FINAL

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DRAFT ENVIRONMENTAL ASSESSMENT, REGULATORY IMPACT REVIEW, AND REGULATORY FLEXIBILITY ACT ANALYSIS FOR A TEMPORARY RULE TO SET THE 2011 GULF OF MEXICO GAG RECREATIONAL AND COMMERCIAL MANAGEMENT MEASURES

MAY 2011

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FINDING OF NO SIGNIFICANT IMPACT

National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. On July 22, 2005, the National Marine Fisheries Service (NMFS) published a Policy Instruction 30-124-1 with guidelines for the preparation of a Finding of No Significant Impact (FONSI). In addition, the CEQ regulations at 40 C.F.R. Section 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity". Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria, the recent Policy Directive from NMFS, and CEQ's context and intensity criteria. 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, the proposed action would not jeopardize the sustainability of the target species, but would protect the Gulf of Mexico stock from overharvest. The most recent stock assessment, as described in detail in Section 2.2.1 of this environmental assessment (EA), indicates the gag stock is overfished and undergoing overfishing. The decline in stock status was attributed in part to a 2005 episodic mortality event (likely due to an unprecedented red tide event). As discussed in Sections 3.1-3.2 of this EA, the proposed action is intended to ensure the catch for 2011 will remain below the overfishing threshold, so that overfishing does not occur and the stock can increase to the stock biomass needed to harvest the equilibrium optimum yield. The Gulf of Mexico Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) recommended an acceptable biological catch (ABC) at 1.58 million pounds gutted weight (MP GW) which is the yield at the fishing mortality (F) associated with allowing the stock to recover within 10 years or less. This value would be less than the yield associated with the F associated with harvesting the maximum sustainable yield (MSY) and allows for scientific uncertainty in the assessment. To account for management uncertainty, the Council uses the yield associated with the F needed to fish at optimum yield (F_{OY}). The total allowable catch (TAC) upon which the proposed actions are based (1.28 MP GW), are consistent with harvesting the stock at F_{OY} and was requested by the Council.

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

Response: No, the proposed action will not jeopardize the sustainability of any non-target species, and is not expected to substantially alter standard fishing practices during the 2011 fishing season. The action is intended to allow a decrease in the harvest of gag in U.S. waters of the Gulf of Mexico (Gulf), based on recent scientific advice indicating a reduction in the stock's condition. Decreasing the commercial and recreational harvests should reduce or end gag overfishing, but could result in a shift in effort to other species as highlighted in Section 3.3.2 of this EA. However, this shift will likely not affect other species because the most desirable commercial species are closely regulated through either an individual fishing quota program or through quotas. For the recreational sector, trips targeting gag (2.4%) are a minor portion of the recreational fishery as a whole and so effort shifting is expected to be minimal (see Section

2.3.2.1 of this EA). Therefore, the sustainability of non-target species is not expected to be jeopardized by this action.

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 (Magnuson-Stevens Act) and identified in fishery management plans (FMPs)?

Response: No, the proposed action is not reasonably expected to cause substantial damage to the ocean and coastal habitats and/or EFH in the U.S. waters of the Gulf as described in Section 3.3.1 of this EA. This action should lessen overall impacts to EFH because effort needed to catch the allowable harvest will be less than 2010 levels, reducing the interactions between reef fish fishing gear and habitat. Nevertheless, longline and vertical line gear has the potential to snag and entangle bottom structures. Although individual gear has a very small footprint, the cumulative impact of the commercial and recreational fishing sectors result in a large amount of gear being placed in the water, increasing the potential for impact. Additionally, anchoring can add to the potential damage of the bottom at fishing locations. Outside this proposed action, oil contamination to coastal and ocean habitats from the Deepwater Horizon MC252 incident could have negative impacts to major portions of the Gulf. However, environmental impacts to gag habitat have not been documented to date.

4) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: No, the proposed action is not reasonably expected to have a substantial adverse impact on public safety or health. The commercial sector in the Gulf operates under an individual fishing quota (see Sections 2.3.1.1 and 2.3.1.2 of this EA), which removes the need to "race for the fish", thus allowing fishermen to better choose when and how they want to fish. This increases safety at sea by eliminating derby conditions for this sector. The two month season for harvesting gag by the recreational sector is not expected to substantially alter the manner in which this sector in the Gulf is prosecuted. Gag-targeted trips represent a small proportion of the total number of trips in the Gulf. There is the potential gag contaminated with oil from the Deepwater Horizon MC252 incident could be caught. However, federal and state governments have strong systems in place to test and monitor seafood safety and to prohibit harvesting from affected areas, keeping oiled products out of the market (See Section 2.1 of NMFS (2010a) and incorporated in this EA by reference).

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: No, the proposed action is not expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species as the proposed action is not expected to substantially alter the manner in which the reef fish fishery is conducted in the Gulf. As discussed in Section 2.2.2 of this EA, a 2009 biological opinion for the Gulf reef fish fishery determined the fishery is not likely to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of the National Marine Fisheries Service (NMFS) or result in the destruction or adverse modification of critical habitat. In addition, the Gulf reef fish fishery is classified in the 2011 Marine Mammal Protection Act List of Fisheries as Category III

fishery (75 FR 68468, November 8, 2010). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from the fishery is less than or equal to 1% of the potential biological removal. Dolphins are the only species documented as interacting with this fishery. Bottlenose dolphins may feed on the bait, catch, and/or released discards of the reef fish 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 have a substantial impact on biodiversity and/or ecosystem function within the Gulf. The proposed action to decrease the allowable harvest of gag is not expected to substantially alter the manner in which the fishery is conducted in the Gulf as described in Section 3.3.1 and 3.3.2 of this EA, which in turn should not alter impacts on biodiversity and ecosystem function.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: No, the proposed action would not create any significant social or economic impacts in the Gulf region interrelated with natural or physical environmental effects. As discussed in Sections 3.3.3 and 3.3.4, allowing decreased harvest of gag by both the commercial and recreational fishing sectors relative to previous years will have direct and indirect social and economic impacts to their respective sectors and to the shoreside operations that support them, however, these impacts are small. As listed in Section 2.3.1 of this EA, gag is a small component of the value of the Gulf commercial reef fish fishery (~6%). This species is also a minor component of the overall Gulf recreational fishery (see question 2), however, gag are disproportionally harvested in different areas as described in Section 2.3.2 of this EA, so the effects will be greater in some areas than others.

