earlier, these parameters for the recent catch specification will have to be tailored to individual stocks and fisheries on a case-by-case basis.

Some examples of current use for ORCS:

- *The Pacific Fishery Management Council (PFMC) coastal pelagics ABC is specified using a scalar multiplier of 0.25 applied to average catch and scaled by proportion of stock available in U.S. waters.*
- *The International Commission for the Conservation of Atlantic Tunas (ICCAT) specifies total allowable catch (TAC) to be no more than the product of scalars of 0.33 for white marlin and 0.50 for blue marlin applied to 1996 or 1999 landings, whichever is greater. These reference years were chosen because they were thought to be particularly reliable. The scalars reflect the understanding of the recent level of overfishing, particularly for white marlin.*
- *OY for some PFMC groundfish stocks is specified using a scalar multiplier of 0.50 applied to average catch.*
- *The North Pacific Fishery Management Council (NPFMC) specifies ABC using a scalar multiplier of 0.75 applied to average catch from 1978-1995.*
- *The Caribbean Fishery Management Council (CFMC) specifies ABC and ACL using a scalar multiplier of 0.85 applied to average catch from 1999-2005 or 2000-2005 depending on the management area.*

- *The New England Fishery Management Council (NEFMC) used a scalar of 1.0 for ABC of Atlantic herring because a provisional analysis suggested that the stock was not overfished and overfishing was not occurring.*
- *The NEFMC also used a scalar of 1.0 for ABC of red crab because there was no evidence of depletion since the beginning of the fishery.*

7. Pluses/minuses of approach as viewed by Working Group

Some advantages of the Restrepo approach are that it a) is straightforward and therefore easily explained and understood by scientists, policymakers and stakeholders, b) can easily be applied even by those not specifically trained in stock assessment procedures, and c) is broadly applicable across species with different biological characteristics. Some of the disadvantages are that a) the appropriateness and performance of the recommended multipliers has not been evaluated, b) the assumptions of a stable stock which is at or near sustainable equilibrium can often not be verified, c) it is not suitable for application to an ORCS stock that is very lightly exploited since it does not allow for a catch limit larger than recent average catch, d) it does not explicitly account for species differences in productivity, and e) continued application could ratchet catch downwards as the recent average catch was forced to decline. The method was intended to be used as a short-term fix, until either additional data could be collected or an improved method could be developed.

B. Scalar multiplied by the ABC of the target species, when ORCS are bycatch species

1. Summary of approach

In one international arena, ORCS species believed to be exploited well below MSY levels and caught incidentally in directed fisheries are regulated in concert with the targeted species, based on a proportion (or harvest cap) associated with the targeted stock's quota. In those cases, the targeted stock's ABC is multiplied by a scalar, for example 5%, to obtain the ABC of the bycatch species. Management for these bycatch species focuses on collecting additional information to elevate these fisheries to a formal assessment status as soon as possible and thereby allow what may have started as an exploratory fishery to safely expand to a targeted fishery.

2. Data needs

The only data required to carry out this management approach is a catch limit for the targeted species of the exploited assemblage.

3. Informed judgment

Judgment is needed for deciding what the proportion of the targeted species' catch limit should be that serves as the scalar for determining the ABC of the bycatch species which requires expert opinion regarding the abundance of the bycatch stock relative to the target stock. The choice of scalars should be guided by the precautionary principle to avoid overfishing but should also allow for data collection and potential fishery expansion. Where this method has been applied, quotas have ranged from 5-16% of the targeted species' catch limit.

4. Caveats

The appropriateness of the chosen scalar cannot be known initially, and therefore, ongoing monitoring programs are imperative to the application of this general approach. Precise estimates of species composition from the landings, as well as observer data and fishery-independent survey data are necessary to ensure current proportional allocations for bycatch species are representative of recent resource/fishery dynamics and are ultimately sustainable.

5. Risk assignment

Although formal risk cannot be explicitly assigned in this straightforward method, the risk of overfishing bycatch species is considered to be relatively low by the management body implementing the approach. Higher landings caps imply higher risk of overfishing.

6. Status of approach

This approach is being implemented by the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). In most cases, all bycatch species associated with the directed fisheries have recommended harvest levels that are defined in accordance with the CCAMLR.

7. Pluses/minuses of approach as viewed by Working Group

The approach is very simple to apply, as it involves multiplying a scalar by the quota of a targeted species. Given species are selected because they are believed to be underutilized, it is assumed that there is a relatively low risk of overfishing using this method, but ultimately, there is little information to inform the initial choice of any particular scalar. Since this method sets an ABC for a group of species rather than an individual stock, it is a special case of a stock complex approach, which is discussed in Section IV of this report. If implemented correctly, the method allows for fishery expansion to occur slowly and in a coordinated fashion.

C. Natural mortality-based approach

1. Summary of approach

The natural mortality-based approach (Anon 2009) is another variant of a scalar approach. It is based on the formula:

$$MCY = c\ Y_{AV}$$

Where MCY is the maximum constant yield, c is the natural variability factor (defined below) and Y_{AV} is the average catch over an appropriate period.

If the catch data are from a period when the stock was fully exploited (i.e., fishing mortality near the level that would produce MAY [= Maximum Average Yield]), then the method should provide a good estimate of MCY. In this case, Y_{AV} = MAY. If the population was under-exploited, the method gives a conservative estimate of MCY.

The natural variability factor is defined as in Table 2. It is assumed that because a stock with a higher mortality rate will have fewer age-classes, it will also suffer greater fluctuations in biomass. The deviations from values of c in the table are for stocks where there is evidence that recruitment variability is unusually high or low.

2. Data needs

Familiarity with stock demographics and the history of the fishery is necessary for the determination of an appropriate period on which to base estimates of Y_{AV}. The period chosen to perform the averaging will depend on the behavior of the fishing mortality or fishing effort time series, the prevailing management regime, the behavior of the catch time series, and the lifespan of the species.

The period should be selected so that it contains no systematic changes in fishing mortality (or fishing effort, if this can be assumed to be proportional to fishing mortality). The period chosen should also contain no systematic changes in catch. If the period shows a systematic upward (or downward) trend in catches then the MCY will be under-estimated (or over-estimated). It is desirable that the period be equal to at least half the exploited life span of the fish.

An estimate of natural morality is required to obtain the value of c, the natural variability factor. Knowledge of recruitment variability levels is needed to modify the natural variability factor, if necessary.

3. Informed judgment

In many cases informed judgment will be needed to select the period chosen to perform the averaging, as all of the information required to adequately select the period may not be available.

4. Caveats

The primary assumptions of the natural mortality-based approach are that the fishery is at or near a sustainable equilibrium and the stock is stable. However, it can be difficult to estimate stability without a protracted period of near-constant and/or sustainable fishing effort and catches. If fishing effort is highly variable or if a fishery is in development or experiencing overfishing, then the catch data stream will be problematic for this approach.

5. Risk assignment

Risk is incorporated through the use of the natural variability factor, which takes into account the natural mortality of the stock. It is assumed that because a stock with a higher mortality rate will have fewer age-classes it will also suffer greater fluctuations in biomass. In addition this can be modified where there is evidence that recruitment variability is unusually high or low.

6. Status of approach

The approach is currently being implemented for ORCS in New Zealand.

7. Pluses/minuses of approach as viewed by Working Group

The natural mortality-based approach has limited potential for application in the U.S. It is not designed for stocks that are currently in an overfished state. It is designed for stocks that have either been fully exploited or under exploited. It does not take into account cases where stocks have been over-exploited (overfished). Further, it requires a time period of stable catch, which may not be available for all stocks. Shorter life spans are viewed as inherently more risk prone and difficult to manage effectively, given they exhibit greater population fluctuations, requiring a smaller scalar to account for the increased risk. Other factors affecting risk are not incorporated into the method. The method has not been evaluated

D. Depletion-Corrected Average Catch (DCAC)

1. Summary of Approach

Restrepo et al. (1998) provide guidance on estimating sustainable catch in situations where only a catch time series is available, suggesting that a sequence of relatively constant catches is evidence that the average annual harvest is sustainable. Although this approach can be useful for providing catch advice for data-poor stocks, the inference of sustainability is only true if both fishing mortality and stock abundance are stable during the period in question. A constant catch could be produced during a period of increasing fishing mortality and decreasing stock abundance, in which case the catch may not be sustainable. Nonetheless, Restrepo et al. (1998) argued that an average catch taken from a time period of stable harvest is a useful proxy estimate of sustainable yield.

MacCall (2009) developed an approach that allows for changing population abundance during the period when catches are obtained. He described the method as "depletion-corrected average catch" (DCAC) because it accounts for the windfall augmentation of catch that occurs due to a one-time reduction in standing stock, also known as "fishing up." Conveniently, the method works just as well if a stock is increasing in abundance during the time interval. Fundamentally, DCAC is based on the premise that knowledge of natural mortality (M) is informative of F_{MSY}, a reasonable prior for relative B_{MSY} (B_{MSY} / B_0; B_0 = virgin biomass) is available, and some view of relative stock depletion can be obtained.

2. Data needs

The basic DCAC calculation requires: a) an average catch calculated over some period of years, b) an estimate of natural mortality, which may be obtained from the relationship between longevity and M developed by Hoenig (1983) or other indirect methods, c) an estimate of the ratio of F_{MSY} to M, which MacCall (2009) argues is typically in the range of 0.6–1.0, and d) an idea of how much stock abundance may have changed during the time period when catch statistics are summarized. This last input value is termed Δ and represents the relative decline (or increase) in stock size, with a larger value representing a greater decrement to the stock. In addition, the method has recently been generalized to include a prior distribution for relative B_{MSY} (Stock Assessment Toolbox; http://nft.nefsc.noaa.gov/index.html).

3. Informed judgment

The DCAC method is a generalization of the average catch approach because an adjustment is made for changes in stock size (Δ). This is, however, a quantity that is difficult to obtain, and expert opinion must be used to decide on relative stock status. Likewise, informed judgment may be helpful in deciding on the ratio of F_{MSY} to M and B_{MSY} to B_0. Prior distributions for Δ, ratio of F_{MSY} to M and B_{MSY} to B_0 could be based on meta-analysis for related stocks, rather than expert opinion.

4. Caveats

DCAC assumes that the catch statistics used in the calculation are unbiased. Also, the method is only appropriate for stocks with moderate to low natural mortality rates ($\leq 0.20\ yr^{-1}$) because the depletion correction becomes negligible at higher values of M. Moreover, in its initial implementation the calculation assumed that relative B_{MSY} occurs at 0.40. While this is a robust proxy supported by the simulations conducted by Clark (1991), the newest version of the calculation (i.e., the NOAA Fisheries Stock Assessment Toolbox) allows the user to specify a prior distribution for this quantity.

5. Risk assignment

Propagation of uncertainty is a strong point of the DCAC method, which is accomplished by Monte Carlo simulation based on draws from distributions of the key input quantities. In particular, the principal inputs (M, F_{MSY}/ M, B_{MSY}/ B_0, and Δ) are specified as distributions. Importantly, MacCall (2009) provides a variance statistic for M based on reanalysis of the data summarized in Hoenig (1983). The result of the algorithm is an output distribution of catch that would have been sustainable over the specified timeframe, conditional on the input distributions, which can be used as a basis for risk assessment (Figure 2).

6. Status of the approach

The NEFMC and its SSC evaluated an application of DCAC to deep-sea red crab and concluded that because it provides an estimate of a sustainable yield and not MSY, it was inappropriate to use in calculating OFLs. Moreover, because survey information did not indicate that the population abundance of red crab had changed between 1974 and 2005, no depletion correction was required and an ABC was set based simply on average landings during that time period.

Because the DCAC calculation utilizes a sum of catches calculated over a period of years, the PFMC endorsed its use in developing OFLs for seven groundfish stocks that are characterized by erratic and/or incomplete catch histories. Those stocks included six rockfishes (*Sebastes* spp.) and one elasmobranch (i.e., blue rockfish, blackgill rockfish, gopher rockfish, honeycomb rockfish, Mexican rockfish, squarespot rockfish, and soupfin shark).

7. Pluses/minuses of approach as viewed by Working Group

There are a number of appealing features of the DCAC method, including: a) it is based principally on catch statistics and basic life history information, b) the catch time series need not be comprehensive, c) stock abundance is explicitly allowed to vary, d) the method's inputs are approximate and are specified as distributions as opposed to point estimates, and e) uncertainty is propagated to produce a distribution of sustainable yield. Some of the disadvantages of the approach are: a) the estimated yield is typically sustainable, but not maximal, b) expert opinion is required to characterize stock depletion, and c) the estimated yield may not be sustainable if the stock at the end of the time series is not representative of the production that occurred during the time series (i.e., it is severely depleted).

E. Depletion-Based Stock Reduction Analysis (DB-SRA)

1. Summary of Approach

Depletion-Based Stock Reduction Analysis (DB-SRA) is an extension of DCAC that incorporates full stock dynamics (Dick and MacCall, In press). At a basic level stock production is the product of *per capita* production (= productivity) scaled by the total size of the population. For example, under Beverton-Holt spawner-recruit dynamics these quantities are represented by steepness (h) and virgin recruitment (R_0), respectively. Likewise, under a Schaefer surplus production model they are equal to the intrinsic rate of increase (r) and the carrying capacity (K). The DB-SRA method relies on specifying a plausible range of "scaled" production parameters and depletion levels in the form of prior distributions. Then, given the availability of a comprehensive catch history to scale the problem, virgin biomass can be uniquely calculated, conditional on each draw from the input distributions.

2. Data needs

Because the DB-SRA method is fully dynamic, a complete history of removals is required, i.e., annual catches from the beginning of the fishery are needed. Moreover, the method, at least in its current form, has been implemented as a delay-difference production model (Quinn and Deriso, 1999) and age-at-maturity is used to lag recruitment relative to production. Beyond those fixed inputs, the technique depends on the same four "prior" input distributions as DCAC, including: a) natural mortality (M), b) the ratio of F_{MSY} to M, c) the ratio of B_{MSY} to B_0, and d) stock depletion (Δ). The DB-SRA method is also formulated in a way that provides considerable independence between F_{MSY} and B_{MSY} by implementation of a generalized production function (Fletcher 1978; McAllister et al. 2000; Dick and MacCall, In press).

As with DCAC, F_{MSY} is scaled relative to the natural mortality rate, and the product of the scalar and M provides an estimate of F_{MSY}. By also drawing an estimate of relative B_{MSY} from its input distribution, production is then completely specified on a relative biomass basis. Next, the time series of catches and a random draw from the depletion distribution (Δ) are used to scale biomass and solve for the unique value of B_0 and current biomass that satisfy all conditions (Figure 3). Of course in some instances the time series of catches is impossible with the random draws from the input distributions and the population trajectory goes negative. Those realizations are considered biologically implausible and are dropped from the collection of feasible outcomes (see also Walters et al. 2006). The process is repeated numerous times and posterior distributions of B_0, $B_{current}$, MSY ($F_{MSY} \times B_{MSY}$) and OFL ($F_{MSY} \times B_{current}$) are summarized from the individual results.

3. Informed judgment

The DB-SRA method further generalizes DCAC and, like that method, requires expert opinion to provide a general idea of stock depletion at some point in the catch time series. However, the depletion distribution can be somewhat vague and/or uninformative without great loss in performance. Likewise, informed biological judgment is needed to provide the initial input distributions for the ratios of F_{MSY} to M and B_{MSY} to B_0. However uncertainty in those distributions can be captured explicitly in their variances and they are biological characteristics that can reasonably be informed by conventional scientific wisdom.

4. Caveats

Other than assumptions associated with generating the four key input distributions, the DB-SRA method is very general. In particular, the implementation of a generalized production function that uncouples F_{MSY} from B_{peak} allows a broad range of models to be explored. Also, the method is robust to stochastic variation in stock recruitment, as long as recruitment is not highly episodic or strongly autocorrelated. Nonetheless, the method requires the user to provide four distributional inputs, which can be difficult to specify. No doubt the most troubling of these is the depletion (Δ) distribution, which is perhaps the main output statistic obtained in a data-rich stock assessment; requiring it as an input would seem to undermine the utility of the DB-SRA approach. In practice, however, the same type of inference is required of all ORCS methods (see above), but with DB-SRA it is expressed quantitatively as a distribution. The obvious benefit of this is that the prior distribution of Δ can be vaguely specified, which is to say the variance about the mean of the distribution implies that not much is actually known about depletion. Also, given that the approach incorporates depletion as an input, it is not an appropriate method for determining relative stock status; rather its strength is in yield estimation (MSY and OFL). Finally, the method requires a complete time series of total catch (landings + discards) to implement. To the extent that discards are underreported or not accounted for the method will produce biased results.

5. Risk assignment

Expression and depiction of uncertainty is a major goal of the DB-SRA method and is accomplished by Monte Carlo simulation of four input distributions through to the output distributions of management concern, i.e., current biomass, F_{MSY}, unfished biomass, and OFL. An example of how uncertainty and risk are characterized within the DB-SRA framework is given in Figure 4, which shows the probability of overfishing for brown rockfish (*Sebastes auriculatus*) from 1920 to the present, as well as the posterior distribution of OFL values for 2011 (Dick and MacCall, 2010). Given a distribution of OFL, it is possible to develop a control rule that maps ABC onto the probability of overfishing, a direct expression of scientific uncertainty.

6. Status of the approach

In 2010, the PFMC SSC endorsed the use of DB-SRA to estimate OFLs for 42 groundfish stocks, including 34 rockfishes (*Sebastes* sp.), four flatfishes (Pacific sanddab, rex sole, rock sole, and sand sole), one roundfish (kelp greenling), two elasmobranches (leopard shark and dogfish), and one complex (grenadiers). All data-poor rockfish stocks are managed within assemblages that are defined based on: a) distribution north or south of Cape Mendocino (lat. 40°10'N), and b) cross-shelf distribution (nearshore, shelf, or slope). These 42 stocks include approximately half of the species listed in the PFMC Groundfish Fishery Management Plan and the development of OFL estimates for these species represents a significant improvement in the scientific information used to manage these stocks.

The medians of the bias-corrected posterior distributions of OFL were used by the PFMC as stock-specific point estimates of OFL. These were aggregated into single OFLs for each assemblage, and a semi-quantitative estimate of scientific uncertainty was endorsed for the DCAC and DB-SRA methods by the Council's SSC (i.e., quadrupling the uncertainty of Tier 1, data-rich assessments). The Council also established a policy on buffering all groundfish ABCs below their OFLs by limiting the probability of overfishing (P*) to ≤ 0.45. Harvest specifications for the 2011-2012 biennial fishing cycle are being developed under this general paradigm.

The DB-SRA method has been coded in R (R Development Core Team, 2009) and is documented in two manuscripts. The first of these describes application of the method to 31 different Tier 1 stocks and compares estimates of OFL, MSY, and B_0 from DB-SRA to those obtained from a full data-rich stock assessment, which have typically been conducted using the maximum likelihood based, integrated Stock Synthesis model (Dick and MacCall, In press). The second publication describes and documents the application of the DB-SRA method to the 42 data-poor, Tier 3 groundfish stocks listed above, including development of bias-corrections based on PSA and performance relative to data-rich stock assessments (Dick and MacCall, 2010).

7. Pluses/minuses of approach as viewed by Working Group

Like DCAC, DB-SRA is based principally on catch statistics and basic life history information, uses inputs that are approximate and are specified as distributions as opposed to point estimates, and allows for the propagation of uncertainty to produce a distribution of sustainable yield. The method was evaluated by comparison of OFL estimates from DB-SRA to those from 31 data-rich stock assessments. Results of that comparison showed that DB-SRA sometimes underestimates and sometimes overestimates OFL for individual stocks. As might be expected, the bias in OFL depended on PSA scores associated with each of the stocks. In particular, DB-SRA applied to flatfish generally underestimated OFL by a factor of 0.55. For high vulnerability non-flatfish stocks DB-SRA was largely unbiased, whereas for low vulnerability non-flatfish stocks the method underestimated OFL by a factor of 0.83. These biases were quantified and applied as an adjustment in estimating OFL for the 42 data-poor stocks by the PFMC. A primary disadvantage is that this method is rather time and resource-extensive and requires application by trained stock assessment scientists. In addition, for many ORCS species, it may not be possible to fully reconstruct catch history.

F. The Methot Table Conceptual Framework

1. Summary of approach

During the second National SSC meeting, NMFS's Rick Methot gave a presentation on the 2009 NS1 guidance regarding ACLs and the treatment of scientific uncertainty. In that presentation, a table was provided that showed an example of how ABCs might be set in catch-only situations. The original purpose of this conceptual framework was to generate discussion and inspire thought. The structured approach that it offered has since been used in discussions in different parts of the country to base ABC recommendations on, and the working group therefore deemed it appropriate to review the method here. The table, which we refer to here as "the Methot table conceptual framework", is based on the same basic concept as the Restrepo approach and requires an expert evaluation of fishery impact. The Methot table generates four fishery impact categories of historic catch: trivial, small, moderate, and moderately high and proposes a possible action for ABC determination for each (Table 1). The first impact category highlights the fact that trivial catches of non-targeted species are unlikely to affect the species population status and under these circumstances the Council should consider listing these species as "Ecosystem Components" (EC species) within their fishery management plan. EC species are not required to specify OFL, ABC, or ACL thresholds; however, their catch levels should be monitored to ensure they are not targeted by the fishery in the future. If historic catches are judged to be small (the second impact category), it is assumed that the stock is not overfished and that the target catch could be set at the historic level while setting ABC and ACL above that. If historic catches are moderate, the fishery should be capped because any increase in catches might mean the stock could become overfished. If historic catches are moderately high, the stock might be overfished and recent catches should be considered as the limit. In that case, ABC would be set below recent catch levels to allow the stock to rebuild. The approach is fairly qualitative in that it does not provide specific methods for calculating the degree to which catch should be set above or below historic levels. Methot does suggest that a stock's vulnerability should be a consideration.

2. Data needs

The data needs for this method are similar to the Restrepo approach. Catch history is required along with any information that may help to determine stock status from the catch data. In addition, vulnerability information is recommended. Vulnerability can be determined through risk assessments such as the PSA analysis that evaluates a stock's productivity and susceptibility to the fishery (Patrick et al. 2009, 2010). The final vulnerability score could be a factor in the setting of a scalar used to multiply recent catch; the scalar would be lowest for the most vulnerable species and highest for the least vulnerable species, scaled to fit within some predetermined range. This relates the level of allowable catch directly to the biology of the species.

3. Informed judgments

At the onset, expert judgment is needed in order to assign species to one of the four impact categories, analogous to the judgment call needed for the Restrepo method for determining stock status with respect to MSST and B_{MSY}. In addition, informed judgment is needed to determine how much the ABC should be set above or below historic catch levels, and a judgment call is also needed to determine what the appropriate period of recent or historic catch is relative to which ABCs should be set.

4. Caveats

Although the Methot method does not make any explicit assumptions about stock stability or fishery equilibrium, the period of historic or recent catch used to determine future ABCs could have potentially large impacts on the final ABC that is calculated. Moreover, this method in its current state of development provides only qualitative statements about relative catch. Establishing absolute values or formulas for how much to increase or decrease OFL from historic catch in the case of low or moderately high impact, respectively, and how vulnerability is used as a relative scalar would still need to be fleshed out.

5. Risk assignment

Risk for this method could be assigned by setting boundaries on how much ABC can be increased or decreased from historic catch. For example, in the case of low historic catch, it would be less risk-prone to specify that ABC can be maximally 50% higher than historic catch instead of 100% higher. Similarly, in the case of moderately high historic catch, higher reductions in ABC translate into a higher probability that the stock will rebuild quickly than low reductions. Risk could also be assigned by deciding how much weight should be given to vulnerability. The PSA risk categories of low, medium and high could be converted into discrete scalars, and how much these scalars differ is a reflection of how much more risk one is willing to take for less vulnerable species.

6. Status of approach

A variation of this approach is currently being developed by the SSC of the Gulf of Mexico Fishery Management Council (GMFMC). The current Gulf ABC control rule consists of three tiers, the lowest of which contains the ORCS. The Gulf SSC is considering only two of the four dimensions from the Methot Table Conceptual Framework: small and moderately high impact (tier 3a and 3b, respectively). In the case of small impact, recent average catch over a stable period would be designated as the target catch, ABC would be set at either 0.5, 1, or 1.5 standard deviations (SDs) above the target, and OFL will be set at 2 SDs above that target. The rationale for setting OFL at 2 SDs above the mean is that this will result in only a 2.5% probability of catches in any given year exceeding and OFL so defined. The choice of SD level for ABC reflects a choice of risk because even though the SSC would recommend that target catch be set at the mean of recent average catch, the ultimate setting of ACT and ACL rests with the Council, and the Council could choose to set both equal to ABC, in which case an ABC of 0.5 SDs above the mean would constitute a less risk-prone upper limit than an ABC set at 1.5 SDs above the mean. In the case of moderately high impact, the GMFMC SSC approach would set OFL equal to the recent average catch and ABC would be set at 65%, 75%, 85%, or 100% of the OFL. Neither GMFMC tier 3a nor 3b currently use species vulnerability as part of their ABC considerations.

7. Pluses/minuses of approach as viewed by Working Group

The Methot Table Conceptual Framework represents a general approach for addressing ORCS and offers only qualitative advice for adjusting the magnitude of future catch limits with respect to recent catches. This can be advantageous in that it allows flexibility in regional application but it is also a drawback in its lack of specificity because it could result in potentially inappropriate application of the concept. As the GMFMC SSC has found out, the expression "the devil is in the details" seems to hold true, in taking an intuitive concept and making it operational. Like the Restrepo approach, the Methot Table Conceptual Framework is intuitive and easy to explain and therefore extremely useful for scientists, policymakers and stakeholders. Another advantage is that it takes into account species vulnerability, thereby acknowledging the differences in resource response to exploitation. It can also be applied to stocks for which there is evidence that exploitation levels can be increased safely, and time and resources needed to apply this method are minimal because data needs are small and it does not require application by highly trained stock assessment scientists. The method's performance has not yet been tested in either simulations or application.

III. The ORCS Working Group Approach

A. Introduction

While this report has already summarized several control rules based on average catch scalars, the Working Group felt that the existing scalar approaches lacked a solid technical basis and that inadequate guidance had been provided for their application, leading to widespread misuse. Therefore, the Working Group developed a new control rule for the managers and scientists to address these issues. The proposed control rule for catch-only stocks builds on methods in Restrepo et al. (1998) and the Methot Table Conceptual Framework (summarized in Witherell 2010 and reviewed in section II F of this report). The Restrepo et al. (1998) approach assigns stocks to one of three status categories (less than MSST, between MSST and B_{MSY}, and above B_{MSY}) and uses a different average catch scalar for stocks in each category. The scalars are intended to be precautionary, so it would be difficult to use the Restrepo et al. (1998) approach in the new OFL/ABC framework where scientific uncertainty is explicitly taken into account. The new approach presented here also uses different scalars for three stock status categories, but defines the categories differently, and develops a scoring procedure for assigning stocks to these categories. Alternative buffers are proposed to account for scientific uncertainty in setting ABCs, since this is regarded as a policy decision.

The Working Group is fully aware that these methods rely heavily on assumptions and expert judgment, and are not intended to be a substitute for quantitative information on stock status and trend. Nevertheless there is a need for robust methods that provide useful scientific advice in less than ideal situations. Our goal is to improve on existing methods and provide a structured and transparent approach, but we recognize that further improvements are probably needed. With these caveats in mind, the basic approach is the following:

1. Assign stocks to one of three exploitation categories using an evidence-based scoring procedure;
2. Obtain an OFL by multiplying a statistical measure of historical catch (e.g., mean, median, maximum, minimum, percentile, etc.) by a scalar that depends on the exploitation category; and
3. Obtain an ABC as a proportion (< 1) of the OFL to reflect a policy decision on acceptable risk, which may depend on productivity of the stock (see Patrick et al., 2009; 2010).

B. Assigning stocks to exploitation categories

Stocks can be grouped into three broad exploitation categories for which different management objectives apply (Table 3): 1) lightly exploited; 2) moderately exploited; and 3) heavily exploited. For stocks that are considered lightly exploited, catches could generally be increased without harm to the stock. For stocks that are considered moderately exploited, management objectives will focus on maintaining status quo catch levels, and preventing non-sustainable increases. For stocks that are considered heavily exploited and possibly overfished, the management objective is to end overfishing and rebuild the stock to B_{MSY} levels as mandated by the MSA.

1. Background

The concept of 'pretty good' yield (PGY) provides a theoretical basis for broadly classifying stocks into exploitation categories. This concept, proposed by Alec MacCall and developed further by Hilborn (2010), is based on the observation that a large percentage of maximum sustainable yield (>80%) can be produced on a long-term basis over a broad range of stock sizes. This concept is particularly meaningful in data-limited situations, since it implies that successful management outcomes are possible even if stock status is not known precisely. To illustrate the PGY concept and to develop a technical basis for catch multipliers, a Pella-Tomlinson production model was used. The Pella-Tomlinson model duplicates the results of the more complex age-structured model used by Hilborn (2010), but allows equilibrium yield to be calculated directly for any percentage of unfished stock size.

Annual equilibrium yield (Y_*) for the Pella-Tomlinson production model is:

$$Y_* = \frac{\gamma\, m}{B_0} B_* - \frac{\gamma\, m}{B_0^n} B_*^n ,$$

where:

$$\gamma = \frac{n^{n/(n-1)}}{n-1},$$

m is maximum productivity (MSY), B_0 is unfished biomass, and B_* is equilibrium biomass at some level of fishing mortality F_*, with $Y_* = F_* \; B_*$ (Quinn and Deriso 1999). Setting n = 1.2 results in a B_{MSY} that occurs at 40% of the unfished stock size, which is often considered a reasonable default value (Clark, 1991). For these assumptions, equilibrium stock abundance in a range from $B_{19\%}$ to $B_{65\%}$ of the unfished biomass provides at least 80% of the MSY yield on a sustainable basis (Figure 5). Stocks above this range would be considered lightly exploited, while stocks below this range would be considered heavily exploited (i.e., overfished). These results are comparable to those obtained by Hilborn (2010) for an age-structured population. Special cases of the Pella-Tomlinson model are n=2, which becomes the Graham-Schaefer production model where B_{MSY} is 50% of unfished biomass, and $n \rightarrow 1$, which translates to the Fox production model where B_{MSY} is approximately 37% of unfished biomass.

2. Guidelines for assigning stock status

Status assignments based on historical catches will not have the benefit of a stock assessment, but will instead need to rely on 'expert' judgment. Experts in this context are those with experience conducting research, working on management issues, or participating in a fishery, and may include scientists, fishery managers, fishermen, and other involved parties. It will be important to be as comprehensive as possible when making status assignments and evaluate multiple lines of evidence. Given the absence of definitive information, the effort to generate these assignments may not be straightforward. It is important to note that that the overriding goal here is simply to assign stocks to very broad status categories with acceptable accuracy (e.g., say greater than a 70% success rate), recognizing that some inappropriate assignments will be inevitable.

An evidence-based scoring procedure (Table 4) has been developed to help assign stocks to the different status categories. This table incorporates some of the susceptibility elements in a PSA analysis (Patrick et al., 2010), as well as several new elements. The susceptibility scores in PSA evaluate the likelihood that a stock is captured in a fishery and the probable levels of fishing mortality, but PSA also includes productivity scores as a second dimension that takes into account the consequences of stock becoming overfished. In the framework we develop, productivity is considered separately when setting a buffer between OFL and ABC. While scoring procedures are a relatively recent development in fishery management, multi-attribute scoring algorithms have been used to evaluate the risk of species extinction (see Musick, 1999 and Dulvy et al., 2003). Multi-attribute scoring algorithms are also used in the medical field for making diagnoses and deciding treatment plans (Ebell, 2001). Elements of the evidence-based scoring procedure are described below.

Overall fishery exploitation based on assessed stocks. In general, the characteristics of the fishery in which the stock is caught are the most important factor to consider when assigning stocks to exploitation categories. If there are assessed stocks in the fishery, are they mostly overfished, moderately exploited, or are most lightly exploited? Unless there are reasons to think that the stock is more or less vulnerable than assessed stocks, it may be reasonable to assign it the same status as an associated stock that has been assessed. Certain habitats may have an overall level of exploitation that can be used to infer the status of unassessed stocks that live in that habitat.

Presence of natural or managed refugia. A stock that is fished throughout its range is more likely to be impacted by fishing than a stock that is fished only in a portion of its range. Species with extensive natural or managed refugia are unlikely to become severely depleted. This consideration would only apply to species that are not highly mobile as adults in relation to size of the refugia.

Schooling, aggregation, or other behavior responses affecting capture. This element encompasses both the behavioral response of individual fish to fishing gear and group behaviors that affect capture such as schooling or aggregating for spawning in known locations. Individual responses may include, for example, herding or gear avoidance behavior that would affect catchability.

Morphological characteristics affecting capture. This element pertains to the ability of the fishing gear to capture fish based on their morphological characteristics. For example, are there aspects of morphological characteristics affecting capture (i.e., large spines) that could make the fish more or less susceptible to capture? Because gear selectivity varies with size and age, this measure should be based on the age or size classes most representative of the entire stock.

Targeted species or Bycatch; and rarity. Targeting behavior by the fishery may help inform stock status assignments. Targeting may be inferred if a species has high commercial value or is considered highly desirable in a recreational fishery. Stocks that are caught primarily as bycatch in fisheries that target other stocks are likely to be lightly exploited relative to the targeted stock. However a non-targeted stock may still become overfished if it is much less productive than the targeted stock. Some stocks are simply too rare to be targeted, and would tend have low fishing impacts.

Natural mortality compared to targeted species in the fishery. This element provides a relative gauge of the stock's productivity compared to the dominant or targeted species in the fishery. Generally, for stocks subject to similar fishing mortality rates, those with low natural mortality have a higher likelihood of becoming overfished than those with higher natural mortality.

Value or desirability. Highly valued fish stocks are more susceptible to overfishing or becoming overfished by the recreational or commercial fishery due to targeting behavior with the goal of maximizing profits or non-market value. To identify the value of the fish, we suggest using the approach of Patrick et al. (2010) who used price per pound, or retention rates for recreational fisheries.

Trend in catches and effort. Finally, trends in historical catches may also be informative under some circumstances. If fishing effort is stable, a declining trend in catches may be an indicator of stock depletion. Again, if effort is not increasing, stable or increasing catches are an indication that the stock is exhibiting resiliency and not likely being severely impacted by fishing, but caution is warranted when interpreting catch patterns in the absence of other indicators and sources of data. Qualitative measures of effort, such as the number of active vessels or employment in the fishery, are likely to be all that are available for data-poor stocks, but may be misleading if there are technological advancements in the fishery. Increasing catches could also be an indication of fishery expansion, i.e., a stock that is transitioning from lightly exploited to moderately or heavily exploited status.

The evidence-based scoring procedure provided (Table 4) includes default-scoring thresholds; however, we realize that revisions to the scoring procedure will likely be needed in different regional ecosystems and recommend that the scoring table be used flexibly. A starting point would be to assign status using the arithmetic mean of all attributes that can be scored, but weighting factors could be considered, or taking the geometric mean rather than the arithmetic mean. Careful consideration should be given to the logistics of scoring stocks. One possibility would be to assemble a core group of scientific experts that draws on information from formally appointed advisors that may include fishery managers, fishermen, and other knowledgeable individuals. Through trial and error techniques, it may also be useful to separate the scoring process into two steps by first ranking stocks along a continuum from lightly exploited to heavily exploited, and then identifying the break points between the lightly exploited, moderately exploited, and heavily exploited categories. Given management implications of identifying the break points, a higher-level science advisory body, such as the Regional Council's SSC, may be more appropriate for this task.

C. Determining an appropriate catch statistic for an OFL calculation

Calculating the OFL using the ORC methodology is based on two terms: a scalar (or multiplier) that is based on the stock status category (described above), and a catch statistic derived from a time series of historical catches. Ideally, historical catches should represent a period with a stable harvest rate, i.e., a harvest rate where fishing removals are balanced by stock production and the stock can be assumed to be in a steady state condition or at its long term equilibrium. Stability in catches should be considered relative to the longevity of the stock. Catches of a long-lived species can be stable over a long period even though the stock is declining during this period. Although historical catches can be very stable with low variability, more often they are highly variable, sometimes with large outliers, or could be characterized by alternate periods of stability and periods of high variability or strong trends. Catches of relatively uncommon stocks can vary for a number of reasons unrelated to increases or decreases in abundance. These stocks may be incidental catches in fisheries that target other stocks or are minor members in a multispecies complex. The greater or lesser occurrence of a stock in the catch could be a chance event, caused by changes in the spatial or ecological overlap between that stock and other stocks that are more actively targeted in the fishery. Furthermore, fishery sampling programs can produce imprecise estimates of catches of stocks that are relatively uncommon. Evaluation of historical catch should include discussion of data quality and potential bias of catch estimates. If landings are highly variable, an attempt should be made to identify the reason for the variation and evaluate implications on the sustainability of historical catches. Other potential reasons for high fluctuations or outliers could be species misidentification, underreporting, effort variability, gear changes, or changes to the regulations for targeted species.

Although in many cases taking the arithmetic mean of historical catches is appropriate for an OFL calculation, the use of an alternative catch statistic may be needed in some situations to provide useful results. Several issues are described below, and suggestions presented for dealing with them are provided.

1. Outliers

In some cases, catch time series include extreme outliers that cannot be fully supported or rejected with available information. Several approaches to handling outliers are possible. First, a trimmed mean can be used (i.e., the inter-quartile mean) when the extreme values are considered unreliable. A similar approach would be to use the Winsorized mean, which is obtained by replacing all the values greater than or less than some quantile of catches by the largest (or smallest) of the remaining values. Usually 10 or 25 percent of the tails of the distribution are replaced. This approach would be appropriate when the extreme values are thought to carry some information about the catch quantity, but their actual values are considered unreliable.

2. Avoiding a ratchet effect

If catches are highly variable, the use of average catch as an OFL may be more constraining than is necessary, particularly when stocks are considered lightly or moderately exploited. When the management objective is to maintain current catch levels, setting the OFL equal to average catch could have the negative effect of depressing the mean level of the catch in the future, since presumably the management measures will need to prevent catches from exceeding the OFL, thereby truncating half of the distribution that was used to calculate the historical average. One possibility is to define the OFL to be some upper percentile of the historical catch, e.g., the 75% percentile of historical catch, with the rationale being that such a value would be exceeded on average one year in four if the fishery was prosecuted similar to historical patterns. Using the maximum catch is another alternative to average catch, but this should only be considered for non-target species with compelling evidence that they are lightly exploited. A similar approach has been proposed by the GMFMC SSC to, in some situations, base OFL on average catch plus two standard deviations (97.5 percentile), but it is unclear whether this approach provides sufficient constraint to prevent stocks from becoming depleted.