8) Are the effects on the quality of the human environment likely to be highly controversial?

Response: No, the effects on the quality of the human environment are not likely to be highly controversial. The analyses and data used in the decision-making process were based on standard techniques used to evaluate Gulf fish stocks and fisheries. The proposed action may be considered politically controversial in that the fishing industry often questions the validity of the science involved in the estimates of annual harvest and the status of the various targeted fish stocks. Many Gulf recreational and commercial fishermen in public testimony to the Council have indicated the proposed reductions in gag are too great. Many have acknowledged they have seen reduced catches in recent years and agree the fishery needs additional restrictions; they just disagree with the extent proposed in the interim rule. This is particularly true for the recreational sector where they see low release mortality rates and are facing a considerably reduced season for harvesting this species.

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, EFH, or ecologically critical areas?

Response: No, the proposed action is not reasonably expected to result in substantial impacts to unique areas, park land, prime farmlands, wetlands, wild and scenic rivers, or EFH. This action affects federal waters of the Gulf. In regard to ecologically critical areas in the Gulf, areas such as the Flower Gardens and the Tortugas Marine Sanctuaries are closed to fishing, as are the Madison Swanson and Steamboat Lumps marine reserves as described in Section 2.1 of this EA. The action should have no impact on the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places; fishing occurs over this wreck, and the action would not increase overall fishing effort compared to previous years. Therefore, there would be no additional impacts on these components of the environment from the proposed action.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: No, the effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks. As described in Section 1.2 of this EA, this action proposes to adjust the harvest of gag in the Gulf, in accordance with procedures outlined in the Magnuson-Stevens Act. Adjustments to quotas, target catch levels, and fishing seasons are made regularly in many U.S. fisheries, based on updated information regarding the status of a specific stock or stocks, and the regulations are well known.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: No, there are no past or reasonably foreseeable future actions related to the proposed Gulf gag management actions with individually insignificant but cumulatively significant impacts. The proposed action to limit the harvest levels of Gulf gag is not expected to substantially alter the manner in which the fishery is conducted as described in Sections 3.3.1 and 3.3.2 of this EA. It should be noted that this action for a temporary rule provides short-term management measures for gag and that long-term measures needed for stock recovery are being developed in Amendment 32 to the Reef Fish FMP. The previous gag quota was established in Amendment 30B.

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, the proposed action does not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. The action should have no impact on the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places; fishing occurs over this wreck, and the action does not increase overall fishing effort. Additionally, gag are not targeted in the western Gulf as gag are more commonly found in eastern Gulf waters. The proposed action is not expected to cause loss or destruction of significant scientific, cultural, or historical resources because there are none located in the affected area.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: No, the proposed action is not reasonably expected to result in the introduction or spread of a non-indigenous species in the Gulf because it involves only naturally occurring domestic species with the exception of the non-native lionfish (*Pterois miles* and *P. volitans*), which are not targeted. The proposed action to decrease the allowable harvest of the Gulf gag stock is not expected to substantially alter the manner in which the fishery is conducted. The fishery is prosecuted within the boundaries of the Gulf exclusive economic zone and Gulf state waters as described in Section 2.3 of this EA reducing the likelihood of introducing non-indigenous species. If the non-native lionfish should be caught by reef fish fishermen, these species would be either released at the point of capture or killed consistent with the manner the fishery is prosecuted, thus not adding to the spread of this species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

Response: No, the proposed action does not establish a precedent for future action with significant effects, and it does not represent a decision in principle about future consideration. Fishing effort for gag in the Gulf is regulated through individual fishing quotas, size limits, and other fishing restrictions as described in Section 1.1 of this EA. The Council has based its decision on updated scientific information summarized in Section 2.2.1 regarding the status of the stock. The assessment indicates the Gulf stock has been depressed by an episodic mortality event and has become overfished and undergoing overfishing. Action is needed to allow the stock to recover to target levels. The proposed action, conducted in accordance with regulations established under the Reef Fish FMP, as amended to date, in no way constitutes a decision in principle about a future consideration. FMPs and their implementing regulations are always subject to future changes. The Council and NMFS have discretion to amend the FMP and accompanying regulations and may do so at any time, subject to the Magnuson-Stevens Act, Administrative Procedures Act, National Environmental Policy Act, and other applicable laws described in Section 6.0.

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, the proposed action is being taken pursuant to federal legal mandates for the management of Gulf fishery resources and does not implicate state or local requirements. It is not reasonably expected to threaten a violation of federal, state, local law, or requirements imposed for the protection of the environment. However, this action depends on the Florida Fish and Wildlife Conservation Commission adopting compatible regulations for the management goals to be achieved. If not, present temporary regulations would need to be continued.

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 proposed action is not reasonably expected to result in cumulative adverse effects that could have a substantial effect on the Gulf target species or non-target species as indicated in Section 3.3.6 of this EA. In general, the proposed action to allow a recreational fishing season, increase the commercial quota by 330,000 pounds GW, and continue the suspension of the use of red grouper multi-use allocation is not expected to substantially alter the

manner in which the Gulf reef fish fishery is conducted. The proposed harvest levels are adjusted to reduce or end overfishing to ensure overfishing does not continue and the stock can recover.

DETERMINATION:

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for this interim rule, it is hereby determined that this interim rule will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

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Roy E. Crabtree, Ph.D. Date
Regional Administrator
Southeast Regional Office
National Marine Fisheries Service

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Abbreviations Used in This Document

ABC	Acceptable biological catch
ACL	Annual catch limit
ALS	Accumulated Landings System
APA	Administrative Procedure Act
Council	Gulf of Mexico Fishery Management Council
CS	Consumer surplus
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
EA	Environmental assessment
EEZ	Exclusive economic zone
EIS	Environmental impact statement
EJ	Environmental Justice
ELMR	Estuarine Living Marine Resources
ESA	Endangered Species Act
F	Fishing mortality
FLS	Federal Logbook System
FMP	Fishery management plan
FTE	Full time equivalent
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
GW	Gutted Weight
IFQ	Individual fishing quota
IRFA	Initial Regulatory Flexibility Analysis
MP	Million Pounds
MRFSS	Marine Recreational Fisheries Statistics Survey
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum sustainable yield
NMFS	NOAA's National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOR	Net operating revenue
OFL	Overfishing limit
OY	Optimum yield
PS	Producer surplus
RFA	Regulatory Flexibility Act
RIR	Regulatory impact review
SAFMC	South Atlantic Fishery Management Council
SEDAR	Southeast Data, Assessment, Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SMZ	Special Management Zone
SSC	Scientific and Statistical Committee
SWG	Shallow-water grouper
TAC	Total allowable catch
TL	Total length

Environmental Assessment (EA) Cover Sheet

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Name of Action
Environmental assessment for an interim rule to set the 2011 Gulf of Mexico gag recreational and commercial management measures

Type of Action
(X) Administrative
(X) Draft
( ) Legislative
( ) Final

Summary
On August 11, 2009, the Regional Administrator for the Southeast Regional Office notified the Gulf of Mexico Fishery Management Council (Council) of his determination that the Gulf of Mexico (Gulf) gag stock was both overfished and undergoing overfishing, based on the results of the 2009 update stock assessment. Therefore, the stock needs to be rebuilt and overfishing ended. The Council is currently developing Amendment 32 to the Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf to address stock rebuilding and ending overfishing; however, management measures proposed in this amendment will not be ready for implementation prior to January 1, 2012. Therefore, temporary measures to reduce or end overfishing of gag are needed. An interim rule was implemented in December 2010 with conservative management measures while the update stock assessment was being rerun to account for issues regarding dead discards. This assessment has been rerun and the stock condition did not substantially change from the previous update assessment (SEDAR 2011). The assessment did show harvest levels could be increased relative to measures put in place in the 2010 interim rule. Action 1 of this EA evaluates: 1) revising the commercial quota including no action – let the current interim rule expire on May 31, 2010, and let the quota revert to 1.49 million pounds; 2) extend the current interim rule with a 100,000 pound quota; and 3) implement a new interim rule revising the quota to 430,000 pounds (preferred) consistent with the results of the rerun of the update stock assessment. The action also evaluates whether to maintain the suspension of the use of red grouper multi-use shares in the shallow-water grouper individual fishing quota program. These shares can be used to harvest gag. Action 2 of this EA addresses the recreational harvest of gag. The alternatives evaluate: 1) the current two-fish bag limit and 2.14 MP catch target (no action) if the current interim rule were allowed to expire; 2) continuing the no harvest provision of the current interim rule; or 3) allowing a limited recreational harvest of gag in the summer (Option a) or fall (Preferred Option b). With respect to the effects of the alternatives on the physical and biological environments, alternatives other than no action tended to reduce the gag harvest and consequently fishing effort. These alternatives were more beneficial to these environments, although the effects were minimal because of the fishing gear used by the sector and the current regulatory controls on fish harvest. For the economic and social environments, the no action alternatives were beneficial in the short term because more fish could be landed, but they can have long- term negative effects if the stock is allowed to remain overfished. Because all the alternatives would not change the type of regulations used to manage the reef fish fishery, the administrative environment would remain unchanged regardless

of which alternative is selected as preferred. These proposed actions were not determined to have any significant cumulative effects.

1.0 INTRODUCTION

1.1 Background

Gag is one of the most abundant grouper species in the Gulf of Mexico (Gulf) reef fish fishery. Gag and red grouper account for over 90% of the recreational grouper landings reported by Marine Recreational Fisheries Statistics Survey (MRFSS), and 80% of commercial grouper landings in the Gulf[1]. For gag, the recreational sector accounts for the majority of gag landings (~61% for the years 1986-2005; GMFMC 2008a). Gag is a protogynous hermaphrodite, meaning that they start life as females and change sex to males later in life.

A brief history of management is provided below as it pertains to this action. A more complete summary of gag management can be found in NMFS (2010a) and GMFMC (2009, 2008a) and is incorporated here by reference. The recreational and commercial allocation of the stock annual catch limit was set in Amendment 30B where 61% of the gag total allowable catch (TAC) is allocated to the recreational sector and 39% is allocated to the commercial sector (GMFMC 2008a). The commercial grouper fishing sector is managed under an individual fishing quota (IFQ) program that has been in effect since January 1, 2010. Prior to 2010, the grouper portion of the reef fish fishery was managed with quotas, seasonal and area closures, and minimum size limits. Management of the recreational sector has used traditional measures such as minimum size limits, aggregate and species-specific bag limits, and a closed season (February 1-March 31). Both sectors are subject to area closures.

The gag stock has been assessed since 1997 when a stock assessment concluded that gag, although not overfished, may be undergoing overfishing (Schirripa and Legault 1997, GMFMC 1998a). In 2006 and 2007, the SEDAR 10 (2006) assessment and a subsequent 2007 reanalysis with corrected dead discard estimates (NMFS 2007) concluded that the gag stock was undergoing overfishing and had been since the 1970s. In response to the SEDAR 10 findings, Amendment 30B (GMFMC 2008a) created new 2009 regulations that reduced the gag recreational bag limit. In addition, a commercial gag quota of 1.32 million pounds gutted weight was adopted representing a 41% decrease from the average landings during 2004-2006.

A 2009 update stock assessment of the Gulf gag stock (SEDAR 2009) indicated the gag stock had diminished. A large part of the decline was attributed to an episodic mortality event in 2005 (most likely associated with red tide) that resulted in an additional 18% of the gag stock being killed in addition to the normal natural and fishing mortalities[2]. The 2008 spawning stock biomass was estimated to be at just 47% of its minimum stock size threshold and the mean fishing mortality rate during 2005-2007 was estimated to be nearly 2.5 times higher than the maximum fishing mortality threshold. Based on these results, the NMFS Regional Administrator notified the Council of his determination that the gag stock was both overfished and undergoing overfishing on August 11, 2009. In response and in line with Magnuson-Stevens Act National Standard Guidelines, the Council initiated Amendment 32 to the subject FMP to address this overfishing and develop a stock rebuilding plan.