3. Recent trends

The theoretical development of average catch multipliers assumes that stocks are in equilibrium at some level of biomass, but this is necessarily an approximation to the real world, and in some cases it may be an inappropriate assumption from which to proceed. When there are downward trends in the landings, the safest approach (i.e., the most precautionary approach) would be to use an average based on the more recent lower values. However, if the downward trend in catches can be clearly linked to a reduction in effort, as when management restrictions are implemented for other species in a multi-species fishery, average catches from an earlier period may be more appropriate. If catches are trending upwards, using an average over all years may be the most reasonable approach.

D. Obtaining OFL scalars for different exploitation categories

When catch trends are stable and the stock is considered to be moderately exploited, setting the OFL to current catch levels is an appropriate action. For these stocks, a multiplier of 1.0 is recommended for the OFL.

For stocks that are considered to be heavily exploited, fishing mortality will need to be reduced to at least F_{MSY} to end overfishing and begin rebuilding the stock to levels closer to B_{MSY}. Since catch is proportional to fishing mortality for the Pella-Tomlinson model, a proportional reduction in catch will result in the same proportional reduction in fishing mortality for a given stock size. There is a time-dependency implicit in this recommendation, since a stock will immediately start to increase when fishing mortality is reduced to F_{MSY}. The Pella-Tomlinson model suggests that multipliers on average catch that reduce fishing mortality to F_{MSY} range from 0.17 when the stock is close to zero to 0.61 when the stock is at $B_{20\%}$ (Figure 6) The average of multipliers from $B_{5\%}$ to $B_{20\%}$ is 0.48. Stock levels below $B_{5\%}$ were excluded because it is unlikely that fishing mortality could be high enough to reduce stock size to such low levels. These results suggest that a multiplier of 0.5 is appropriate for the OFL when the stock is considered to be heavily exploited. Since increased yields should be possible once the stock rebuilds, use of a 0.5 multiplier for the OFL should be considered a temporary measure that will be re-evaluated periodically.

When the stock is considered lightly exploited, fishing mortality is lower than F_{MSY} and thus could potentially be increased. However a multiplier on catch would result in an immediate decrease in biomass so that that F_{MSY} would quickly be exceeded. An alternative multiplier when the stock is lightly exploited is a multiplier that would increase yield to *MSY*, so that annual catches of this amount would move the stock into the moderately exploited category without overfishing. The average of yield multipliers from $B_{66\%}$ to $B_{90\%}$ is 1.98 (Figure 7). Stock levels above $B_{90\%}$ were excluded because these stocks would likely be classified as ecosystem component species. These results indicate that a multiplier of 2.0 is appropriate for the OFL when the stock is lightly exploited. Comparisons between the Pella-Tomlinson model with n = 1.2, the Graham-Schaefer model, and Fox model indicate that the recommended multipliers are reasonably robust to the shape of the production function. Due to the simple modeling approach used to derive these multipliers, we suggest using Table 5 as a starting point in discussions regarding appropriate OFLs.

Although three categories have been broadly defined in the above analysis, distinguishing between lightly exploited and moderately exploited stocks may be difficult in some circumstances (e.g., widely varying catch data). Under such circumstances, it may be more practical to combine these two categories and use a 1.0 scalar for both; however this would imply a decision to constrain the catch of stocks that may be lightly exploited.

E. Obtain an ABC as a proportion of the OFL

The last step in the control rule is determining the appropriate buffer between OFL and the ABC, which is based on the scientific knowledge about the stock and the uncertainty in the estimate of OFL (i.e., historical catch analysis). Since both risk policy and scientific uncertainty are involved in the choice of an ABC multiplier, input will be required from managers (i.e., Regional Fishery Management Councils) and science advisors (i.e., SSCs). Technical approaches to characterizing uncertainty are not yet possible for data-poor stocks, but it is clear that uncertainty is greater for these stocks than for data-rich assessed stocks. The size of the ABC multipliers derived from data-rich stocks provides a starting point for considering ABC multipliers for data-poor stocks. In developing ABCs, managers should consider distinguishing between high productivity stocks and low productivity stocks, the latter of which can be considered higher risk because they are more prone to becoming overfished and have long recovery times if they do become overfished. Assigning stocks to productivity categories is largely a scientific task, and can be done using productivity scores from a PSA analysis (Patrick et al., 2010) or other approaches. The degree to which different ABC multipliers are used for the productivity categories is more of a policy issue that should be decided by managers.

Table 6 lists some ABC options we developed as examples, but these are not meant to preclude managers from developing their own alternatives based on their risk preference. The alternatives in Table 6 have a greater or lesser degree of risk aversion, and contrast policy decisions to be more risk averse for low productivity stocks with those that do not. The most productive stocks tend to be coastal pelagic species such as anchovy and sardine, which have characteristics other than productivity that may be taken into account in setting the ABCs (or ACLs), such as decadal variability or importance as forage species. Other ways of grouping stocks into risk categories by productivity scores or some other characteristic are possible and should be considered.

IV. STOCK COMPLEXES

The National Standard One Guidelines (NMFS, 2009) describe the concept of a stock complex management, which is defined as a group of stocks that are managed as a single unit. Stock complexes are considered an approach to deal with stocks that are harvested together and cannot be assessed separately because of insufficient data or resources. Stock complexes can include similar species (e.g., southeastern U.S. reef fishes) or distinct populations of the same species that support mixed-stock fisheries (e.g., the Georges Bank-Gulf of Maine stock complex of Atlantic herring). In all fishery management systems, priority is given to assessing and monitoring stocks with the highest economic value or ecological importance. Nevertheless, marine ecosystems are diverse, and become increasingly so at lower latitudes. Although there is a general need for additional stock assessments, the cost of monitoring and assessing some stocks could potentially exceed the value of landings, suggesting that there is a limit to how many stocks should be individually assessed and managed. Management of stock complexes is an approach to addressing complexity by managing stocks at a higher level than an individual stock. Whether management by stock complexes is considered successful depends on how well the approach achieves management objectives, which can be evaluated like any other management strategy. Stock complexes are likely to be useful in the same data-poor situations as average catch assessments. This section discusses the issues that should be considered when these two approaches are used together.

The formation of stock complexes should take into account life history, geographic distribution, depth distribution, and vulnerability to the fishery (NMFS, 2009). When stock complexes are formed using these criteria, it is assumed that 1) a single catch limit will be sustainable for all members of the stock complex, and 2) fishery impacts are relatively uniform across the members of stock complex (i.e., there is no targeting of individual stocks in the complex). NMFS (2009) also recommends the use of indicator stocks, which is a stock selected as being representative of the complex, and is assessed periodically as a proxy for the other members of the complex. Indicator stocks have been used in various fisheries (e.g., Hawaii Seamount and Bottomfish Fishery, Alaska Salmon Fishery, North Pacific Groundfish Fishery, etc.) and have shown various levels of success. Shertzer and Williams (2008) evaluated the utility of stock complexes and indicator stocks as a proxy of status for reef fisheries off the southeast United States coast. Two difficulties were encountered: 1) species did not group naturally into well-defined complexes based on a cluster analysis of catch data, and, 2) fishery CPUE trends of member stocks within complexes showed little synchrony, suggesting that a single stock could not be used as an indicator for the complex. This study did not distinguish between the utility of using stock complexes and indicator stocks to prevent overfishing, as opposed to being simply used for status determination. At this point, it is not possible to conclude that Shertzer and Williams (2008) results generally apply to other stock complexes, and the indicator stock approach warrants further evaluation (see Branton and Richardson, 2011). Preliminary work with Pacific Coast groundfish using the results of a PSA as well as geographic distribution in a clustering algorithm to define stock complexes shows promising results, but is not expected to be implemented until the next management cycle (Cope et al., In press).

A stock complex can be managed in-season by monitoring the aggregate landings of the complex relative to an annual catch limit as a way to control the fishing mortality experienced by the stock complex in its entirety. Determination of stock status relative to target or limit stock size could be done for the complex as whole, or for an indicator stock that is a member of the group. Determining stock status may be difficult or impossible for data-poor stocks, but a management system that successfully limits catch to sustainable levels would be expected to prevent any stock from becoming overfished. While an inability to determine whether stocks are below a critical threshold is a weakness of average catch assessments, a management system that is designed to be precautionary should accommodate this uncertainty with an appropriate response.

It is difficult to find examples where stock complexes have been implemented following the principles in NMFS (2009), most likely because the guidance is relatively new (earlier versions of the NS1 guidelines did not provide guidance on the formation of stock complexes). Stock complexes have often been established based on broad taxonomic groupings. For example, in the North Pacific, stock complexes have been established for squids and sculpins, while in New England, skates are managed as a complex despite large differences in productivity and susceptibility for members of the complex. In other cases, stock complexes are treated as a kind of warehouse for stocks that have not been dealt with using other assessment and management approaches. For an example, the "Other fish" complex used by PFMC includes several skate, shark, deepwater (e.g., finescale codling and Pacific rattail), and nearshore species (e.g., cabezon and kelp greenling). A more appropriate use of stock complexes is the PFMC management of minor rockfish species, which are grouped into complexes based on geographic distribution (north and south of 40°10" lat. N.), and depth distribution (nearshore, shelf, and slope). Another example is the "Shelf Demersal Rockfish" stock complex in the Gulf of Alaska, consisting of an assessed stock, yelloweye rockfish, and a number of other rockfish stocks occupying similar habitats that are not assessed. ABCs and OFLs are based on the assessed stock with an adjustment to account for the percent of the total catch of the stock complex consisting of other members of the complex.

Reef fishes in the Gulf of Mexico and U.S. Southeastern Atlantic Ocean were grouped into assemblages for management purposes based on multivariate statistical analyses conducted by the NMFS Southeast Regional Office. The analysis was based on landings associations, life history, and PSA. In the Gulf of Mexico, depth was the most important factor influencing assemblage composition. In the U.S. Southeastern Atlantic Ocean, depth and latitude were both important factors. Each identified assemblage contained at least one targeted, assessed species.

OFLs and ABCs for stock complexes can be specified for indicator stock(s) of the complex or set for the complex as a whole. When indicator species is not a feasible option, and OFLs and ABCs need to be set for the complex as a whole, average catches can be compiled for the complex and the OFL and ABC calculations can be done for the entire complex. This is because the average catch of a complex is simply the sum of the average catches of the individual members of the complex. This approach would also be useful for stock complexes when estimates of the catch by species are unavailable, however some level of catch sampling is necessary to track the relative landings of stocks in a complex. Although the OFL and ABC of a stock complex can be the sum of the OFLs and ABCs for its individual stocks, the best scientific information available may not support the definition of stock-specific reference points. In the most data-poor situations, OFL and ABC may need to be based on the time series of aggregate stock catch.

The ABCs established for the indicator stocks for a complex as a whole should reflect the risk policy adopted by the Council. It is recommended by NMFS (2009) that indicator stocks be representative of the stocks within the complex with respect to their vulnerability to the fishery; otherwise the indicator stock should be chosen to represent the more vulnerable stocks in the complex. Similar rationale should be used when setting ABCs for the complex as a whole, which should take into account more vulnerable stocks within the complex. An important consideration in the use of stock complexes for management of data-poor species is that the catch of individual species within the complex is not monitored or controlled in-season. Consequently there is additional uncertainty associated with management by stock complexes that is not present when stocks are managed independently. If the objective is precautionary management, it may be necessary to build some additional conservatism into the system to account for the additional uncertainty associated with management using stock complexes. One approach would be to set an ACT for the stock complex that is less than ACL to account for management uncertainty.

V. DISCUSSION

This review of methods covers a wide range of scientific approaches to confront the challenges associated with recommending appropriate catch recommendations for data-poor stocks. Unlike previous guidance on data-poor stocks, we view the range of methods as a hierarchy, from the most informative to the most data-limited approaches, with the scalar approach recommended by Restrepo et al. (1998) for the bottom tier. A hierarchical approach to catch advice can be used for determining the most appropriate method for each stock in the short-term, depending on stock properties and data availability, as well as a broader perspective on how fishery and resource monitoring information can be improved to advance the catch advice to a more informative tier of methodology (e.g., Cadrin et al., 2004). The ORCS Working Group recognized these method-based tiers and developed an adaptive approach in which the appropriate method is hierarchical with the goal to eventually improve the scientific basis of catch limits.

The adaptive approach to determining appropriate methods for setting ABC accepts that lower-level approaches for the most data-poor stocks do not meet all of the needs of the mandated management system or the desires of fishery stakeholders. Although it is beyond the scope of this report, the top-tier of scientific support is a stock assessment that incorporates and fully accounts for key sources of uncertainty to yield an estimate of the distribution of the OFL. Given this information on OFL and its statistical distribution, Fishery Management Councils can develop ABC control rules in which ABC is derived from an evaluation of scientific uncertainty and their acceptable probability of overfishing (see for example Ralston et al., In press). Several intermediate-tier methods (e.g., DB-SRA) support such a probabilistic approach to ABC and fully comply with NS1 guidelines. By contrast, lower tier methods (e.g., scalars of average catch) are not explicitly based on the Council's desired risk tolerance.

Lower tier methods are designed to provide catch advice so that the fishery will be sustainable, but the optimality of the derived catch and the probability of overfishing are not known. These deficiencies of the lower tier approaches can impose substantial costs in the form of larger uncertainty buffers and substantial foregone yield. The hierarchical and adaptive approach to data-poor methods for determining ABC provides incentives for improving the scientific information.

Ideally, the performance of each method in the tiered system should be evaluated for avoidance of overfishing and maintaining optimum yield (and any other potential benefits identified as management objectives) through simulation of an operating model that is tailored to the stock of interest. Furthermore, the entire tier system could be evaluated through management strategy evaluation if a decision rule is simulated for improving data and moving from lower to higher tiers.

While it is important to improve methods used to set ABCs for ORCS, even improved methods will never take the place of data and monitoring. Informed judgment plays a critical part in every ORCS approach. It cannot be avoided or assumed away. Data collection through research and monitoring are needed to eliminate the need for informed judgment.

VI. RESEARCH RECOMMENDATIONS

Due to the new requirements of the reauthorized Magnuson-Stevens Act (2006), development of methods to evaluate the status of data-poor stocks, including ORCS, is an active area of research. In particular, status determination and characterization of uncertainty are two focal study areas where significant advances are being achieved. In this regard, we believe that continued progress could be accomplished if additional research is conducted along the following lines:

- Develop and accept formal methods to elicit expert opinion from scientists, stakeholders, and managers.

- Conduct Management Strategy Evaluations (MSEs) to evaluate the robustness of methods used to characterize data-poor stocks and control rules for their management.
- Collect basic life history information on data-poor stocks, especially maximum age, to better inform estimation of natural mortality.
- Conduct stock delineation for fish species that occur over extensive ranges and/or overlapping jurisdictions.
- Improve the coverage and accuracy of catch sampling programs.
- As a basis for risk assessment, complete Productivity-Susceptibility Analyses (Patrick et al. 2009) for all stocks that are currently under fishery management plans.
- Increase the study of data-rich stocks within a meta-analytic framework to develop priors and proxies for application to data-poor stocks.
- Coordinate efforts to assemble regional landings statistics into databases in a comprehensive, thorough way.
- Monitor fishery indicators to provide additional information on sustainability of data-poor catch limits.

VII. CONCLUSIONS

The problem of setting appropriate catch levels (now called ABCs) for ORCS is not new, is not going away, and doesn't have an ideal solution. As discussed earlier, methods to deal with ORCS go back to the Restrepo et al. (1998) technical guidance. It is not realistic to assume that all, the majority of, or even many of these "data-limited" ORCS stocks will become "data-rich," allowing for comprehensive stock assessments. Past, present, and proposed methods all require the incorporation of "informed judgment" and major assumptions in critical steps of the process.

Given this situation and all of the information presented in this report, the ORCS Working Group recommends the following tiered approach to setting ABCs for ORCS:

- Apply DB-SRA to a stock, if possible. The main limitation here is the availability of a complete time series of historical catch, which is often not available.

- If it is not possible to apply DB-SRA, apply DCAC to a stock. DCAC's main limitation is that it is only appropriate for stocks with moderate to low natural mortality rates ($\leq 0.20\ yr^{-1}$).

- If DB-SRA and DCAC are not possible, apply the ORCS Working Group's Approach. The main limitation with this approach is that a number of critical decisions are required before it can be made operational. Some would also view this as an advantage, as it provides flexibility in its establishment.

- Finally, in some cases none of the above methods are practical for setting ABCs for an individual stock, as specific ORCS stocks may not have the capability to be effectively managed or monitored. In these cases, it may be best to use a stock complex approach. There are many limitations of applying a stock complex approach as described above, and the ORCS Working Group cautions against overusing or misusing this approach, as it may result in converse of precautionary management, exactly what MSA was designed to avoid.

Finally, we recommend moving forward with the research recommendations listed above, given the methods for setting ABCs for ORCS are in various stages of development and necessarily depend on adequate attention and funding in the future.

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Table 1. The Methot table showing possible actions for determining ABC based on different fishery impact categories and expert opinion. Taken from the workshop report of the 2nd National SSC meeting.

Historical Catch	**Expert Judgment**	**Possible Action**
Nil, not targeted	Inconceivable that catch could be affecting stock	Not in fishery; Ecosystem Component; SDC not required
Small	Catch is enough to warrant including stock in the fishery and tracking, but not enough to be of concern	Set ABC and ACL above historical catch; Set ACT at historical catch level. Allow increase in ACT if accompanied by cooperative research and close monitoring.
Moderate	Possible that any increase in catch could be overfishing	ABC/ACL = f(catch, vulnerability) So caps current fishery
Moderately high	Overfishing or overfished may already be occurring, but no assessment to quantify	Set provisional OFL = f(catch, vulnerability); Set ABC/ACL below OFL to begin stock rebuilding

Table 2. The natural variability factor, c, used in the New Zealand approach, as determined by the value of the natural mortality rate, M.

M	**c**
< 0.05	1.0
0.05-0.15	0.9
0.16-0.25	0.8
0.26-0.35	0.7
> 0.35	0.6

Table 3. Potential management objectives depending on stock status for ORCS Working Group Approach.

Stock status	**Potential management objectives**
Lightly exploited	Maintain current catch levels or allow for limited increases in catch
Moderately exploited	Maintain current catch levels
Heavily exploited, possibly overfished	Reduce catches to end overfishing

Table 4. Table of attributes for assigning stock status for historical catch-only assessments.

Overall scores are obtained by an unweighted average of the attributes for which scoring is possible, although alternative weighting schemes could also be considered. An initial assignment to a stock status category is: mean scores>2.5—heavily exploited; stocks with mean scores 1.5-2.5--moderately exploited; and stocks with mean scores<1.5--lightly exploited. When the attribute does not apply or is unknown it can be left unscored.

Attribute	**Stock status**		
	Lightly exploited (1)	**Moderately exploited (2)**	**Heavily exploited (3)**
Overall fishery exploitation based on assessed stocks	All known stocks are either moderately or lightly exploited. No overfished stocks	Most stocks are moderately exploited. No more than a few overfished stocks	Many stocks are overfished
Presence of natural or managed refugia	Less than 50% of habitat is accessible to fishing	50%-75% of habitat is accessible to fishing	>75% of habitat is accessible to fishing
Schooling, aggregation, or other behavior responses affecting capture	Low susceptibility to capture (specific behaviors depend on gear type)	Average susceptibility to capture (specific behaviors depend on gear type)	High susceptibility to capture (specific behaviors depend on gear type)
Morphological characteristics affecting capture	Low susceptibility to capture (specific characteristics depend on gear type)	Average susceptibility to capture (specific characteristics depend on gear type)	High susceptibility to capture (specific characteristics depend on gear type)
Bycatch or actively targeted by the fishery	No targeted fishery	Occasionally targeted, but occurs in a mix with other species in catches	Actively targeted
Natural mortality compared to dominant species in the fishery	Natural mortality higher or approximately equal to dominant species ($M \geq \overline{M}$)	Natural mortality equal to dominant species ($M \approx \overline{M}$)	Natural mortality less than dominant species ($M < \overline{M}$)
Rarity	Sporadic occurrence in catch	Not uncommon, mostly pure catches are possible with targeting	Frequent occurrence in catch
Value or desirability	Low value (< $1.00/lb, often not retained (< 33% of the time)	Moderate value ($1.00 - $2.25), usually retained (34-66% of the time)	Very valuable or desirable (e.g., > $2.25/lb), almost always retained (>66% of the time).
Trend in catches (use only when effort is stable)	Catch trend increasing or stable (assign score of 1.5)	Catch trend increasing or stable (assign score of 1.5)	Decreasing catches

Table 5. Recommended OFLs using ORCS Working Group Approach.