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[1] Personal communication , Fisheries Statistics Division, NMFS, Silver Spring, MD

[2] Personal communication, Brian Linton, SEFSC, 75 Virginia Beach Drive, Miami, FL 33149

The Council's Scientific and Statistical Committee (SSC) reviewed the update stock assessment (SEDAR 2009) to make an allowable biological catch (ABC) recommendation to the Council. Based on concerns expressed by the SSC and summarized in NMFS (2010a), the SSC asked for revised stock projections using 2009 landings estimates, which were provided for review in May 2010 (NMFS 2010b). After reviewing these estimates, the SSC recommended the 2011 ABC be decreased considerably from 3.62 million pounds (MP) to 1.17 MP. Because of the time needed to revise the assessment update, the Council found it could not complete Amendment 32 in time for subsequent rulemaking to be implemented before December 1, 2010, when the 2011 gag individual fishing quota allocation is announced. Therefore, the Council requested NMFS develop an interim rule to set the gag quota at 390,000 pounds, suspend the red grouper multi-use IFQ shares to preclude their use to harvest gag, and set the recreational harvest to zero until recreational measures could be implemented in Amendment 32. However, in the course of developing management alternatives for gag, potential discrepancies in commercial and recreational estimates of discards were discovered[3]. The Council discussed these discrepancies at their August 2010 meeting and agreed another review of the gag assessment would be in order and asked it be conducted in the fall or winter of 2010. Given this delay and the uncertainty regarding the status of the gag stock, the Council revised their interim rule request to limit the commercial harvest to 100,000 pounds. The Council felt that some commercial harvest was necessary so gag that would otherwise be regulatory discards under a zero harvest restriction could be retained and counted towards the quota. The other two actions remained unchanged from the original interim rule request. This rule, referenced in this document as the 2010 interim rule, was published on December 1, 2010, with an effective date of January 1, 2011 (75 FR 74650).

In December 2010, the gag update assessment was rerun to address the dead discard issues discussed above (SEDAR 2011). The results of the rerun indicated the spawning stock biomass was only slightly lower than the earlier assessment runs and the fishing mortality estimates were nearly unchanged except for 2008, the last year of the assessment[4]. However, 2008, the terminal year, was not used to calculate $F_{current}$. Yield streams for OFL, $F_{rebuild}$, and F_{OY} slightly increased for each year, but rerun did not change the stock status from overfished and undergoing overfishing (Table 2.2.1).

1.2 Purpose and Need for Action

The purpose of this action is to decrease or end overfishing of gag so that the stock can begin to rebuild as initiated by the 2010 interim rule. This action would be temporary until long-term measures including a gag stock rebuilding plan can be developed and implemented through

[3] Similar issues about how dead discards were treated in the red grouper assessment were discussed by the Council at its August 2010 meeting. However, because of differences in how dead discards were estimated, the same concerns were not triggered for red grouper. The Council did request NMFS to examine the effects of using observer- versus logbook-based commercial discards in the assessment, but did not ask the assessment itself be reexamined. A report from NMFS indicated these differences had little effect on the assessment outcome (Walter 2011)

[4] Draft Standing, Special Spiny Lobster and Special Reef Fish Scientific and Statistical Committee, January 18-21, 2011,Committee Summary, Gulf of Mexico Fishery Management Council, Tampa, Florida

Amendment 32. The action would be consistent with the goals and objectives of the Council's plan to manage gag to achieve the mandates of the Magnuson-Stevens Act. The recreational and commercial allocation of the stock annual catch limit will remain consistent with Amendment 30B. Some management measures analyzed in this action can only reduce overfishing if the Florida Fish and Wildlife Conservation Commission (FWC) enact regulations compatible with federal regulations. The FWC indicated at their April 2011 meeting they will adopt compatible regulations. If a new interim rule were put in place, it would be effective 180 days after the rule publishes in the Federal Register and could be extended another 186 days.

As indicated above, the 2009 update stock assessment of the gag stock (SEDAR 2009) showed the stock has declined since 2005 and is considered overfished and undergoing overfishing. Therefore, there is a need to reduce harvest to a level where the stock condition can rebuild within the constraints of the Magnuson-Stevens Act and to a level consistent with the Council's management objective for this stock. This objective is to manage the stock at a level where, at equilibrium, the stock can be harvested at its optimum yield. The 2010 interim rule implementing temporary management measures was consistent with this objective and was also a conservative approach because of the uncertainty in the update assessment. However, in requesting the 2010 interim rule, the Council indicated their intent was to increase the commercial gag quota and allow a recreational season if the rerun of the update assessment justified such measures. Doing so would mitigate some of the adverse economic impacts of the 2010 interim rule while still being is consistent with the Magnuson-Stevens Act's National Standard 1 that requires NMFS and regional fishery management councils to prevent overfishing, and achieve, on a continuing basis, the optimum yield from federally managed fish stocks. These mandates are intended to ensure fishery resources are managed for the greatest overall benefit to the nation, particularly with respect to providing food production and recreational opportunities, and protecting marine ecosystems.

2.0 AFFECTED ENVIRONMENT

The actions considered in this environmental assessment (EA) would affect fishing in the Gulf of Mexico (Gulf) region. Descriptions of the physical, biological, economic, social, and administrative environments were completed in the recent environmental assessment for the gag interim rule that published December 1, 2010 (75 FR 74650). That information is being incorporated herein by reference and the reader is directed to the 2010 EA to obtain the information (NMFS 2010a). In cases of new information, this information is provided below

2.1 Physical Environment

The physical environment for reef fish, including gag, has been described in detail in the EIS for the Generic Essential Fish Habitat Amendment (GMFMC 2004). This includes ecologically critical areas in the Gulf, areas such as the Flower Gardens and the Tortugas Marine Sanctuaries. That information is being incorporated herein by reference (NMFS 2010a). This EA can be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf. There is one site located on the National Register of Historic Places in the Gulf. This is the wreck of the *U.S.S. Hatteras*, located in federal waters off Texas. The primary habitat for gag as described in NMFS (2010a) is located in the Northeastern Gulf.

2.2 Biological Environment

The biological environment of the Gulf, including the species addressed in this environmental assessment, is described in detail in the final EIS for the Generic Essential Fish Habitat amendment and is incorporated here by reference (GMFMC 2004). Summaries of this information can be found in NMFS (2010a) and GMFMC (2008a and 2009). Information for this section has been presented in NMFS (2010a) except for updated material resulting from the rerun of the gag assessment model. Therefore, information on gag life history, reef fish, and protected resources is being incorporated herein by reference. This EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf. Information on gag life history and the status of the stock are summarized and updated.

In 2005, a red tide event on the west-Florida shelf may have impacted red grouper populations (as described in Section 2.2.1). It has only been in the last 10 years that mortalities of higher vertebrates have been indisputably demonstrated to be due to acute red tide blooms and their brevetoxins (Landsberg et al. 2009). The extent of this event and possible effects of fish community structure has been described in Gannon et al. (2009).

2.2.1 Gag and Reef Fish

Gag Life History and Biology

See NMFS (2010a). This EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

Status of the Gag Stock and Scientific and Statistical Committee (SSC) Recommendations

The Gulf gag stock was assessed in both SEDAR 10 and the 2009 Stock Assessment Update using a statistical forward projection catch-at-age model called CASAL (SEDAR 2009). The Council's SSC reviewed several model runs and accepted the model run titled, "Red Tide with Increasing Catchability." The SSC chose a model with increasing catchability for gag because they felt that the tendency of gag to form aggregations made them more susceptible to improvements in gear technology over time. In addition, the model run allowed the natural mortality rate for 2005, a year when there was an extensive red tide event along the West Florida Shelf, to adjust above the base natural mortality rate. The best-fit result indicated that an additional mortality for gag corresponding to 18% of the stock occurred in 2005.[5] The SSC asked that the projections of the status of red grouper and gag be run using updated landings estimates for 2009 and that the 2010 harvest level be set equal to the current TAC or equal to 2009 estimated landings (NMFS 2010a). Projections were provided for fishing mortality rates associated with rebuilding the stock within 10 years ($F_{Rebuild}$) and with optimum yield (F_{OY}). Based on the resultant projections, the SSC recommended that the ABC be set at the $F_{rebuild}$ level of 1.17 million pounds (MP) gutted weight (GW) and 1.64 MP GW for the 2011 and 2012

[5] E-mail from Brian Linton (NMFS Southeast Fisheries Science Center) to Steven Atran (Gulf Council staff) dated July 7, 2009.

fishing years, respectively (Table 2.2.1). This level would be less than the Council's current ACL definition which is the yield associated with F_{MSY}.[6]

In the course of developing management alternatives for gag, potential inconsistencies in estimates of commercial and recreational discards were discovered. One difference was preliminary estimates of commercial gag discards provided by the indicated commercial discards were two orders of magnitude greater when estimated using reef fish observer data[7]. Also, the size and age distributions computed for recreational discards in the 2009 stock assessment indicated most discards were close to the minimum size limit in more recent years, but tagging and observer data indicated a broader size range for discarded fish[4]. The Council discussed these discrepancies at their August 2010 meeting and it was agreed that another review of the gag assessment was needed.

The SEDAR update assessment review panel met in December 2010 and recommended two changes be made to the original assessment run (SEDAR 2011). The first was the size distribution of released fish in the charter and private recreational fisheries were revised to provide a better estimate of the size distribution. In the original run, the size distributions were truncated at just below the minimum size limit (i.e, just sublegal sized fish). The revisions were made by using Mote data from 2006-2007 to adjust the private vessel size distribution, and by applying the headboat observer data from 2000-2008 to the charterboat sector. In addition, landed undersized gag were excluded from the analyses to avoid biasing the size distribution. These changes resulted in a broader size distribution of discarded fish. The other change was that observer based commercial discard estimates were used in place of previous estimates based on Trip Interview Program data. The terminal year of the assessment model remained at 2008 and the $F_{current}$ was estimated as the average Fs of 2005-2007.

The results of the rerun produced higher estimates of the number of discards in the commercial handline fishery, but lower estimates of discards in the commercial longline fishery (SEDAR 2011). The spawning stock biomass was lower in the rerun but only slightly (Table 2.2.1, Fig. 2.2.1.1). The fishing mortality estimates were nearly unchanged except for the terminal year of 2008, but this year was not used in the calculation of $F_{current}$ (Fig. 2.2.1.2). The end result was that the yield streams for OFL, $F_{rebuild}$,and OY increased slightly for each year, but the stock remained overfished and undergoing overfishing (Table 2.2.1, Fig. 2.2.1.1). Based on these results, the SSC recommended an ABC for gag for 2011 to be 1.58 MP GW (based on $F_{rebuild}$ to SSB_{MAX}). The SSC also recommended the 2011 OFL for gag to be 1.67 MP GW (based on yield at F_{MAX}).

[6] Note: F_{MAX} is used as a proxy for F_{MSY} and is the rate of fishing mortality for a given exploitation pattern rate of growth and natural mortality, that results in the maximum level of yield per recruit.

[7] SEFSC presentation at the August 2010 Council meeting titled "2009 Gulf of Mexico Gag Update Assessment – Commercial Dead Discards"

Table 2.2.1. Required SFA and MSRA evaluations for the 2010 rerun of the Gulf of Mexico gag update assessment. 2009 assessment update values come from the Gulf of Mexico gag 2009 update assessment report, except where otherwise noted. Assessment rerun values come from the 2010 rerun of the Gulf of Mexico gag update assessment.