Stock category		
Lightly exploited ($B > B_{65\%}$)	Moderately exploited ($B \sim B_{MSY}$)	Heavily exploited ($B < B_{20\%}$)
2.0 x catch statistic	1.0 x catch statistic	0.50 x catch statistic

Table 6. Example ABC options for catch-only stocks using the ORCS Working Group Approach.

Risk level	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Low risk (high productivity)	0.75 x OFL	0.75 x OFL	0.90 x OFL	0.90 x OFL
Moderate risk (moderate productivity)	0.75 x OFL	0.75 x OFL	0.75 x OFL	0.80 x OFL
High risk (low productivity)	0.75 x OFL	0.50 x OFL	0.50 x OFL	0.70 x OFL

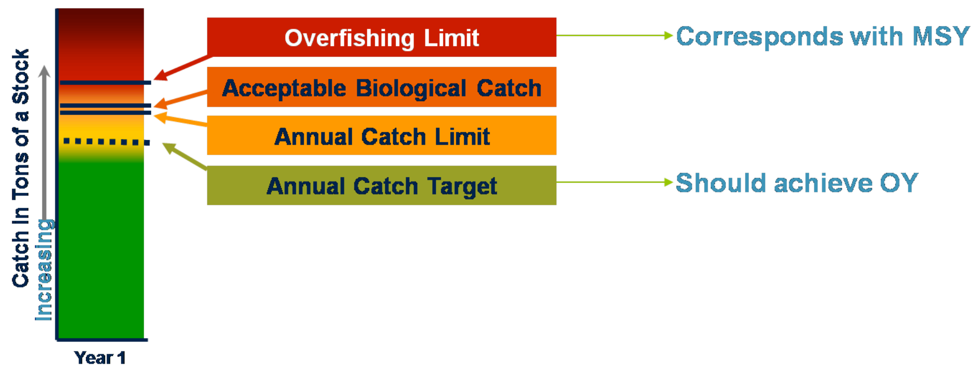

Figure 1. The relationship of catch reference points under National Standard 1.

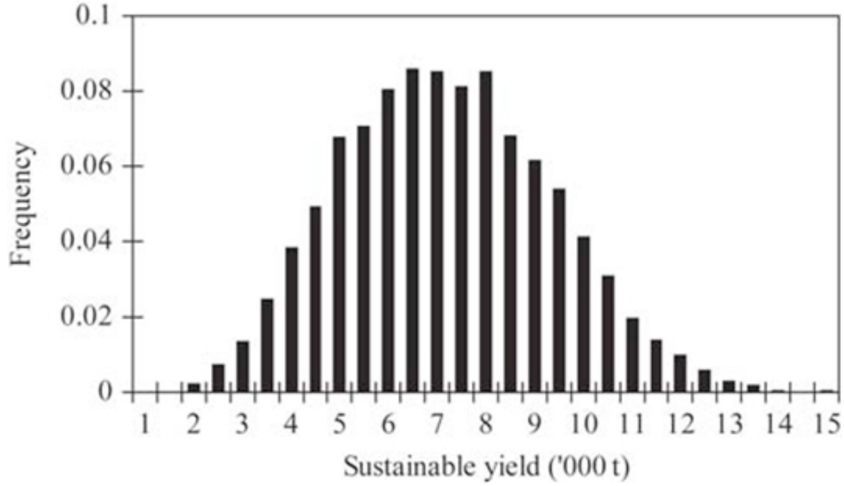

Figure 2. Distribution of 1989 widow rockfish yields from DCAC analysis (taken from MacCall 2009). The median of the sustainable yield distribution is 6,849 mt, which compares with MSY that was estimated to be 8,300 mt.

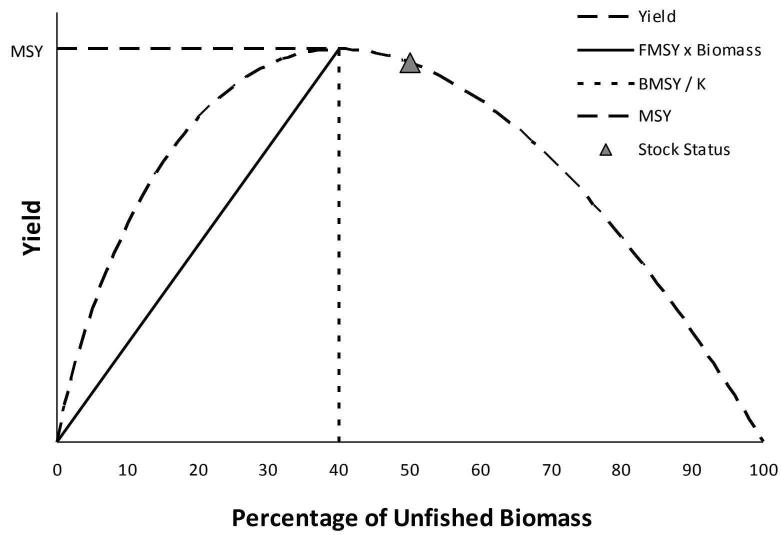

Figure 3. Graphical representation of one iteration of the DB-SRA method, shown on rescaled biomass (B_0 = 1.0).

The slope of the diagonal solid line is determined by the current value of F_{MSY}, which is the product of draws from the M and $F_{MSY} \div M$ distributions. The relative biomass that generates maximum sustainable yield (B_{MSY}/B_0) is also drawn from its distribution (value shown = 0.4). Lastly, stock status relative to unfished biomass is determined by a draw from the distribution of relative biomass depletion (Δ, value shown = 0.5). For each set of draws from the four input distributions, the catch time series determines the unique value of unfished biomass (B_0) that satisfies the current estimate of stock status. Figure courtesy of E.J. Dick.

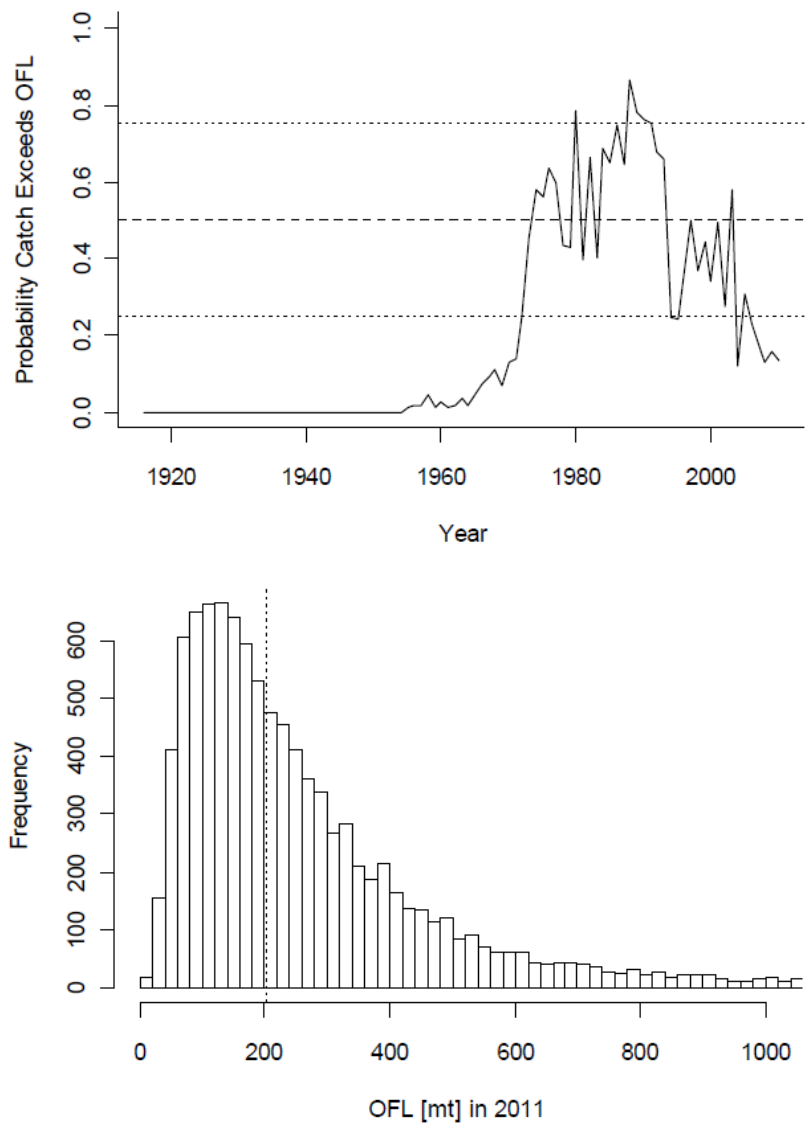

Figure 4. DB-SRA output for brown rockfish. The upper panel shows a time series of the probability that overfishing occurred in any particular year. The lower panel provides the posterior distribution of OFL in 2011 (vertical dotted line = median of distribution).

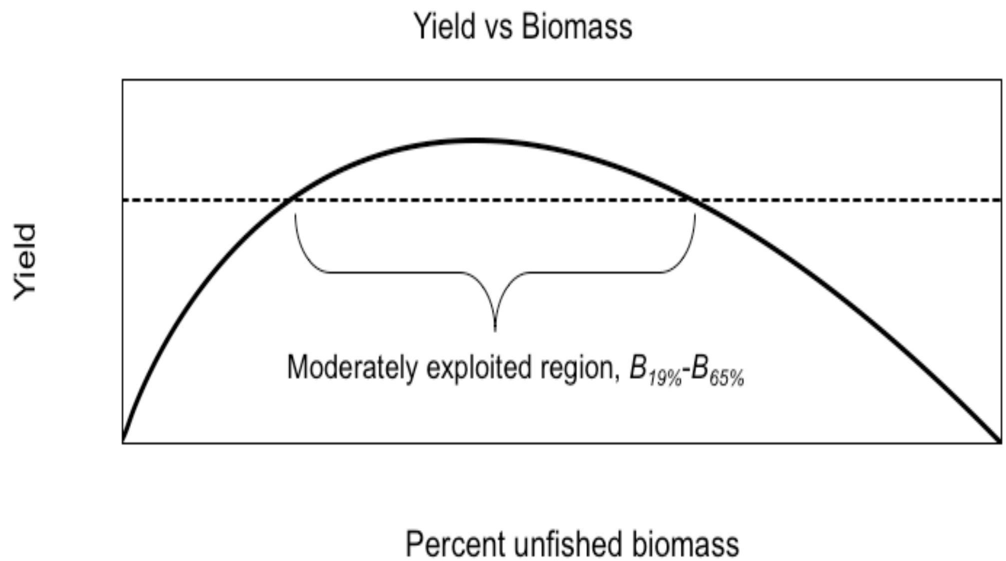

Figure 5. Equilibrium yield as a function of biomass for the Pella-Tomlinson model with n = 1.2.

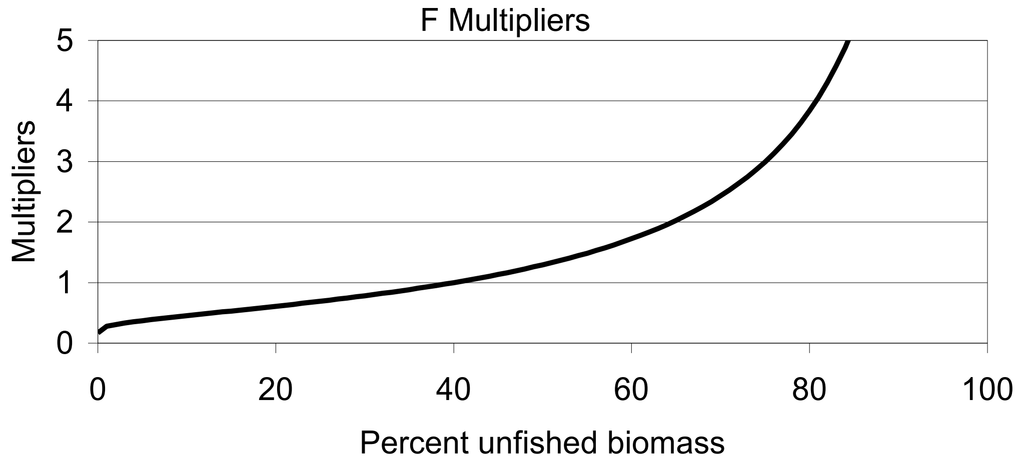

Figure 6. Multiplier for fishing mortality to reduce or increase fishing mortality to F_{MSY} for the Pella-Tomlinson model with n = 1.2.

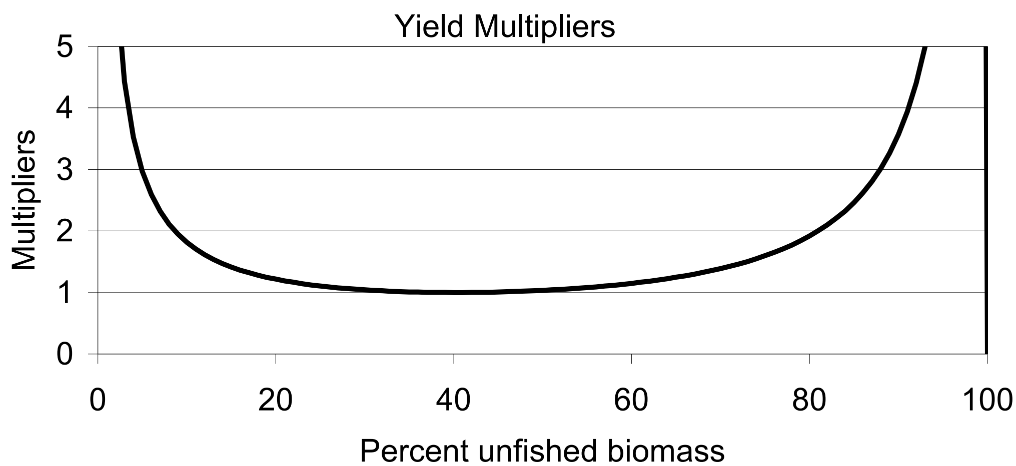

Figure 7. Multiplier for yield to reduce or increase yield to MSY for the Pella-Tomlinson model with n = 1.2.

SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC ORCS WORKSHOP REPORT

August 1-3, 2012

Crowne Plaza
North Charleston, SC

PURPOSE

This workshop was convened to:

- Apply the ORCS approach to unassessed SAFMC stocks

CONTENTS

1. Introduction

1.1. Documents

Agenda

1.2. Action

Introductions
Review and Approve Agenda

The ORCS meeting was called to order at 3:00 pm, as scheduled. The agenda was adopted without change. Workshop participants (*see Section 3 below*) were introduced and their affiliations noted for the administrative record. The Chair reviewed the agenda and outlined meeting format and process.

2. Workshop Terms of Reference

The SSC ORCS sub-Committee developed Terms of Reference to guide the workshop.

1. Review and update the ORCS Table of Stock Attributes (Table 4 in the ORCS report) to better suit SAFMC-managed stocks.
2. Develop a scoring method for assigning stocks to exploitation categories (develop criteria for addressing missing values, weighting, range of scores for exploitation categories etc.). Consider developing a new exploitation category for 'special case' stocks or stocks with no reliable catch data. Assign stocks to exploitation categories.
3. Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.
4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.
5. Create a report to summarize and document work group findings.

3. Apply the ORCS Approach

3.1. Action

Address Workshop Terms of Reference

WORKSHOP MEETING SUMMARY:

To better address the Terms of Reference workshop participants were assigned to 3 breakout groups:

Life History and Ecology:
Jim Berkson (leader)
Eric Johnson (rapporteur)
Churchill Grimes
George Sedberry
Jeffrey Buckel
Luiz Barbieri
David Cupka (Chair, SAFMC)
John Jolley (member, SAFMC)

Fisheries Landings and Surveys:
Marcel Reichert (leader)
Chip Collier (rapporteur)
Carolyn Belcher
Yan Jiao
Doug Vaughan
Michelle Duval (member, SAFMC)

Fishery Characteristics:
Steve Cadrin (leader)
Anne Lange (rapporteur)
Sherry Larkin
Robert Johnson (Chair, Snapper-Grouper AP)
David Harter (Chair, Dolphin-Wahoo AP)
Bob Pelosi (Chair, Mackerel AP)
Ben Hartig (Vice Chair, SAFMC)
Charlie Philips (Member, SAFMC)

The first Term of Reference dealt with customizing the ORCS Table of Attributes to better suit SAFMC stocks. Points addressed by the 3 breakout groups and further discussed during plenary included:

- Levels for attributes reflect the risk of overfishing, not the exploitation level of the stock. Change ‘Stock Status’ heading to ‘Risk of Over-Exploitation’. Also, sub-headings were changed to reflect above modification: Low, Medium, and High.
- It may be advisable to combine attribute 2 (managed refugia) with effectiveness of fishery regulations.

- Consensus was to keep attribute 4 (morphology), contrary to the Life History and Ecology group's suggestion, because this attribute reflects capture probability and therefore, as suggested by the Fishery Characteristics group, has information value.
- The 'Discard Mortality' attribute was modified to read discard mortality instead of discard mortality rate so that the attribute encompasses the mortality rate plus the magnitude of discards. Categories were modified to read Low, Medium, and High. , which could include some catchability issues (e.g. changes in technology).
- Habitat loss or alteration should stay as is. The time period applicable for this attribute should be based on the period of landings being considered.
- Concerning the effectiveness of regulations attribute, the working group felt that other ways should be developed to incorporate this attribute into the table since it affects several of the other criteria. The suggestion was made to modify this attribute to read 'Impacts of Regulations' in order to capture regulations that impact a species even though they were meant to regulate a different species.
- The working group felt that consideration should be given to modification of the fleet stability attribute to fleet productivity to capture some economic issues such as some catchability issues (e.g. changes in technology) as well as fishing efficiency. This attribute also needs to reflect changes in effort. Some of this information can be captured in the 'targeted fishery or bycatch' criteria.