Criteria	Definition	2009 Assessment Update Value Table 9.3 except as noted	Assessment rerun revisions
Mortality Rate Criteria			
$F_{MSY\ or\ proxy}$	F_{MAX}	0.22	0.22
MFMT	F_{MAX}	0.22	0.22
F_{OY}	75% of F_{MAX}	0.16	0.17
$F_{CURRENT}$	Geometric mean 2005-2007	0.53	0.55
$F_{CURRENT}$/MFMT	Geometric mean 2005-2007	2.47	2.50
Base M		0.15	0.15
Biomass Criteria			
SSB_{MAX}	Equilibrium SSB @ F_{MAX}	24.02 MP GW	22.51 MP GW
MSST	(1-M)*SSB_{MAX} M=0.15	20.41 MP GW	19.14 MP GW
$SSB_{CURRENT}$	current = 2008	9.58 MP GW	9.30 MP GW
$SSB_{CURRENT}$/MSST	current = 2008	0.47	0.49
Equilibrium MSY	Equilibrium Yield @ F_{MSY}	4.28 MP GW	4.19 MP GW
Equilibrium OY	Equilibrium Yield @ F_{OY}	4.17 MP GW	4.08 MP GW
OFL	Annual Yield @ F_{MAX}		
(June 10, 2010 e-mail	2011	1.32 MP GW	1.67 MP GW
From Clay Porch & Brian Linton)	2012	1.81 MP GW	2.11 MP GW
	2013	2.30 MP GW	2.54 MP GW
	2014	2.74 MP GW	2.91 MP GW
	2015	3.08 MP GW	3.19 MP GW
	2016	3.34 MP GW	3.40 MP GW
10-yr rebuild yield (ABC)	Annual Yield @ $F_{Rebuild}$		
(March 22, 2010 revised	2011	1.17 MP GW	1.58 MP GW
assessment with 2009 landings)	2012	1.64 MP GW	2.02 MP GW
	2013	2.12 MP GW	2.45 MP GW
	2014	2.57 MP GW	2.82 MP GW
	2015	2.93 MP GW	3.12 MP GW
	2016	3.20 MP GW	3.34 MP GW
Annual OY (ACT)	Annual Yield @ F_{OY}		
(March 22, 2010 revised	2011	1.01 MP GW	1.28 MP GW
assessment with 2009 landings)	2012	1.44 MP GW	1.69 MP GW
	2013	1.90 MP GW	2.11 MP GW
	2014	2.34 MP GW	2.49 MP GW
	2015	2.70 MP GW	2.80 MP GW
	2016	2.98 MP GW	3.04 MP GW

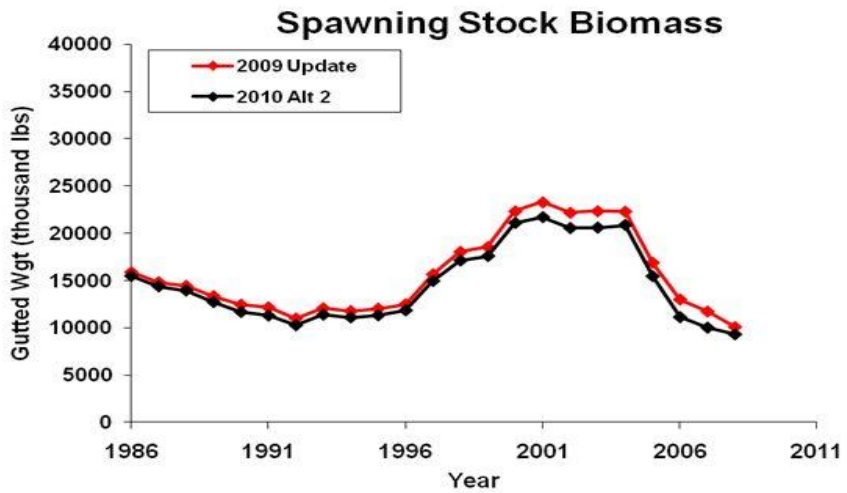

Figure 2.2.1.1. Estimated spawning stock biomass for gag by year from NMFS (2010)

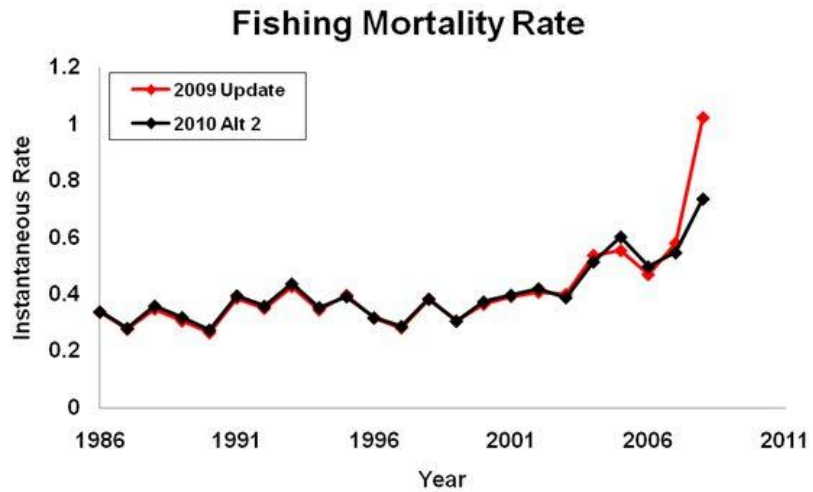

Figure 2.2.1.2. Estimated fishing mortality rate for gag by year from NMFS (2010)

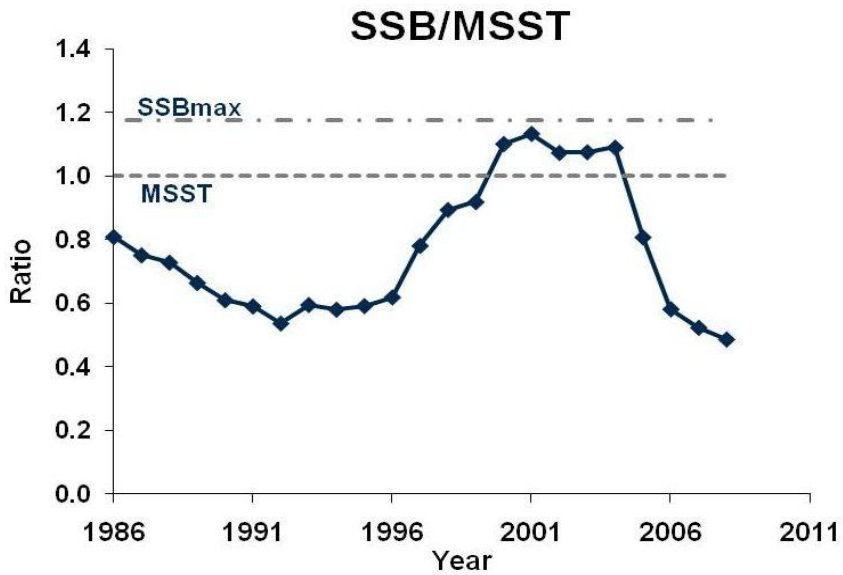

Figure 2.2.1.3. Estimated gag spawning stock biomass relative to the overifishing threshold by year from NMFS (2010)

General Information on Reef Fish Species

See NMFS (2010a). This EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

Status of Reef Fish Stocks

See NMFS (2010a). This EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

2.2.2 Protected Species

See NMFS (2010a). This EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf. Note the EA used the 2010 Marine Mammal Protection Act List of Fisheries as Category III fishery as a basis for determining the effect of the reef fish fishery on marine mammals. The 2011 list was published on November 8, 2010 (75 FR 68468), and the classification for the reef fish fishery remains as Category III. This indicates the annual mortality and serious injury of a marine mammal stock resulting from the fishery is less than or equal to 1% of the potential biological removal.

2.3 Economic Environment

2.3.1 Commercial Sector

This section describes the economic environment associated with the commercial fleet that harvested species managed under the Reef Fish FMP. Although the reef fish fishery in general is discussed, it specifically focuses on the Gulf grouper sector which is addressed in this proposed rule, and is expected to be further addressed in proposed Amendment 32 to the FMP. Given the implementation of the grouper/tilefish IFQ program on January 1, 2010, which is described in section 2.3.1.1, information regarding the commercial fleet's operations from 1993-2008 is considered historical in nature and is therefore incorporated herein by reference.

The major sources of data summarized in this description include the Federal Logbook System (FLS) and Accumulated Landings System (ALS) for the commercial sector, with price indices taken from the Bureau of Labor Statistics. Inflation adjusted revenues and prices are reported in 2008 constant dollars. Economic information is collected by an add-on survey to FLS trip reports supplemented by average prices calculated from ALS data; consequently, landings totals in this section will be underestimated because official landings statistics are derived from the ALS.

2.3.1.1 The IFQ Program

Information on the performance of the Gulf commercial grouper/tilefish sector of the reef fish fishery prior to the implementation of the current IFQ program is provided in NMFS (2010a). Discussion of the expected effects of the IFQ program is provided in GMFMC (2009a) and is incorporated herein by reference. The IFQ program became effective January 1, 2010, though

the determination of shares and allocations was made based on information available as of October 1, 2009. Further, restrictions on the use of bottom longline to particular vessels operating in particular areas at certain times of the year were implemented under GMFMC (2009b) in order to reduce sea turtle interactions, and discussion of the expected effects of such are incorporated herein by reference. The following section provides a description of the IFQ program in terms of eligible participants, the distribution of shares and allocations among initial shareholders, as well as vessels qualifying for bottom longline endorsements. Emphasis is placed on entities with initial shares and allocations of red grouper. No attempt is made to incorporate information on the combining or transfers of the initial shares or appeals of initial determinations as these activities are still ongoing.

Everyone who owned a valid (active or renewable) commercial Gulf reef fish permit as of October 1, 2009, and who had grouper or tilefish landings reported under their permit during the qualifying time period of 1999 through 2004 received initial IFQ shares and allocation. Owners of a valid commercial Gulf reef fish permit that did not have any landings during the qualifying time period did not receive initial IFQ shares or allocation but are able to purchase shares or allocation from IFQ shareholders.

The initial IFQ shares distributed to each participant were determined by the average annual landings of grouper and tilefish from logbooks associated with their reef fish permit(s) during the time period 1999 through 2004, with an allowance for dropping 1 year. Dropping a year allows a participant to remove the year with the lowest landings. All grouper and tilefish landings associated with a valid commercial reef fish permit for the qualifying period were attributed to the permit holder as of October 1, 2009, including those reported by a person who held the permit prior to the current owner. Anyone purchasing a reef fish permit after September 30, 2009, did not receive grouper or tilefish shares associated with that permit.

As of October 1, 2009, 970 entities owned a valid commercial Gulf reef fish permit and thus were deemed eligible for initial shares and allocation. However, of these 970 entities, only 908 had grouper or tilefish landings reported under their permit during the qualifying time period and thus actually received initial IFQ shares and allocation, while the other 62 permit owners did not. Although some of these 62 permit owners were active in the grouper/tilefish sector, at least with respect to the current analysis, they are no longer considered sector participants because they did not initially receive shares or allocation. Thus, only the 908 permit owners that initially received shares and allocation, and the vessels attached to those permits, are of interest for current purposes.

An IFQ share is a percentage of the commercial quota for each species. A fisherman's initial shares were determined by the proportion of the total landings associated with their reef fish permit during the qualifying period relative to landings reported on all reef fish permits during the qualifying period. For example, if 2.1% of the total red grouper landings during the qualifying period were landed under a particular permit, the fisherman holding that permit received 2.1 red grouper shares. The amount of shares a fisherman holds only changes if the fishermen buys or sells shares, or if another participant's permit is revoked and those shares are redistributed to other eligible participants.

IFQ allocation is the pounds a fisherman is ensured the opportunity to possess, land, or sell in a fishing year. For each species or species group, a fisherman's allocation is determined each year by multiplying his shares by the current commercial quota. There are five species or species groups within the IFQ program: red grouper, gag, other SWG (i.e. black grouper, rock hind, red hind, scamp, yellowfin grouper, and yellowmouth groupers), DWG (i.e. yellowedge grouper, misty grouper, snowy grouper, warsaw grouper, and speckled hind), and tilefish (blueline, golden, goldface, anchor, and blackline). For 2010, their respective commercial quotas were as follows: 5.75 MP, 1.41 MP, .41 MP, .44 MP, and 1.02 MP respectively. However, only 97% of these quotas were initially allocated to the initial shareholders because three percent was set aside to resolve appeals. Any amount remaining of the three percent set-aside after the appeals process is completed will be proportionately distributed to initial IFQ shareholders. Thus, the initial quota to be allocated across initial shareholders was as follows for each species/species group: 5.58 MP, 1.37 MP, .40 MP, .43 MP, and .99 MP respectively.

Everyone who owns a valid commercial Gulf reef fish permit and has an active IFQ online account is eligible to purchase IFQ shares and allocation from current IFQ shareholders for the first five years of the IFQ program. After five years, all U.S. citizens and permanent resident aliens will be eligible to purchase IFQ shares and allocation.