According to the comments and suggestions discussed above the following table of attributes was produced:

Attribute	Risk of Overexploitation		
	Low (1)	**Moderate (2)**	**High (3)**
Overall fishery exploitation based on assessed stocks	All known stocks are either moderately or lightly exploited. No overfished stocks.	Most stocks are moderately exploited. No more than a few overfished stocks.	Many stocks are overfished.
Presence of natural or managed refugia	Less than 50% of habitat is accessible to fishing	50%-75% of habitat is accessible to fishing	>75% of habitat is accessible to fishing
Schooling, aggregation, or other behavior responses affecting capture	Low susceptibility to capture (specific behaviors depend on gear type)	Average susceptibility to capture (specific behaviors depend on gear type)	High susceptibility to capture (specific behaviors depend on gear type)
Morphological characteristics affecting capture	Low susceptibility to capture (specific characteristics depend on gear type)	Average susceptibility to capture (specific characteristics depend on gear type)	High susceptibility to capture (specific characteristics depend on gear type)
Discard mortality rate	Low	Medium	High
Bycatch or actively targeted by the fishery	No targeted fishery	Occasionally targeted, but occurs in a mix with other species in catches	Actively sought after
Natural mortality compared to dominant species in the fishery	Natural mortality higher or approximately equal to dominant species ($M \geq \overline{M}$)	Natural mortality higher or equal to dominant species ($M \approx \overline{M}$)	Natural mortality less than dominant species ($M < \overline{M}$)
Rarity	Sporadic occurrence in catch	Not uncommon, mostly pure catches are possible with targeting	Frequent occurrence in catch
Value or desirability	Low value, often not retained (<$1/lb)	Moderate value, usually retained ($1-$2.25/lb)	Very valuable or desirable (trophy fish or >$2.25/lb)
Trend in catches (use only when effort is stable)	Catch trend increasing or stable (assign score of 1.5)	Catches trend increasing or stable (assign score of 1.5)	Decreasing catches
Loss or alteration of habitat	No loss or alteration of habitat, or habitat is increasing	Habitat is being lost or altered and the rate is declining or staying constant	Habitat is being lost or altered and the rate is increasing
Fleet stability	Fleet/# of trips/effort decreasing	Fleet/# of trips/effort stable	Fleet/# of trips/effort increasing
Fishery Independent CPUE	Increasing in most recent years	stable in most recent years,	Decreasing in most recent years.
Effectiveness of regulations (other than ACLs) to limit exploitation	Most of the resource is protected from harvest (closed areas, size limits, seasons)	Considerable portions of the resource are protected	The resource is fully vulnerable to the fishery

In addressing Term of Reference #2 workshop participants came to the following consensus decisions:

- The ORCS table of attributes will be scored with equal weights.
- Missing values (i.e., unscored attributes) will be left as 'blanks' and not used in calculating the stock's final mean score.
- Stocks with no reliable catch data, i.e., stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates, will be removed from this exercise and moved to a new ABC control rule Tier 5 (unassessed stocks that do not qualify as ORCS). The table below lists SAFMC stocks removed from this ORCS application exercise. Table headings indicate the reason for considering these stocks as not having reliable catch.

Variability	Landings or Data Collection issues	Species ID
Black Snapper	Black Snapper	Almaco Jack
	Blackfin Snapper	Lesser Amberjack
	Sand Tilefish	Sailor's Choice
	Mahogany	Banded Rudderfish
	Dog Snapper	Yellowmouth Grouper
	Misty Grouper	Scup
	Sailor's Choice	Saucereye Porgy
	Coney	Jolthead Porgy
	Graysby	Knobbed Porgy
	Saucereye Porgy	Whitebone Porgy
	Scup	
	Queen Snapper	
	Warsaw grouper	
	Speckled hind	

Application of the revised and upgraded ORCS table of attributes to remaining stocks (i.e., after the non-ORCS stocks were removed from the analysis) resulted in the assignment of all stocks to the 'Moderate' risk of exploitation category.

To refine the analysis and achieve better resolution in assigning stocks to risk of exploitation categories (i.e., to better differentiate between risk levels for different stocks) workshop participants reviewed individual criteria and attributes discussed by the 3 breakout groups (Life History and Ecology, Landings and Surveys, and Fishery Characteristics). Then, based on group consensus and expert judgment the group assigned each stock to a final risk of exploitation category. Results are summarized on the table below (Qualitative Categorization column).

Species	MEAN	Exploitation Category	Life History	Fishery Characteristics	Fishery Surveys and Trends	Qualitative Categorization
bar jack	1.50	Moderate	Moderate	Low	Low	Low
margate	1.65	Moderate	Moderate	Low	Moderate	Moderate
rock hind	1.65	Moderate	Moderate	Low	Moderate	Mod High
red hind	1.73	Moderate	Moderate	Low	Moderate	Moderate
cubera snapper	1.79	Moderate	Moderate	Moderate	Low	Moderate
wahoo	1.80	Moderate	Low	Moderate	Moderate	Moderate
tomtate	1.83	Moderate	Low	Moderate	High	Mod High
blue runner	1.88	Moderate	Moderate	Moderate	Moderate	Moderate
yellowedge grouper	2.05	Moderate	Moderate	Moderate	Moderate	Moderate
hogfish	2.03	Moderate	High*	Moderate	Moderate	Mod High
blueline tilefish	1.94	Moderate	Moderate	Moderate	High	Moderate
silk snapper	2.00	Moderate	Moderate	Moderate	Moderate	Moderate
white grunt north			Moderate	Moderate	High	Mod High
white grunt south	2.08	Moderate	Moderate	Moderate	High	Moderate
atlantic spadefish	2.09	Moderate	Moderate	Moderate	Moderate	Moderate
gray snapper	2.10	Moderate	High	Moderate	Moderate	Moderate
dolphin	2.10	Moderate	Low*	High	Moderate	Mod Low
lane snapper	2.06	Moderate	High	Moderate	Low	Moderate
scamp	2.16	Moderate	Moderate	Moderate	Moderate	Mod High
gray triggerfish	2.25	Moderate	Moderate	Moderate (High)	Moderate (High)	Mod High

Unfortunately, we ran out of time and were not able to address Terms of Reference 3-5 at this workshop. The workgroup recommended meeting again in the spring of 2013 to complete application of the ORCS approach and finalize the report.

The group discussed the fact that several of the stocks included in this analysis (e.g., gray snapper, dolphin, white grunt) should have enough data to have stock assessments based on more traditional quantitative assessment methods—i.e., based on the data available they likely fall under higher tiers of our ABC control rule (the ORCS approach is tier 4). The SSC will discuss this issue in more detail at its October meeting.

Workshop adjourned.

SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC ORCS WORKSHOP

August 1-3, 2012

SSC ORCS WORKSHOP II
April 8-9, 2013

Crowne Plaza
North Charleston, SC

PURPOSE

This workshop is convened to:

- Complete application of the ORCS approach to unassessed SAFMC stocks

CONTENTS

1. Introduction

1.1. Documents

Agenda
ORCS Workshop I Final Report

1.2. Action

Introductions
Review and Approve Agenda

The ORCS meeting was called to order at 1:00 pm, as scheduled. The agenda was adopted without change. Workshop participants were introduced and their affiliations noted for the administrative record. The Chair reviewed the agenda and outlined meeting format and process.

2. Workshop Terms of Reference

The SSC ORCS sub-Committee developed Terms of Reference to guide the workshop.

1. Review and update the ORCS Table of Stock Attributes (Table 4 in the ORCS report) to better suit SAFMC-managed stocks.
2. Develop a scoring method for assigning stocks to exploitation categories (develop criteria for addressing missing values, weighting, range of scores for exploitation categories etc.). Consider developing a new exploitation category for 'special case' stocks or stocks with no reliable catch data. Assign stocks to exploitation categories.
3. Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.
4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.
5. Create a report to summarize and document workgroup findings.

3. Apply the ORCS Approach

3.1. Documents

Attachment 1. April 2012 SSC Report
Attachment 2. ORCS Report
Attachment 3. ABC Control Rule
Attachment 4. ABC Recommendations
Attachment 5. SSC ORCS Group Summary
Attachment 6. Preliminary ORCS Application
Attachment 7. Preliminary ORCS Application Details
Attachment 8. MRAG PSA results
Attachment 9. NMFS PSA results
Attachment 10. MRAG PSA Gulf Results
Attachment 11. ORCS Application Workshop Draft
Attachment 12. ORCS Application Workshop Draft worksheet
Attachment 13. Preliminary evaluation of effort trends

3.2. Overview

The objective of the second workshop was to address Terms of Reference 3 and 4, which were not considered during the first workshop. Since there have been no changes in the ORCS method since the first workshop, and the intent of the workshop is to continue the work started previously we ask readers to refer to the ORCS workshop 1 report for details and full documentation on how Terms of Reference 1 and 2 were addressed.

4. WORKSHOP MEETING SUMMARY:

The workgroup reviewed progress and results from the first workshop and proceeded to address the remaining Terms of Reference:

3. Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.

The group had an extensive discussion regarding the difficulties associated with choosing a catch statistic that would be appropriate for the full suite of stocks being considered for application of the ORCS method. Initial suggestions focused on using the median landings over a set time period. However, after further inspection the median was considered inadequate to represent the high fluctuation in landings—i.e., to appropriately capture the range of occasional high landings—and the group reached consensus on using the maximum catch over the period 1999-2007. The time period was chosen to (1) be consistent with the period of landings used in the Council's Comprehensive ACL Amendment, and (2) to minimize the impact of recent regulations and the economic down turn on the landings time series.

A few special case stocks had different landings time periods used for the catch statistic. Please refer to the table below for the time periods used for these stocks and to the April 2010 SSC meeting report for a description of the rationale used to choose the time periods.

Stock	**Landings Period**
Wahoo	1994-2003
Dolphin	1994-1997

The group also had extensive discussion regarding selection of a scalar to be associated with the catch statistic. Scalars should help capture the range of variability in landings so managers do not take action on random landings fluctuations or measurement error by interpreting them as overexploitation.

After much debate the group reached consensus on a scalar scheme consistent with the Risk of Overexploitation categories assigned to stocks in the first ORCS workshop:

Risk of Overexploitation	**Scalar Value**
Low	2
Moderate Low	1.75
Moderate	1.5
Moderate High	1.25

Important Note: given characteristics specific to South Atlantic stocks the group agreed that the "catch statistic × scalar" metric developed in this stage of the process may not represent a reliable proxy for OFL and, therefore, would not be called OFL or used as such.

The resulting values of "catch statistic × scalar" metric for the South Atlantic stocks in question can be found in the table below:

				Scalar X Catch Stats		
Stock	Risk of OverExpl.	Max. Catch	2	1.75	1.5	1.25
Bar Jack	Low	2.303442733	4.61			
Dolphin	Mod Low	1.54699779		2.71		
Margate	Moderate	2.731488304			4.1	
Red Hind	Moderate	1.131450531			1.7	
Cubera Snapper	Moderate	1.440948167			2.16	
Wahoo	Moderate	1.993493971			2.99	
Blue runner	Moderate	1.807000846			2.71	
Yellowedge Grouper	Moderate	1.648473237			2.47	
Blueline tilefish	Moderate	1.908467571			2.86	
Silk snapper	Moderate	2.124247472			3.19	
White Grunt (South)	Moderate	0.990796505			1.49	
Atlantic Spadefish	Moderate	2.743772279			4.12	
Gray snapper	Moderate	1.525352698			2.29	
Lane snapper	Moderate	1.460420169			2.19	
Rock Hind	Mod High	2.377527761				2.97
Tomtate	Mod HIgh	1.334877919				1.67
Hogfish	Mod HIgh	1.340823933				1.68
White Grunt (North)	Mod HIgh	0.990796505				1.24
Scamp	Mod High	1.332317715				1.67
Gray triggerfish	Mod HIgh	1.325207325				1.66

4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.

The next step in the process involves obtaining ABC values for each stock by multiplying the "catch statistic × scalar" metric (*here not being called OFL*) by a range of scalar values that reflects the SAFMC's risk tolerance level. After much discussion and input from the Council members participating in the workshop the group consensus was to follow the risk level described by Alternative A in the table below:

Risk level	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Low risk (high productivity)	0.75 x OFL	0.75 x OFL	0.90 x OFL	0.90 x OFL
Moderate risk (moderate productivity)	0.75 x OFL	0.75 x OFL	0.75 x OFL	0.80 x OFL
High risk (low productivity)	0.75 x OFL	0.50 x OFL	0.50 x OFL	0.70 x OFL

The resulting interim ABC values obtained (i.e., catch statistic × scalar × 0.75) for each stock can be found in the table below:

Stock	Risk of OverExpl.	ORCS ABC
Bar Jack	Low	3.4552
Dolphin	Mod Low	2.0304
Margate	Moderate	3.0729
Red Hind	Moderate	1.2729
Cubera Snapper	Moderate	1.6211
Wahoo	Moderate	2.2427
Blue runner	Moderate	2.0329
Yellowedge Grouper	Moderate	1.8545
Blueline tilefish	Moderate	2.1470
Silk snapper	Moderate	2.3898
White Grunt (South)	Moderate	1.1146
Atlantic Spadefish	Moderate	3.0867
Gray snapper	Moderate	1.7160
Lane snapper	Moderate	1.6430
Rock Hind	Mod High	2.2289
Tomtate	Mod HIgh	1.2514
Hogfish	Mod HIgh	1.2570
White Grunt (North)	Mod HIgh	0.9289
Scamp	Mod High	1.2490
Gray triggerfish	Mod HIgh	1.2424

However, the group also recognized that further input from the full Council would be necessary before a final decision on ABC scalar values could be obtained. The group proposes the Alternative A risk tolerance scheme as a starting value but suggests that the Council evaluate this issue in more detail at its June meeting and provide further guidance to the SSC on the risk tolerance level to be adopted.

Workshop adjourned.

APPENDIX I. REGULATORY IMPACT REVIEW

Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) It provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and (3) it 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 any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 (E.O. 12866) and whether the approved regulations will have a "significant economic impact on a substantial number of small business entities" in compliance with the Regulatory Flexibility Act of 1980.

Problems and Objectives

The purpose and need, issues, problems, and objectives of this Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region are presented in **Chapter 1**, **Section 1.4**, and incorporated herein by reference.

Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the proposed measures for an existing fishery should be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. Where figures are available, they are incorporated into the analysis of the economic impacts of the different actions and alternatives.

Description of the Fishery

A description of the snapper grouper fishery is contained in Chapter 3 and is incorporated herein by reference.

Effects of Management Measures

This action will directly apply to the businesses that own and/or operate commercial and for-hire recreational fishing vessels that harvest snapper grouper species in the South Atlantic exclusive economic zone (EEZ). It will also apply to recreational fishers who harvest those species from private or rental vessels in those waters.

Commercial vessels must have a valid commercial snapper grouper permit, which is a limited access permit for either an unlimited quantity of pounds per trip or no more than 225 pounds (lbs) per trip. The numbers of both valid unlimited and 225-lb permits have declined annually since 2008, resulting in increased concentration of the commercial sector of the fishery. As of July 3, 2014, there were 551 valid (and 18 renewable/transferrable) unlimited pounds permits and 113 valid (and 10 renewable/transferrable) 225-lb permits.

For-hire fishing vessels must have a valid charter/headboat permit for snapper grouper to harvest and possess snapper grouper species in the South Atlantic EEZ. As of July 3, 2014, there were 1,437 valid permits. The number of anglers that use private or rented boats to harvest the species in federal waters is unknown.

Action 1

Action 1 is an administrative action and would have no direct economic impact. Any indirect impact is dependent on following actions. The preferred alternative of **Action 1** would change the allowable biological catch (ABC) rule for Only Reliable Catch Stocks (ORCS) of the snapper grouper fishery. Presently, the ABC for these stocks is equal to the third highest landings from 1999 through 2009. The preferred alternative would change the ABC to the highest landings from 1999 through 2007 and multiply that by a scalar value and then by a risk tolerance scalar. There are 14 species identified as ORCS species, and they are Atlantic spadefish, bar jack, silk snapper, yellowedge grouper, gray triggerfish, lane snapper, margate, tomtate, white grunt, scamp, red hind, rock hind, cubera snapper and gray snapper. Silk snapper and yellowedge grouper are part of the Deepwater Complex; margate, tomtate, and white grunt are part of the Grunts Complex; red hind and rock hind are in the Shallow Water Grouper Complex, and cubera, lane and gray snapper belong to the Snappers Complex.

Action 2

Action 2 is an administrative action and would have no direct economic impact. Any indirect impact is dependent on following action. The preferred alternatives of **Action 2** would assign scalar values and risk tolerance levels for stocks deemed to have low, moderate and moderately high risk of overexploitation; the lower the risk, the higher the values and levels. Only bar jack is deemed by the South Atlantic Scientific and Statistical Committee (SSC) to be with low risk of overexploitation. Five of the stocks have a moderate high risk of overexploitation (gray triggerfish, rock hind, scamp, tomtate and white grunt), and eight with a moderate risk (Atlantic spadefish, cubera snapper, gray snapper, lane snapper, margate, red hind, silk snapper and yellowedge grouper).

Combined, the preferred alternatives of **Actions 1** and **2** would increase the ABC for the stocks with a low or moderate risk of overexploitation and decrease the ABC of those with a high risk of exploitation. These changes range from a 26.8% decrease to a 328.84% increase and represent potential changes in annual landings (**Table I-1**). All of the stocks deemed to have a moderate high risk of overexploitation would have a lower ABC. The largest reduction would be the ABC for scamp; which would decrease by 136,739 lbs whole weight (ww).

Table I-1. Preferred Sub-alternatives 2b, 3b, and 4d of Action 2.

Only Reliable Catch Stocks	Complex	ABC (lbs ww)			
		Alt. 1	Pref. Sub-alt.	Change	% Change
Low Risk of Overexploitation					
Bar Jack		24,780	62,249	37,469	151.21%
Moderate Risk of Overexploitation					
Atlantic Spadefish		189,460	812,478	623,018	328.84%
Cubera Snapper	**Snappers**	24,680	63,265	38,585	156.34%
Gray Snapper	**Snappers**	795,743	1,247,132	451,389	56.73%
Lane Snapper	**Snappers**	119,984	203,486	83,502	69.59%
Margate	**Grunts**	29,889	76,792	46,903	156.92%
Red Hind	**Shallow Water Grouper**	24,867	33,084	8,217	33.04%
Silk Snapper	**Deepwater**	25,104	90,323	65,219	259.79%
Yellowedge Grouper	**Deepwater**	30,221	55,596	25,375	83.96%
Moderate High Risk of Overexploitation					
Gray Triggerfish		626,518	717,000	90,482	14.42%
Rock Hind	**Shallow Water Grouper**	37,953	37,493	-460	-1.21%
Scamp		509,788	373,049	-136,739	-26.82%
Tomtate	**Grunts**	80,056	92,670	12,614	15.76%
White Grunt	**Grunts**	674,033	643,889	-30,144	-4.47%

The changes to the ABCs for species within a complex are combined to yield the change to the ABC for the complex. For example, the total ABC for the Grunts Complex would increase by 29,373 lbs ww, which is the sum of the changes of the ABCs for margate, tomtate, and white grunt. Currently, the total ABC for the Grunts Complex is 806,652 lbs ww and the preferred alternatives would increase the total ABC for the Grunts Complex to 836,025 lbs ww, which is an increase of approximately 4% (**Table I-2**). The total ABC would increase for all four species complexes (**Tables I-2** and **I-3**).

Table I-2. Comparison of Alternative 1 (No Action) and proposed (prop.) changes (Preferred Sub-Alternatives 3b and 4d) of Action 2 by species complex.

Species Complex	ABC (lbs ww)			
	Current	Prop.	Prop. Change	Percent Change
Grunts	806,652	836,025	29,373	3.64%
Shallow Water Grouper	96,432	104,190	7,758	8.05%
Snappers	944,239	1,517,716	573,477	60.73%

Table I-3. Comparison of Alternative 1 (No Action) and proposed (prop.) changes (Preferred Sub-Alternative 3b) of Action 2 for Deepwater Complex.

Species Complex	With or Without Blueline Tilefish	ABC (lbs ww)			
		Current	Prop.	Prop. Change	Percent Change
Deepwater	**With**	711,025	801,619	90,594	12.74%
	Without	79,684	170,278	90,594	113.69%

Note that **Table I-3** includes consideration for temporary and permanent changes of the ABC for the Deepwater Complex. An emergency rule temporarily removed blueline tilefish from the complex, and its permanent removal from the complex is being considered in Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Amendment 32).

Action 3

Action 3 would set the total annual catch limit (ACL) for each of the four individual stocks and three of the four complexes. **Action 3** does not include the Deepwater Complex. Consequently, although the preferred alternatives of **Actions 1** and **2** include changes of the ABCs for two species within the Deepwater Complex, this action would not change the total ACL for the Deepwater Complex.

Preferred Alternative 2 of **Action 3** would set the total ACL equal to the revised total ABC (and OY) for three of the four complexes (Grunts, Snappers, and Shallow Water Grouper) and Atlantic spadefish, bar jack, and gray triggerfish. **Preferred Alternative 4** would set the total ACL for scamp at 90% of its total ABC.

The revised total ACLs are allocated to the commercial and recreational sectors. This rule would not change the current percentages of a total ACL allocated to either sector. As shown in **Table I-4**, the total ACLs for six of the seven species/species complexes would increase, while the total ACL for scamp would decrease.

Table I-4. Comparison of Alternative 1 (No Action) and proposed (prop.) total ACLs (Preferred Alternatives 2 and 4) for species/species complex.

Species or Complex	Total		
	Current	Prop.	Prop. Change
Atlantic Spadefish	189,460	812,478	623,018
Bar Jack	24,780	62,249	37,469
Gray Triggerfish	626,518	836,025	209,507
Grunts	806,652	836,025	29,373
Scamp	509,788	335,744	-174,044
Shallow Water Grouper	96,432	104,190	7,758
Snappers	944,239	1,517,716	573,477

The preferred alternatives would reduce the commercial and recreational ACLs for scamp and increase the commercial and recreational ACLs for Atlantic spadefish, bar jack, gray triggerfish, and the Shallow Water Grouper and Snappers Complexes (**Table I-5**). The commercial ACL for the Grunts Complex would decrease, but its recreational ACL would increase.

Table I-5. Comparison of Alternative 1 (No Action) and proposed (prop.) ACLs (Preferred Alternatives 2 and 4) for species or species complex by sector.

Species or Complex	Commercial Sector			Recreational Sector		
	Current	Prop.	Prop. Change	Current	Prop.	Prop. Change
Atlantic Spadefish	35,108	150,552	115,444	154,352	661,926	507,574
Bar Jack	5,265	13,228	7,963	19,515	49,021	29,506
Gray Triggerfish	272,880	312,325	39,445	353,638	404,675	51,037
Grunts	218,539	217,903	-636	588,113	618,122	30,009
Scamp	333,100	219,375	-113,725	176,688	116,369	-60,319
Shallow Water Grouper	49,776	55,542	5,766	46,656	48,648	1,992
Snappers	215,662	344,884	129,222	728,577	1,172,832	444,255

Commercial Sector:

The above changes in the commercial ACLs represent potential changes in annual landings. First, changes in ACLs would have no effects if there were no corresponding accountability measures (AMs) to cap landings when they reach or are projected to reach the ACLs. However, the above four individual species and three complexes have AMs that close the commercial season for the remainder of the fishing year when landings reach or are projected to reach the commercial ACL. Once a commercial season is closed, all sale or purchase of the species or complex is prohibited and harvest or possession of the relevant species in the South Atlantic EEZ is limited to the (recreational) bag and possession limit. Second, if annual landings of a stock (either individual species or complex) have and are expected to remain substantially less than its current ACL, an increase in the ACL would be expected to produce no change in annual landings. Similarly, if the ACL for a stock is reduced but annual landing of that stock have been and are expected to remain less than the lower revised ACL, the decrease in the ACL would be expected to have no impact on annual landings of that stock. Consequently, estimates of expected changes of annual landings require a comparison of baseline landings to the current and proposed ACLs.

The fishing year for snapper grouper species is from January 1 through December 31. However, commercial fishing for scamp and shallow water grouper complex is prohibited from January 1 through April 30 each year. Only one commercial season closed early in 2013 (gray triggerfish closed on July 13), and in 2012, the commercial seasons for scamp and the shallow water grouper complex closed on October 20th to reopen from November 13 through 21 (**Table I-6**). However, the early closures of the scamp and shallow water grouper complex seasons were not because their landings reached or exceeded their ACLs, but instead were the seasons were required to close when the commercial season for gag grouper closed that year. More recently, the commercial season for gray triggerfish closed on May 12, 2014.

Table I-6. Commercial seasons that closed early in 2012, 2013 and as of June 19, 2014.

Year	Closed Early	Date Closed
2014[1]	Gray Triggerfish	May 12
2013	Gray Triggerfish	July 13
2012	Scamp and Shallow Water Grouper	October 20 & re-opened November 13 - 21.

1. As of June 23, 2014.

If annual commercial landings of a stock exceed its commercial ACL and the stock is overfished, the commercial ACL for the following year is reduced by the amount of the overage in the prior fishing year. None of the four individual species or three complexes above is or has been overfished during the above time period.

Three alternative baseline landings are used to estimate the range of economic impacts of **Action 3** on the commercial sector: 1) the average of 2013 and projected 2014 landings, 2) the average of 2012, 2013, and projected 2014 landings, and 3) the average of 2012 and 2013 landings. All three variations of baseline landings for Atlantic spadefish, Grunts Complex, scamp, Shallow Water Grouper Complex, and Snappers Complex are less than their current and proposed commercial ACLs (**Table I-7**). Hence, the proposed action is expected to have no additional effect on commercial landings (both by weight and value) of Atlantic spadefish, Grunts Complex, scamp, Shallow Water Grouper Complex and Snappers Complex (**Table I-8**).

All three variations of baseline commercial landings of gray triggerfish exceed the current commercial ACL (**Table I-7**). The proposed action would increase the commercial ACL for gray triggerfish by 39,445 lbs ww. The baseline landings exceed the current ACL from 22,978 to 34,726 lbs ww. Therefore, the proposed action is expected to increase annual landings of gray triggerfish from 22,978 to 34,726 lbs ww, although annual landings potentially could increase by as much as 39,445 lbs ww. In 2013, the average dockside price of gray triggerfish in the South Atlantic Region was $1.92 per lb ww (NMFS SERO ALS data). From that it is estimated that the proposed action would increase annual dockside revenue from gray triggerfish landings from $44,117 to $66,674 (**Table I-8**).

Baseline commercial landings of bar jack exceed the current commercial ACL from 0 to 1,429 lbs ww (**Table I-7**) and the proposed action would increase the commercial ACL for bar jack by 7,963 lbs ww. Thus, the proposed action is expected to increase annual landings of bar jack from 0 to 1,429 lbs ww, although potentially they could increase by as much as 7,963 lbs ww. In 2013, the average dockside price of bar jack in the South Atlantic Region was $1.36 per lb ww. Consequently, the proposed action would be expected to increase annual dockside revenue from bar jack landings from $0 to $1,944 (**Table I-8**). The total annual increase in dockside revenue would range from $44,177 to $68,618 ($ 2013).

Table I-7. Annual and averages of commercial landings and ACL for seven stocks, 2012, 2013, and January 1 through June 19, 2014.

Year	Atlantic Spadefish		Bar Jack		Gray Triggerfish		Scamp	
	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL
2014[1]	1,091	35,108	3,325	5,265	289,120	272,880	52,221	333,100
2013	3,152	35,108	6,250	5,265	302,595	272,880	130,942	333,100
2012	27,416	36,476	4,072	6,686	312,617	305,262	175,564	341,636
Exp. 2014[2]	2,342		7,139		289,120		255,883	
Ave. 2012-13 & exp. 2014	10,970		5,820		301,444		187,463	
Ave. 2013 & exp. 2014	2,747		6,694		295,858		193,412	
Ave. 2012 - 13	15,284		5,161		307,606		153,253	

Year	Grunts		Shallow Water Groupers		Snappers	
	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL
2014[1]	40,719	218,539	10,496	49,776	32,717	215,662
2013	95,194	218,539	19,417	49,776	133,666	215,662
2012	106,375	214,624	17,813	49,888	124,939	204,552
Exp. 2014[2]	87,426		51,430		22,536	
Ave. 2012-13 & exp. 2014	96,332		29,553		93,714	
Ave. 2013 & exp. 2014	91,310		35,424		78,101	
Ave. 2012 - 13	100,785		18,615		129,303	

1. Landings from January 1 through June 19, 2014.
2. Projected 2014 landings assuming average daily rate through June 19, 2014, applies through rest of year.

Table I-8. Expected changes in dockside revenue due to Action 3.

Stock	Expected Change in Annual Landings	
	Lbs ww	Revenue ($ 2013)
Atlantic Spadefish	0	$0
Bar Jack	0 - 1,429	$0 - $1,944
Gray Triggerfish	22,978 - 34,726	$44,117 - $66,674
Grunts	0	$0
Scamp	0	$0
Shallow Water Groupers	0	$0
Snappers	0	$0
Total	22,978 to 36,155	$44,117 to $68,618

The above increases in annual dockside revenue are expected to be accompanied by higher annual trip-related costs. Consequently, the expected change in annual net dockside revenue is expected to be less than $44,177 to $68,618.

Recreational Sector:

A single baseline of the average of 2012 and 2012 recreational landings is used to estimate the annual impacts of **Action 3** on the recreational sector (**Table I-9**). Baseline recreational landings are less than the current recreational ACL for Atlantic spadefish, bar jack, Grunts Complex, scamp, Shallow Water Grouper Complex, and Snappers Complex. As shown previously in **Table I-5**, **Action 3** would increase the recreational ACLs for Atlantic spadefish, bar jack, Grunts Complex, Shallow Water Grouper Complex, and Snappers Complex. Consequently, **Action 3** is not expected to change annual recreational landings of and associated economic benefits from Atlantic spadefish, bar jack, Grunts Complex, Shallow Water Grouper Complex and Snappers Complex.

The preferred alternatives of **Action 3** would reduce the recreational ACL for scamp to 116,369 lbs ww. Baseline recreational landings of scamp are substantially lower than that figure. Hence, **Action 3** is not expected to change recreational landings of and associated economic benefits from scamp.

Baseline recreational landings of gray triggerfish are greater than the stock's current recreational ACL by 25,087 lbs ww and **Action 3** would increase the recreational ACL by 51,037 lbs ww. From those figures, it is expected that **Action 3** would increase annual recreational landings of gray triggerfish by 25,087 lbs ww. That annual increase would have associated increases in net economic benefits from recreational harvest of gray triggerfish that cannot be quantified at this time.

Table I-9. Annual and average annual recreational landings and ACLs for species/species complexes affected by Action 3.

Year	Atlantic Spadefish		Bar jack		Gray triggerfish		Scamp	
	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL
2013	53,878	154,352	2,209	19,515	373,983	353,638	45,813	176,688
2012	187,106	246,365	2,559	13,834	383,466	367,303	78,446	150,936
Average	120,492		2,384		378,725		62,130	

Year	Grunts		Shallow Water Groupers		Snappers	
	Lbs ww	ACL	Lbs ww	ACL	Lbs ww	ACL
2013	359,382	588,113	26,959	46,656	803,450	728,577
2012	408,318	562,151	19,552	48,329	428,982	
Average	383,850		23,256		616,216	

Action 4

Action 4 would change the minimum size limit for gray triggerfish and enlarge the area of the South Atlantic EEZ where the minimum size limit would apply. Presently, the minimum size limit for gray triggerfish is 12 inches total length (TL) and only applies in the South Atlantic EEZ off Florida. The preferred alternatives would specify a minimum size limit of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia and a minimum size limit of 14 inches FL in federal waters off Florida's east coast.

Commercial Sector:

During 2007-2012, commercial landings in Florida accounted for 14% to 24% and North Carolina, South Carolina, and Georgia combined to account for 76% to 86% of the annual gray triggerfish commercial harvest in the South Atlantic. Those ranges of percentages are applied to the current commercial ACL (272,880 lbs ww) for gray triggerfish to estimate baseline landings for Florida and the three combined states (**Table I-10**).

Table I-10. Baseline annual commercial landings of gray triggerfish by area.

Area	Range of Baseline Commercial Landings (lbs ww)	
	If 14% FL & 86% NC,SC,GA	**If 24% FL and 76% NC,SC,GA**
FL East Coast	38,203	65,491
NC, SC & GA	234,677	207,389

It is estimated that **Preferred Sub-alternative 3a** would reduce baseline commercial landings of the North Carolina, South Carolina, and Georgia from 1% to 3% and **Preferred Sub-alternative 5a** would reduce baseline commercial landings in Florida from 14% to 22%. The ranges of annual losses of commercial gray triggerfish landings would be as low as from 5,348 to 8,404 lbs ww ($10,269 to $16,137) in Florida if 14% of annual landings is landed in Florida to as high as from 9,169 to 14,408 lbs ww ($17,604 to $27,663) in Florida if 24% of landings are in Florida. Similarly, the ranges of annual losses of commercial gray triggerfish landings in the combined states of North Carolina, South Carolina, and Georgia would be as low as 2,074 to 6,222 lbs ww ($3,982 to $11,946) to as high as 2,347 to 7,040 lbs ww ($4,506 to $13,517) (**Table I-11**). Note that the figures in **Table I-3** do not include the increase of the commercial ACL due to **Action 3**.

Table I-11. Expected decrease in annual commercial landings (lbs ww and $ 2013) due to Action 4 without increase of commercial ACL of Action 3. Average price of $1.92 per lbw w (NMFS SERO ACL data).

Area	Range of Decreases in Commercial Landings (lbs ww) by Area due to Action 4	
	If 14% FL & 86% NC,SC,GA	**If 24% FL and 76% NC,SC,GA**
FL East Coast	5,348 to 8,405 ($10,269 to $16,137)	9,169 to 14,408 ($17,604 to $27,663)
NC, SC & GA	2,347 to 7,040 ($4,506 to $13,517)	2,074 to 6,222 ($3,982 to $11,946)
Total	7,695 to 15,445 ($14,775 to $29,654)	11,243 to 20,630 ($21,586 to $39,609)

As stated previously, **Action 3** is expected to increase annual commercial landings of gray triggerfish from 22,987 to 34,726 lbs ww. That would represent increases in annual baseline commercial landings in Florida from 3,219 to 4,862 lbs ww if Florida represents 14% of all landings and 5,515 to 8,334 lbs ww if Florida's landings represent 24% of the total (**Table I-12**).

Table I-12. Expected increase in annual commercial landings (lbs ww and $ 2013) due to Action 3, independent of Action 4. Average price of $1.92 per lbw w (NMFS SERO ACL data).

Area	Range of Increases in Commercial Landings (lbs ww) by Area due to Action 3	
	If 14% FL & 86% NC,SC,GA	If 24% FL and 76% NC,SC,GA
FL East Coast	3,219 to 4,862 ($6,179 to $9,334)	5,517 to 8,334 ($10,592 to $16,002)
NC, SC & GA	19,769 to 29,864 ($37,956 to $57,340)	17,470 to 26,392 ($33,543 to $50,672)
Total	22,987 to 34,726 ($44,117 to $66,674)	22,987 to 34,726 ($44,117 to 66,674)

The above economic impacts of these two actions are combined to estimate the net change in landings of gray triggerfish (by weight and value) due to **Actions 3** and **4**. The combined impact is expected to be a net increase in annual landings by weight and value in the South Atlantic Region; however, there would be a net beneficial impact in North Carolina, South Carolina, and Georgia and a net adverse impact in Florida. The net annual increase of dockside revenues from gray triggerfish landings in North Carolina, South Carolina, and Georgia would range from $22,548 to $27,064 if the states' combined landings represent 76% of the total and from $29,363 to $37,020 if the states' landings represent 86% of the total (**Table I-13**). The net annual decrease of dockside revenues from gray triggerfish landings in Florida would range from $4,087 to $6,803 if 14% of the landings occur in Florida or from $7,012 to $11,662 if 24% of total landings are in Florida.

Table I-13. Net changes in commercial gray triggerfish landings by area due to Actions 3 and 4 combined.

Area	Range of Net Change in Commercial Landings (lbs ww) by Area due to Actions 3 & 4	
	If 14% FL & 86% NC,SC,GA	If 24% FL and 76% NC,SC,GA
FL East Coast	-2,129 to -3,543 (-$4,087 to -$6,803)	-3,652 to -6,074 (-$7,012 to -$11,662)
NC, SC & GA	17,422 to 22,824 ($33,450 to $43,822)	15,396 to 20,170 ($29,560 to $38,726)
Total	15,293 to 19,281 ($29,363 to $37,020)	11,744 to 14,096 ($22,548 to $27,064)

Commercial fishermen in these states, especially Florida, may take action to mitigate for the expected losses of landings due to **Action 4**. For example, in Florida fishermen may increase targeting of gray triggerfish in state waters, where there would be a smaller minimum size limit, or they may increase the number or length of trips in federal waters. However, the ability to mitigate is dependent on additional actions, specifically, the length of the open commercial fishing season (which would be split into two parts by **Action 5**) and establishment of a commercial trip limit for gray triggerfish (which would be set at 1,000 lbs ww by **Action 6**). Dealers who purchase gray triggerfish harvested by these commercial fishermen would experience indirect adverse economic impacts in the form of smaller net revenues from wholesale sales of gray triggerfish.

Recreational Sector:

It is estimated that **Preferred Sub-alternative 3b** would reduce annual recreational landings of gray triggerfish in the South Atlantic Region from 2.7% to 3.7%. From 2008 through 2012, an annual average of 459,031 lbs ww of gray triggerfish was landed in the South Atlantic States. From that it is estimated that **Preferred Sub-alternative 3b** would reduce annual recreational landings of gray triggerfish in North Carolina, South Carolina, and Georgia by 12,394 to 16,984 lbs ww. It is also estimated that **Preferred Sub-alternative 5b** would reduce annual recreational landings in the Region from 4.9% to 6.0%. From those figures, it is estimated that **Preferred Sub-alternative 5b** would reduce annual recreational landings in Florida from 22,493 to 27,542 lbs ww. There are insufficient data to estimate the dollar equivalents of those losses of pounds.

Action 5

Given the preferred alternatives under **Actions 3** and **4**, if the South Atlantic Fishery Management Council (South Atlantic Council) did chose **No Action (Alternative 1)** as its preferred alternative for **Action 5**, the commercial season for gray triggerfish is expected to be extended by 15 days. **Preferred Alternative 2** would split the season into two six-month periods, January through June, and July through December, with each season receiving 50% of the allocation. However, the South Atlantic Council's selection of **Preferred Alternative 2** would have the first split season lasting 20 days longer than **Alternative 1, No Action** and the second split season would last 8 days longer than **Alternative 1, No Action**.

Whether a single 12-month season or two 6-month seasons, annual commercial landings are capped by the commercial ACL. This action would affect the rate of commercial landings, but likely would not affect the annual total landings. Although it is unknown how having split seasons for gray triggerfish would actually affect future fishing behavior, it may reduce the current average monthly rate from January through June and increase the current average monthly rate from July through December. Regardless of which seasonal scenario was chosen as the preferred alternative, it is expect that the entire ACL will be caught, therefore none of the alternatives of **Action 5** is not expected to change the economic benefits or costs of the commercial gray triggerfish fishery.

Action 6

This action would establish a commercial trip limit for gray triggerfish. **Preferred Alternative 2, Sub-Alternative 2b** would establish a trip limit of 1,000 lbs ww. The purpose of the trip limit is to extend the fishing season longer. It is expected that even with the trip limit and the effects of the other actions of this amendment, the entire ACL of gray triggerfish will continue to be harvested each season and fishermen will be expected to be able to receive the full economic benefit of harvesting the entire ACL regardless of the selected alternative of this action.

Commercial trip limits, in general, are not economically efficient because they limit vessels from benefiting from economies of scale. They have a tendency to increase some fishing trip costs when a trip must stop targeting a specific species because its trip limit has been reached.

Unless a vessel that has reached its limit of the targeted fish can easily move into targeting a different species on the same trip, trip costs associated with the species where the limit has been reached will increase because it will require more annual trips by vessels to catch the ACL. Depending on vessel characteristics and the distance required to travel to fish, a trip limit that is too low could result in targeted trips being cancelled altogether if the vessel cannot target other species on the same trip.

If the entire commercial ACL of gray triggerfish is caught in a single fishing year and fishermen are able to continue to have profitable trips at the same rate, none of the alternatives or sub-alternatives of **Action 6** would result in positive or negative economic changes from the status quo. However, it is not possible to estimate the number of trips that might be foregone should a trip limit be set too low to be deemed profitable. Additionally, lower trip limits would require more trips to land the ACL. The additional trip costs associated with the "extended season" trips would reduce the profits attributable to the fishery. A mitigating factor that could offset some of the additional trip costs would be if the ex-vessel price per pound of the species goes up because there would be fewer fish on the market. However, only 2.29% of trips in 2012 landed more than 1,000 lbs ww; therefore, it is expected that relatively few trips will be affected by this action.

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, which can be expressed as costs associated with the regulations. Costs associated with this action include, but are not limited to South Atlantic Council costs of documentation preparation, meeting, and other costs; NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to from \$100,000 to \$150,000 before annual law enforcement costs, if any.

Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is expected 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.

This rule would not have an adverse economic effect of \$100 million or more, create a serious inconsistency or otherwise interfere with an action taken by another agency, materially alter the budgetary impact of programs or rights or obligations of recipients, or raise novel legal or policy issues. Hence, it is not a significant regulatory action.

Appendix J. Regulatory Flexibility Analysis

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 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 that 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 the alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure that 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 a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis 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. In addition to analyses conducted for the RIR, the initial regulatory flexibility analysis (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) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; (4) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (5) a description of the projected reporting, record-keeping, and other compliance requirements of the final rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and (6) a description of significant alternatives to the proposed rule which accomplish the stated objectives of applicable statues and which minimize any significant economic impact of the proposed rule on small entities.

Statement of need for, objectives of, and legal basis for the proposed rule

The purpose and need, issues, problems, and objectives of the proposed action are presented in **Section 1.4** and are incorporated herein by reference.

Identification of federal rules which may duplicate, overlap or conflict with the proposed rule

No federal rules have been identified that duplicate, overlap or conflict with the proposed rule.

Description and estimate of the number of small entities to which the proposed rule will apply

This action will directly apply to the firms that own and/or operate commercial fishing vessels that harvest snapper grouper species in the South Atlantic Exclusive Economic Zone (EEZ). These vessels must have a valid federal commercial snapper-grouper permit, which is a limited access permit for either an unlimited quantity of pounds per trip or no more than 225 pounds (lbs) per trip.

The number of both valid unlimited and 225-lb permits has declined annually since 2008, resulting in increased concentration of the commercial sector of the fishery (**Table J-1**). As of July 3, 2014, there were 551 valid (and 18 renewable/transferrable) unlimited pounds permits and 113 valid (and 10 renewable/transferrable) 225-lb permits.

Table J-1. Numbers of valid South Atlantic commercial snapper-grouper permits, 2007 - 2014. Sources: SAFMC May 22, 2013 (S-G Regulatory Amendment 19) for 2007 – 2013 and NMFS SERO PIMS for 2014 as of July 3, 2014.

Year	Valid permits		Change		% Change	
	Unlimited	225-lb	Unlimited	225-lb	Unlimited	225-lb
2007	695	165				
2008	665	151	-30	-14	-4.32%	-8.48%
2009	640	144	-25	-7	-3.76%	-4.64%
2010	624	139	-16	-5	-2.50%	-3.47%
2011	569	126	-55	-13	-8.81%	-9.35%
2012	558	123	-11	-3	-1.93%	-2.38%
2013	551	121	-7	-2	-1.25%	-1.63%
2014	551	113	0	-8	0%	-6.61%

The largest drop in the number of valid unlimited permits occurred in 2011. A partial explanation for that drop is that by 2011, there were many in-season closures for snapper-grouper species, such as vermilion snapper, golden tilefish and black sea bass, and longer seasonal closures for grouper species. Another partial explanation is the 2-for-1 permit transfer requirement. A firm intending to obtain a commercial snapper-grouper unlimited permit from a current permit holder who is not in the vessel owner's immediate family must obtain and exchange two such permits for one permit to be issued. NMFS will transfer a single snapper grouper unlimited permit only to the permit holder's immediate family (e.g. mother, father, brother, sister, son, daughter, or spouse). There is no such transfer requirement for the 225-lb permit. The search for a transferrable unlimited permit is complicated by the fact that not all unlimited pound permits are equal. A transferred permit's catch history follows it to the new holder/vessel with that permit, which can affect the perceived value of a permit, especially if the permit's catch history is low to zero and there is perceived risk of future allocation based on the permit's catch history.

The largest percentages of unlimited and 225-lb permit holders reside in Florida (**Table J-2**). Entities that reside outside the South Atlantic States hold less than 2% of the permits.

Table J-2. Number and percent of valid and renewable/transferable commercial snapper-grouper permits by state of residence of permit holder as of February 16, 2014. Source: NMFS SERO PIMS.

State	Unlimited lb permits		225-lb permits	
	Number	%	Number	%
FL	394	69.2%	112	90.3%
GA	5	0.9%	0	0.0%
NC	114	20.0%	8	6.5%
SC	49	8.6%	2	1.6%
Other	7	1.2%	2	1.6%
Total	569	100.0%	124	100.0%

This proposed rule would directly affect up to 693 commercial fishing vessels. Approximately 22% (124) of the vessels with an unlimited permit are owned by 45 permit holders and two of the vessels with a 225-lb permit are owned by one permit holder. Hence, it is estimated that 490 firms have an unlimited permit and 123 firms with a 225-lb permit would be affected by the proposed rule.

These 613 firms operate in the commercial finfish fishing industry (NAICS 114111). A business primarily involved in finfish 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 $20.5 million for all its affiliated operations worldwide. It is estimated that a substantial number of the 613 firms are small businesses.

Description of compliance requirements and estimates of economic impacts of the proposed rule

Actions 1 and 2:

These are administrative actions that do not have a direct economic impact. The preferred alternative of Action 1 would change the acceptable biological catch (ABC) rule for Only Reliable Catch Stocks (ORCS) of the snapper grouper fishery. There are 14 ORCS species. Four of these stocks are managed at the individual species level and ten are included in the management of four species complexes. Together, these actions revise the total ABC of each of these stocks.

Action 3:

Action 3 does not include the Deepwater Complex. Consequently, although the preferred alternatives of **Actions 1** and **2** include changes of the ABCs for two species within the Deepwater Complex, this proposed rule would not change the total ACL for the Deepwater Complex. Snapper Grouper Amendment 32 would make that change.

The preferred alternatives of **Action 3** would revise the total annual catch limit (ACL) for three of the four species complexes (Grunts, Snappers and Shallow Water Grouper) and the four individual species: Atlantic spadefish, bar jack, gray triggerfish, and scamp. These revised total ACLs are then allocated to the commercial and recreational sectors. This rule would not change the current percentages of a total ACL allocated to either sector.

The small businesses directly affected by this action are within the commercial sector. Consequently, the remainder of this discussion is limited to that sector.

The preferred alternatives would increase the commercial ACLs for Atlantic spadefish, bar jack, gray triggerfish, Shallow Water Grouper Complex, and Snappers Complex and decrease the commercial ACLs for scamp and the Grunts Complex (**Table J-3**).

Table J-3. Comparison of current and proposed commercial ACLs for species/species complexes.

Species or Complex	Commercial ACL (lbs ww)		
	Current	Prop.	Prop. Change
Atlantic Spadefish	35,108	150,552	115,444
Bar Jack	5,265	13,228	7,963
Gray Triggerfish	272,880	312,325	39,445
Grunts	218,539	217,903	-636
Scamp	333,100	219,375	-113,725
Shallow Water Grouper	49,776	55,542	5,766
Snappers	215,662	344,884	129,222

As more fully explained in the Regulatory Impact Review (RIR), baseline commercial landings for Atlantic spadefish, Shallow Water Groupers Complex, and Snappers Complex are less than their current commercial ACLs. The proposed action would increase the commercial ACLs for these species/species complexes. Thus, the proposed action is expected to have no additional effect on commercial landings (by weight or value) of Atlantic spadefish, Shallow Water Groupers Complex and Snappers Complex.

The proposed action would reduce the commercial ACL for the Grunts Complex to 217,903 lbs whole weight (ww). Baseline landings have been and are less than the current and revised ACL. Consequently, there is expected to be no change in annual commercial landings (by weight or value) of the Grunts Complex because of the action.

Baseline commercial landings of gray triggerfish and bar jack exceed their current commercial ACLs. The proposed action is expected to increase annual commercial landings of gray triggerfish from 22,978 to 34,726 lbs ww and from $44,117 to $66,674 ($ 2013). It is also expected to increase annual commercial landings of bar jack from 0 to 1,429 lbs ww and from $0 to $1,944 ($2013). The total economic impact of Action 3 on the commercial sector would be an annual increase in dockside revenue from $44,177 to $68,618 ($ 2013) (**Table J-4**) less any trip-related costs associated with higher landings of these species.

Table J-4. Expected changes in annual dockside revenue due to Action 3.

Stock	Expected Change in Annual Landings	
	Lbs ww	Revenue ($ 2013)
Atlantic Spadefish	0	$0
Bar Jack	0 - 1,429	$0 - $1,944
Gray Triggerfish	22,978 - 34,726	$44,117 - $66,674
Grunts	0	$0
Scamp	0	$0
Shallow Water Groupers	0	$0
Snappers	0	$0
Total	22,978 to 36,155	$44,117 to $68,618

Action 4:

Action 4 would change the minimum size limit for gray triggerfish and enlarge the area of the South Atlantic EEZ where the minimum size limit would apply. Presently, the minimum size limit for gray triggerfish is 12 inches total length (TL) and only applies in the South Atlantic EEZ off Florida. The preferred alternatives would specify a minimum size limit of 12 inches fork length (FL) in federal waters off North Carolina, South Carolina, and Georgia and a minimum size limit of 14 inches FL in federal waters off Florida's east coast.

During 2007-2012, commercial landings in Florida accounted for 14% to 24% and North Carolina, South Carolina and Georgia combined to account for 76% to 86% of the annual gray triggerfish commercial harvest in the South Atlantic. Those ranges of percentages are applied to the current ACL for gray triggerfish to estimate baseline landings for Florida and the three combined states (**Table J-5**).

Table J-5. Baseline annual commercial landings of gray triggerfish by area.

Area	Range of Baseline Commercial Landings (lbs ww)	
	If 14% FL & 86% NC,SC,GA	If 24% FL and 76% NC,SC,GA
FL East Coast	38,203	65,491
NC, SC & GA	234,677	207,389

It is estimated that **Preferred Sub-alternative 3a** would reduce baseline commercial landings of gray triggerfish in North Carolina, South Carolina and Georgia combined from 1% to 3% and **Preferred Sub-alternative 5a** would reduce baseline commercial landings of gray triggerfish in Florida from 14% to 22%. The ranges of annual losses of commercial gray triggerfish landings would be as low as 5,348 to 8,404 lbs ww ($10,269 to $16,137) in Florida if 14% of annual landings is landed in Florida to as high as from 9,169 to 14,408 lbs ww ($17,604 to $27,663) in Florida if 24% of landings are in Florida. Similarly, the ranges of annual losses of commercial gray triggerfish landings in the combined states of North Carolina, South Carolina and Georgia would be as low as 2,074 to 6,222 lbs ww ($3,982 to $11,946) to as high as 2,347 to 7,040 lbs ww ($4,506 to $13,517) (**Table J-6**). Note that the figures in **Table J-6** do not include the increase of the commercial ACL due to **Action 3**.

Table J-6. Expected decrease in annual commercial landings (lbs ww and $ 2013) due to Action 4 without increase of commercial ACL of Action 3. Average price of $1.92 per lb ww (NMFS SERO ACL data).

Area	Range of Decreases in Commercial Landings (lbs ww) by Area due to Action 4	
	If 14% FL & 86% NC,SC,GA	If 24% FL and 76% NC,SC,GA
FL East Coast	5,348 to 8,405 ($10,269 to $16,137)	9,169 to 14,408 ($17,604 to $27,663)
NC, SC & GA	2,347 to 7,040 ($4,506 to $13,517)	2,074 to 6,222 ($3,982 to $11,946)
Total	7,695 to 15,445 ($14,775 to $29,654)	11,243 to 20,630 ($21,586 to $39,609)

As stated previously, Action 3 is expected to increase annual commercial landings of gray triggerfish from 22,987 to 34,726 lbs ww. That would represent increases in annual baseline commercial landings in Florida from 3,219 to 4,862 lbs ww if Florida represents 14% of all landings and 5,515 to 8,334 lbs ww if Florida's landings represent 24% of the total (**Table J-7**).

Table J-7. Expected increase in annual commercial landings (lbs ww and $ 2013) due to Action 3, independent of Action 4. Average price of $1.92 per lb ww (NMFS SERO ACL data).

Area	Range of Increases in Commercial Landings (lbs ww) by Area due to Action 3	
	If 14% FL & 86% NC,SC,GA	If 24% FL and 76% NC,SC,GA
FL East Coast	3,219 to 4,862 ($6,179 to $9,334)	5,517 to 8,334 ($10,592 to $16,002)
NC, SC & GA	19,769 to 29,864 ($37,956 to $57,340)	17,470 to 26,392 ($33,543 to $50,672)
Total	22,987 to 34,726 ($44,117 to $66,674)	22,987 to 34,726 ($44,117 to 66,674)

The above economic impacts of these two actions are combined to estimate the net change in landings of gray triggerfish (by weight and value) due to **Actions 3** and **4**. The combined impact is expected to be a net increase in annual landings by weight and value in the South Atlantic Region; however, there would be a net beneficial impact in North Carolina, South Carolina, and Georgia and a net adverse impact in Florida. The net annual increase of dockside revenues from gray triggerfish landings in North Carolina, South Carolina, and Georgia would range from $22,548 to $27,064 if the states' combined landings represent 76% of the total and from $29,363 to $37,020 if the states' landings represent 86% of the total (**Table J-8**). The net annual decrease of dockside revenues from gray triggerfish landings in Florida would range from $4,087 to $6,803 if 14% of the landings occur in Florida or $7,012 to $11,662 if 24% of total landings are in Florida (**Table J-8**).

Table J-8. Net changes in commercial gray triggerfish landings by area due to Actions 3 and 4 combined.

Area	Range of Net Change in Commercial Landings (lbs ww) by Area due to Actions 3 & 4	
	If 14% FL & 86% NC, SC, GA	If 24% FL and 76% NC, SC, GA
FL East Coast	-2,129 to -3,543 (-$4,087 to -$6,803)	-3,652 to -6,074 (-$7,012 to -$11,662)
NC, SC & GA	17,422 to 22,824 ($33,450 to $43,822)	15,396 to 20,170 ($29,560 to $38,726)
Total	15,293 to 19,281 ($29,363 to $37,020)	11,744 to 14,096 ($22,548 to $27,064)

Action 4 would require commercial fishermen to sort and discard fish that presently are landed, but, once implemented, would be undersized. The sorting and discarding of undersized fish is expected to increase trip costs per pound landed, which are not reflected in the above estimates of changes in dockside revenues. **Action 4** may also decrease the rate of landings. However, commercial fishermen in these states, especially Florida, may take action to mitigate for the expected losses of landings due to **Action 4**. For example, those in Florida may increase targeting of gray triggerfish in state waters, where there would be a smaller minimum size limit, or they may increase the number or length of trips in federal waters. However, the ability to mitigate is dependent on additional actions, specifically, the length of the open commercial fishing season (which would be split into two parts by **Action 5**) and establishment of a commercial trip limit for gray triggerfish (which would be set at 1,000 lbs ww by **Action 6**).

<u>Action 5</u>:

Once commercial landings of gray triggerfish reach or are expected to reach its commercial ACL, the season in federal waters is closed. In 2013 and 2014, the commercial season closed early: on July 13 in 2013 and May 12 in 2014. Presently, the commercial ACL for gray triggerfish is 272,880 lbs ww, but **Action 4** would increase that ACL by 39,445 lbs ww (to 312,325 lbs ww). **Action 5** would not change the commercial ACL, but, instead, would allocate 50% of the ACL to the first half of the season and the remaining 50% to the second half. Each 50% would be a quota and any remaining quota from season 1 would transfer to season 2. Any remaining quota from season 2 would not be carried forward. The divided commercial season would provide fishermen the opportunity to fish for gray triggerfish in the summer months when weather conditions are more favorable, especially for those more north, although weather conditions did not prevent North Carolina from having the largest percentage of commercial landings in the South Atlantic Region from 2003 through 2012.

A split commercial season is not new. The commercial season for vermilion snapper has been split since 2009: January 1 through June and July 1 through December. In 2012, the first half of the vermilion snapper season closed on February 29th and the second half closed on September 28th. Similarly, in 2013, the first half of the season closed on February 13th and second half closed on December 2nd. This year (2014), the first half of the season closed on April 19th.

Gray triggerfish and vermilion snapper are co-occurring and co-targeted species and because they are, similarly split seasons could improve average net revenues per trip that land the two species.

Action 6:

This action would establish a commercial trip limit for gray triggerfish of 1,000 lbs ww. Presently, there is no such limit. **Action 6** is not expected to change annual landings , but instead the length of time that landings reach the ACL. By reducing the rate of landings, **Action 6** is expected to increase the length of the first half of the commercial season up to 16 days and the second half by one day.

Action 6 would not affect commercial fishing vessels equally. Those with larger net tonnage, which can and do land higher quantities of fish, would more likely be adversely affected by the trip limit. Larger vessels may presently experience economies of scale by landing more than 1,000 lbs ww, and the trip limit would decrease their net revenue per pound.

Description of significant alternatives

Considered but not adopted alternatives of **Action 3** would have resulted in smaller commercial ACLs, which would have smaller beneficial and larger adverse economic impacts on small businesses.

A larger minimum size standard was considered for **Action 4**, but would have had a larger adverse economic impact on small businesses that harvest gray triggerfish in federal waters off North Carolina, South Carolina and Georgia. A considered but not adopted alternative of **Action 5** would have allocated a smaller percentage (40%) of the commercial ACL to the first half of the season and larger percentage (60%) to the second half, which would result in smaller economic benefits in the first half of the year and larger economic benefits in the second half. However, there would be no expected difference in annual landings between the rejected and accepted alternatives.

Considered but not adopted alternatives of the commercial trip limit (**Action 6**) would have established a lower trip limit and a larger adverse economic impact. The adverse impacts would not be equal across vessels. Smaller trip limits can have significantly larger adverse economic impacts on larger fishing vessels, especially those that presently experience economies of scale with higher landings per trip. Another considered but rejected alternative would have established a higher commercial trip limit than the selected alternative; however, it would also have allowed for a higher rate of landings and likely shorter open seasons.

Appendix K. 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 Amendment 29 to the Snapper Grouper FMP

Amendment 29 proposes actions to: update the South Atlantic Fishery Management Council's (Council's) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of select unassessed species; adjust ABCs for the affected unassessed species; adjust ACLs and recreational annual catch targets (ACTs) based on revised ABCs; and revise management measures for gray triggerfish to modify minimum size limits, establish a commercial split season and commercial trip limits.

Assessment of Biological Effects

The action to modify the ABC control rule will have neutral biological impacts as it is an administrative action that will not have direct impacts on harvest.

Action 2 would revise ABCs based on the new ABC control rule. There is uncertainty associated with the risk of overexploitation scalar (determined by the Scientific and Statistical Committee) and the risk tolerance scalar (which was selected by the Council). However, the South Atlantic Council selected risk tolerance scalars to achieve values of ABC that will minimize any biological impacts associated with harvest levels.

The action to select ACLs would not have negative biological impacts. The South Atlantic Council's ABC control rule takes into account scientific uncertainty and the National Standard 1 guidelines indicate ACL may typically be set very close to the ABC. The Council has selected preferred alternatives that would set the ACL equal to the ABC for these unassessed species except scamp.

The action to implement a minimum size limit of 12 inches fork length (FL) for North Carolina, South Carolina, and Georgia and a 14-inch (FL) minimum size limit for east Florida would provide positive biological impacts by offering slightly greater spawning opportunities for gray triggerfish, relative to the status quo.

The action to implement a commercial split season for gray triggerfish could have positive biological impacts by reducing bycatch of both gray triggerfish and vermilion snapper. These species are co-occurring species that are caught together and this action would implement fishing seasons for gray triggerfish that have opening and closing dates that coincide with those for the commercial harvest of vermilion snapper.

The action to implement a commercial trip limit of 500 pounds of gray triggerfish would be expected to have neutral biological effects because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded.

Assessment of Economic Effects

The combined actions to revise the ABCs and ACLs would increase the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, Grunts Complex, Shallow Water Grouper Complex and Snapper Complex. The total ACL of scamp would decrease. Actual economic impacts are dependent on baseline landings relative to the current and revised ACLs, and baseline landings indicate there would be no changes in annual commercial or recreational landings and associated economic benefits from fishing for Atlantic spadefish, the Grunts Complex, Shallow Water Grouper Complex, and Snapper Complex. There would be no changes in annual landings and associated economic benefits from commercial fishing for scamp. Annual landings and associated economic benefits from commercial fishing for bar jack would increase, whereas annual landings and associated economic benefits from recreational fishing for scamp would decrease. The previous actions combined with the minimum size limit for gray triggerfish would yield increases in annual landings and associated economic benefits from commercial and recreational fishing for gray triggerfish; however, landings and associated economic benefits on Florida's east coast would be reduced, while those in North Carolina, South Carolina and Georgia would increase.

The action to establish a commercial split season for gray triggerfish is expected to increase the number of months that the season is open, which could economically benefit fishermen that are more active in the summer months when weather conditions are more favorable. However, the sum of landings from the two split seasons would be capped by the ACL, so there would be no increase in annual landings and associated economic benefits.

The action to establish commercial trip limits for gray triggerfish is expected to increase the number of days that the season is open; however, it would likely not affect commercial fishing vessels equally. Those with larger net tonnage, which can and do land higher quantities of fish, would more likely be adversely affected by the trip limit. Larger vessels may presently experience economies of scale by landing more than 1,000 lbs ww, and the trip limit would decrease their net revenue per pound.

Assessment of the Social Effects

The action to modify the ABC control rule is an administrative action and has no direct beneficial or adverse social impacts.

The action to revise the ABCs based on the new control rule is an administrative action and would not have direct social impacts. However, this action would modify the ABCs for fourteen species, which would allow for subsequent action that could affect annual landings and may impact social benefits.

The action to revise the ACLs and recreational annual catch targets would result in the largest increases in the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, Grunts Complex, Shallow Water Grouper Complex and Snappers Complex. The ACL of scamp would decrease. Actual social impacts are dependent on baseline landings relative to the current and revised ACLs. In general, the higher the ACL, the greater the short-term social and economic benefits that would be expected to accrue, assuming overfishing does not occur.

The action to modify minimum size limits for gray triggerfish would result in positive impacts associated with the sustainability of harvest and health of the stock, which would be beneficial to recreational and commercial fishermen in the long term. Negative effects would be associated with potential increases in discard mortality due to a newly established size limit in North Carolina, South Carolina, and Georgia and a modified minimum size limit for the east coast for Florida.

The action to establish a split commercial fishing season for gray triggerfish would likely increase access to the commercial ACL for North Carolina and South Carolina, which would be beneficial to commercial businesses in these areas. Additionally, a split season for gray triggerfish could reduce discards of vermilion snapper because the two species are commonly caught together. This could improve trip efficiency and help reduce regulatory discards for vessels catching vermilion snapper.

Assessment of Effects on Safety at Sea

The action to establish a commercial split season for gray triggerfish is likely to be beneficial to commercial fishermen harvesting gray triggerfish in North Carolina and South Carolina. Because the current fishing year starts on January 1, fishermen in North Carolina and South Carolina sometimes have limited or no access to gray triggerfish in the early months due to weather, or could risk unsafe conditions to fish. Therefore, this action would improve safety at sea considerations.

Finding of No Significant Impact (FONSI) for the Environmental Assessment (EA) of Amendment 29 to the Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region (Amendment 29)

National Marine Fisheries Service (NMFS)
February 20, 2015

Amendment 29 proposes actions to update the South Atlantic Fishery Management Council's (Council's) acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of unassessed species; adjust ABCs for 14 unassessed snapper-grouper species; adjust annual catch limits (ACLs) and recreational annual catch targets (ACTs) for four snapper-grouper species and three snapper-grouper species complexes based on revised ABCs; and revise management measures for gray triggerfish to modify minimum size limits, establish a commercial split season, and specify a commercial trip limit. **Amendment 29**, the final rule and FONSI will be made available on the Southeast Regional Office webpage at http://sero.nmfs.noaa.gov/sustainable_fisheries/s_atl/sg/2014/am29/index.html. National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of these actions are analyzed based on the CEQ's context and intensity criteria, NAO 216-6 criteria and NMFS Instruction 30-124-1, July 22, 2005, Guidelines for Preparation of FONSI. These include:

1) **Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?**

Response: No. As discussed in the biological analysis in Chapter 4, the proposed action is not reasonably expected to jeopardize the sustainability of any target species.

Amendment 29 would modify the ABC control rule to use the Only Reliable Catch Stocks (ORCS) approach, recommended by the Council's Scientific and Statistical Committee (SSC). The amendment would also calculate ABC values for 14 unassessed snapper-grouper stocks through application of the modified ABC control rule. The ORCS approach uses a catch statistic based on historical landings, a scalar derived from the risk of overexploitation, and requires the Council to select the management risk tolerance level.

The Council's SSC extensively discussed the designation of a catch statistic to be used in the ORCS approach for the unassessed species addressed in Amendment 29. For many of these unassessed species, catch is incidental to other targeted species, and landings are episodic and highly variable. The SSC considered the use of median landings as a catch statistic but was concerned that it would not adequately represent the high fluctuation in landings. Landings would be expected, on average, to be below the ABC. Accountability measures would be triggered if an annual catch limit (ACL) that resulted from the ABC was met. By using maximum landings for the catch statistic in the ORCS approach, the SSC was trying to specify an ABC that is a limit, not a target, which is slightly above the level where stock biomass and landings will vary naturally.

Under the revised control rule, the ABC's for the following snapper-grouper species would be revised: bar jack, margate, red hind, cubera snapper, yellowedge grouper, silk snapper, Atlantic spadefish, gray snapper, lane snapper, rock hind, tomtate, white grunt, scamp, and gray triggerfish. Amendment 29 would also revise the ACLs and recreational ACTs for three complexes and four species based on the updated ABCs. Commercial and recreational ACLs for the snappers complex, shallow water grouper complex, bar jack, Atlantic spadefish, and gray triggerfish would increase. The commercial and recreational ACL for the grunts complex and scamp would decrease. Under the ORCS approach, the Council selected a management risk tolerance level for each species to ensure sustainability of the target species.

Amendment 29 also proposes management measures for gray triggerfish that include modifying the minimum size limits for the commercial and recreational sectors, and implementing a split season and a trip limit for the commercial sector. These measures address concerns from fishermen about inconsistent minimum size limits among states, and shortened fishing seasons.

Amendment 29, including the ORCS approach and the specification of catch level recommendations, has been determined to be based on the best scientific information available by the Council's SSC and the NMFS Southeast Fisheries Science Center (SEFSC). The management measures proposed in Amendment 29 are not expected to jeopardize the sustainability of any target species.

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

Response: No. As discussed in the bycatch practicability analysis in Appendix F, the anticipated effects on bycatch mortality of target and non-target species as a result of the actions contained in Amendment 29 are likely to be negligible.

Species considered in Amendment 29 are caught with co-occurring species (Appendix F, Table 2), but previous amendments to Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region (FMP) have been implemented that establish ACLs and accountability measures for all snapper-grouper species to ensure that overfishing does not occur (See Appendix D for a history of management). Therefore, bycatch and discards of co-occurring snapper-grouper species are not expected to be affected by the proposed actions in Amendment 29.

Additionally, as noted in Section 4.5.1, a split season for gray triggerfish could reduce discards of vermilion snapper because the two species are commonly caught together. This could improve trip efficiency and help reduce regulatory discards for vessels catching vermilion snapper.

Each alternative is analyzed with respect to biological impacts on target and non-target species in Chapter 4. Based on the information in the Chapter 4 and the bycatch practicability analysis

(Appendix F), Amendment 29 is not likely to jeopardize the sustainability of any non-target species.

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act and identified in fishery management plans?

Response: No. Section 3.1 describes the habitat requirements of snapper-grouper species. The biological impacts, including impacts on habitat are discussed in Chapter 4. Appendix C to the amendment describes EFH and ecosystem based management.

Amendment 29 would update the ABC control rule, revise ABCs for 14 unassessed snapper-grouper species, and update the ACLs and recreational ACTs for three complexes and four species based on the new control rule. The amendment also considers actions that would modify management measures for gray triggerfish including minimum size limits for the commercial and recreational sectors, and split seasons and trip limits for the commercial sector. The anticipated effects on ocean and coastal habitats and/or EFH as a result of the actions contained in **Amendment 29** are likely to be negligible. The Council's SSC and the SEFSC determined that the proposed actions are based on best scientific information available.

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

Response: No. The actions in **Amendment 29** are not expected to have any adverse impacts on public health or safety. Actions in the amendment are not expected to change fishing techniques or operations in a way that would impact the safety of commercial or recreational fishermen. A split season under **Action 5** would likely enhance safety for commercial fishermen harvesting gray triggerfish in North Carolina and South Carolina. Because the current fishing year starts on January 1, fishermen in North Carolina and South Carolina sometimes have limited or no access to gray triggerfish in the early months of the year due to poor weather, and could risk unsafe conditions to fish. A split season would likely increase access to gray triggerfish in North Carolina and South Carolina during times of the year when weather conditions are good. An analysis of the social impacts of these actions is included in Chapter 4.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

Response: No. Based on the analysis of impacts relative to protected species or critical habitat as discussed in the biological impacts sections of Chapter 4, the proposed actions are not expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species. A description of Endangered Species Act (ESA) listed species and any critical habitat in the action area can be found in Section 3.2.2.

Fishery management actions can adversely affect species and habitat protected by the ESA and Marine Mammal Protection Act (MMPA) by increasing bycatch and fishing gear interactions with these species, and by redistributing fishing effort to areas where protected species and critical habitat occur. Recent determinations on ESA and MMPA impacts on the snapper-grouper fishery are included in Appendix E. Determinations were made indicating that Amendment 29 would not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on this fishery, and that the actions in Amendment 29 do not trigger a reinitiation of consultation on the fishery.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: No. The proposed action is not expected to substantially impact the biodiversity and/or ecosystem function within the affected area.

Each alternative is analyzed with respect to biological impacts on target species, non-target species, habitat, and protected species (Chapter 4). Based on this analysis, actions in **Amendment 29** are not likely to have a significant impact on biodiversity and/or ecosystem function. The proposed actions are not expected to alter fishing methods or activities in such a manner that would affect benthic productivity or predator-prey relationships.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: No. Amendment 29 would modify the ABC control rule to use the ORCS approach, recommended by the Council's SSC, to calculate ABC values for select unassessed stocks. The ORCS approach uses a catch statistic based on historical landings, a scalar derived from the risk of overexploitation, and requires the Council to select the risk tolerance level. Under the revised control rule, the ABCs for the following snapper-grouper species would be changed: bar jack, margate, red hind, cubera snapper, yellowedge grouper, silk snapper, Atlantic spadefish, gray snapper, lane snapper, rock hind, tomtate, white grunt, scamp, and gray triggerfish. Amendment 29 would also revise the ACLs and recreational ACTs for three complexes and four species based on the updated ABCs. Commercial and recreational ACLs for the snappers complex, shallow water grouper complex, bar jack, Atlantic spadefish, and gray triggerfish would increase. The commercial and recreational ACL for the grunts complex and scamp would decrease. Under the ORCS approach, the Council selected risk tolerance scalars for each species to ensure sustainability of the target species. This approach has been determined to be based on the best available scientific information by the Council's SSC and NMFS' SEFSC and determined to not result in negative impacts to the natural or physical environment. Amendment 29 also proposes management measures for gray triggerfish including modifying the minimum size limit for the commercial and recreational sectors, and implementing a split season and a trip limit for the commercial sector. These measures are necessary to address concerns about inconsistent minimum size limits among South Atlantic states and shortened fishing seasons. The management measures for gray triggerfish are not expected to jeopardize the sustainability of the species.

As discussed in Chapter 4, the economic and social impacts of the actions would be minor as the combined actions to revise the ABCs and ACLs would increase the total ACLs for Atlantic spadefish, bar jack, gray triggerfish, shallow water grouper complex, and snapper complex. The total ACL for the grunts complex and scamp would decrease. Actual economic and social impacts are dependent on baseline landings relative to the current and revised ACLs. Baseline landings indicate there would be no change in annual commercial or recreational landings and associated economic and social benefits from fishing for Atlantic spadefish and the grunts, shallow water grouper, and snapper complexes. For gray triggerfish, landings and associated economic benefits on Florida's east coast would be reduced, while those in North Carolina, South Carolina, and Georgia would increase.

Biological, social, and economic impacts of the actions are described in Chapter 4. Based on the analysis described in Chapter 4, there are no significant social or economic impacts interrelated with natural or physical environmental effects because significant social or economic impacts are not expected to occur.

8) **Are the effects on the quality of the human environment likely to be highly controversial?**

Response: During the public comment period for Amendment 29, one comment was received in opposition to the use of the ORCS approach for data poor species, and four comment letters were opposed to new management measures for gray triggerfish.

The Council was informed about a public comment expressing concerns with using maximum landings as the catch statistic for ORCS and received a presentation at their March 2014 meeting on the SSC's use of the ORCS method, and on the simulation approach presented to the SSC in October 2013, and discussed the SSC's rationale for choosing maximum landings as a catch statistic in the ORCS approach again at their June 2014 meeting. As explained in Chapter 5, the Council also discussed a minority report, which is contained within the April 29-May 1 SSC report, from one SSC member regarding concerns with how the ORCs approach was being applied. The Council decided to move forward with the proposed revisions to the ABC control rule as recommended by the SSC, with the understanding that further revisions to the ABC control rule may be warranted in the future. Additional scientific studies regarding improvements to management of data-limited fisheries were published after Amendment 29 was approved for submission to the Secretary of Commerce and were not available during the development of the amendment. In a memo dated November 10, 2014, the SEFSC also determined that the actions in Amendment 29 are based on the best available scientific information.

Amendment 29 would modify the ABCs, ACLs, and recreational ACTs based on the Council's SSC recommended approach for establishing ABCs for unassessed species. The amendment would also establish routinely used management measures (specifying a minimum size, fishing seasons and a commercial trip limit) for gray triggerfish requested by fishery participants to lengthen the fishing season.

Thus, the effects of the proposed actions of Amendment 29 on the quality of the human environment are not likely to be highly controversial. A description of the social and economic environment can be found in Section 3.3, and impacts of each alternative on the biological, social, economic, and administrative environments are analyzed in Chapter 4 of the EA.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild, and scenic rivers or ecologically critical areas?

Response: No. As described in Chapter 6, U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic Exclusive Economic Zone (EEZ). Several notable shipwrecks can also be found in South Atlantic federal and state waters including Loftus (eastern Florida), Copenhagen (Southeast Florida), Half-Moon (Southeast Florida), Hebe (Myrtle Beach), Georgiana (Charleston, South Carolina), Monitor (Cape Hatteras, North Carolina), Huron (Nags Head, North Carolina), and Metropolis (Corolla, North Carolina).

However, the proposed action is not expected to result in substantial impacts to these unique areas or other historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas because of its limited scope. The proposed action is not expected to result in appreciable changes to current fishing practices.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: No. Actions in the amendment would revise the ABC control rule, update ABCs for unassessed stocks, and revise ACLs and recreational ACTs based on the updated ABCs. This revision to the ABC control rule was recommended by the Council's SSC based on the best scientific information available and considers scientific and management uncertainty. Actions to implement management measures for gray triggerfish respond to a need to protect the stock and extend the fishing season. As described in Section 3.3 and Chapter 4, **Amendment 29** would not result in impacts with highly uncertain or unknown risks as fishing for these species already occurs in the action area and the modifications in catch limits are based on the best scientific information available.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: No. Chapter 6 includes an analysis of cumulative impacts. The proposed action is not related to other actions with individually insignificant, but cumulatively significant impacts. The actions proposed in this amendment combined with past and reasonably foreseeable actions would not lead to cumulatively significant impacts.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: No. As described in Chapter 6, several notable shipwrecks can be found in federal and state waters including Loftus (eastern Florida), Copenhagen (Southeast Florida), Half-Moon

(Southeast Florida), Hebe (Myrtle Beach), Georgiana (Charleston, South Carolina), Monitor (Cape Hatteras, North Carolina), Huron (Nags Head, North Carolina), and Metropolis (Corolla, North Carolina). The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are also within the boundaries of the South Atlantic EEZ.

Fishing activity already occurs in the vicinity of these sites and the actions in this amendment are not likely to adversely affect the above listed historic resources because the actions are not expected to result in appreciable changes to current fishing practices.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: No. As discussed in Chapter 6, actions in **Amendment 29** focus on the harvest of indigenous species in the Atlantic, and the activity being altered does not itself introduce non-indigenous species, and is not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these actions do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

Chapter 3 includes a description of the snapper-grouper fishery. The actions contained in **Amendment 29** are not expected to change fishing practices in such a way that would introduce or spread non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: No. As discussed in Section 3.3, the snapper-grouper fishery has been managed with ACLs since 2011. **Amendment 29** does not establish a precedent for future action with significant effects or represent a decision in principle about a future consideration. Among other things, the Comprehensive ACL Amendment established the ABC control rule for snapper-grouper species, and specified ABCs and ACLs for these species through application of the control rule, and an environmental impact statement (EIS) was prepared for that amendment. **Amendment 29** would modify the existing ABC control rule based on recommendations from the Council's SSC, and for certain species the amendment would revise ABCs, ACLs, and recreational ACTs. Management measures proposed for gray triggerfish are not precedent setting and similar measures have been implemented for other stocks in the South Atlantic.

15) Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?

Response: No. An analysis of other applicable laws related to the implementation of proposed actions analyzed in the EA was conducted in Appendix E of the EA. These analyses do not indicate any reasonable expectation that the actions contained in **Amendment 29** threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment.

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: No. The impacts of the proposed alternatives on the biological, physical, and human environment are analyzed in Chapter 4. A cumulative effects analysis (Chapter 6) was conducted for **Amendment 29** and revealed no cumulative adverse effects that could have a substantial effect on the target species or non-target species. Proposed actions and analysis contained in **Amendment 29** are based on the best available scientific information.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for **Amendment 29**, it is hereby determined that the proposed actions would not significantly affect the quality of the human environment as described above and in the supporting EA. In addition, all beneficial and adverse impacts of the proposed actions have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS is not necessary for these proposed actions.

for Kim Amendola — 2/19/15

Roy E. Crabtree, Ph.D. — Date
Regional Administrator
National Marine Fisheries Service
Southeast Regional Office