Share caps have been established for each share category (i.e., red grouper, gag, other SWG, DWG, and tilefish). Share caps are defined as the maximum IFQ share issued to a person, corporation, or other entity at the time of initial apportionment of the IFQ shares. The IFQ program will also limit the amount of allocation that could be purchased or held by a person or corporation cumulatively during a given calendar year with an allocation cap. The allocation cap for the commercial grouper and tilefish fisheries equal the total amount of pounds that corresponds to the share caps. The initial share caps established for red grouper, gag, other SWG, DWG, and tilefish were 4.21%, 2.29%, 7.05%, 14.18%, and 11.47%. In 2010, the maximum total allocation associated with these share caps is 483,505 pounds.

Finally, flexibility in the use of red grouper and gag shares has been built into the program via the establishment of multiuse allocations. These multiuse allows fishermen to use a small portion of their allocation for one species (either red or gag grouper) to harvest another species (either gag or red grouper) that would otherwise be discarded because the fisherman does not possess allocation for that species. Multiuse allocation will be derived at the beginning of each year by converting a portion of the allocation for red grouper and gag to allocation that can be used for either species. Initially, 8% of gag and 4% of red grouper allocation was set aside as multiuse allocation. Multiuse allocation is not available for use by fishers until the species-specific allocation for the fish they wish to land and sell (either gag or red grouper) is exhausted.

2.3.1.2 Initial Shareholders and Vessels

Although it would be expected that practically all initial shareholders would be currently participating in the fisheries for which they received shares, logbook data for 2008 and 2009 indicate otherwise. In fact, a combination of Southeast and HMS logbook data indicate that a rather large percentage of the vessels associated with the initial shareholders and permits were not commercially active in any of the federally managed species covered by these two logbook

programs. Specifically, 233, or nearly 26%, of the 908 vessels associated with the permits initially receiving shares and allocations of grouper or tilefish were apparently not commercially active in any of the fisheries covered by these logbooks in either 2008 or 2009. This finding seems to suggest that many of the initial shareholders and their vessels have left commercial fishing, at least temporarily. As such, it is unlikely that these shareholders and vessels will use their shares to generate commercial fishing revenues and personal income in the short-term. In turn, these initial shareholders likely value their shares for their asset value which is derived from their ability to sell their shares at some point in the future or, alternatively, sell or lease their annual allocation in the short-term. These inactive shareholders represent relatively significant percentages of the total shares for each species: 21.5% of red grouper, 13.3% of gag, 17.5% of other SWG, 14% of DWG, and 16% of tilefish shares respectively. Unless these shareholders decide to sell their shares or their annual allocations in the short-term, relatively significant proportions of the annual commercial quotas in each instance may not be harvested.

Certain statistical findings suggest potential reasons as to why these vessels have been inactive and others have remained active. First, vessels that were inactive in 2008 and 2009 are somewhat smaller, in terms of length and fuel capacity, and less powerful, in terms of horsepower, on average than the 675 vessels that were commercially active in either or both years. The difference is approximately 13% in each case.

Second, and more importantly, the inactive vessels received much smaller initial shares and allocations on average than their commercially active counterparts. Specifically, the inactive shareholders received shares that were 23%, 57%, 40%, 54%, and 47% lower on average than commercially active shareholders for red grouper, gag, other SWG, DWG, and tilefish respectively. In terms of allocations, inactive shareholders received 7,325 pounds on average while active shareholders received 11,172 pounds on average, representing a difference of approximately 34%. These results also support the hypothesis that inactive shareholders represent relatively smaller commercial operations than those that have remained active in recent years. For various reasons, it may not have been possible for these relatively smaller operations to remain economically viable in recent years. Further, their allocations may not be sufficient to re-enter the grouper/tilefish fisheries. If volume as measured by landings is a primary determinant of economic viability in the current market and regulatory environment, then it is possible and perhaps likely that these smaller shareholders intend to and will in fact sell their shares to larger operations.

In 2008 and 2009, 608 and 616 initial grouper/tilefish shareholders and their vessels were commercially active respectively. Some vessels were active in only one year while others were active in both years. On average, the shares and allocations between vessels that were active in 2008 as opposed to 2009 differed very little. However, their total landings and revenue and, to a lesser extent, the distribution of those landings and revenues across species, did change between 2008 and 2009. Specifically, on average, average annual gross revenue decreased by approximately 13.4% from $71,158 to $61,618 between these two years. Although revenue decreased for all grouper/tilefish species, the most pronounced decreases were in red grouper revenue, which fell by about $5,700 on average (27%), and gag revenue, which fell by approximately $3,400 on average (45%). As a result, these vessels' dependency on grouper/tilefish revenue also declined, representing approximately 50% of their total revenue in

2008 but only 45% in 2009. In turn, dependence on other southeast logbook species (e.g. snappers, coastal migratories, dolphin, wahoo, etc.) increased between these two years.

Of the 908 initial grouper/tilefish shareholders, 875 received shares and allocation of gag. Of these, 215 were not commercially active in any fisheries covered by federal logbooks. A comparison of all commercially inactive grouper/tilefish shareholders with commercially inactive gag shareholders indicated few significant differences. For example, the average allocation of gag to commercially inactive gag shareholders was 874 pounds, or only slightly larger than the 806 pound allocation to commercially inactive grouper/tilefish shareholders. However, this allocation is 33% greater than the 656 pound average for commercially active grouper/tilefish shareholders. Given their relatively larger allocations, it is uncertain why these gag shareholders have not been commercially active and thus what their likely intentions are with respect to their gag shares (i.e. to personally use them for generating commercial fishing revenues and income in the short-term or hold/sell their shares/allocations). What they do with their shares and allocations in the short-term is critical given that they hold 13.3% of the gag shares, representing approximately 188K pounds of the 2010 commercial gag quota.

Of the 660 commercially active gag shareholders, the number of commercially active shareholders in 2008 and 2009 was nearly identical (608 and 616 respectively). However, average annual gross revenue decreased from $71,159 to $61,618, or more than 13%, between 2008 and 2009. Although revenue reductions occurred for all grouper/tilefish species, the most significant reductions were in revenue from red grouper landings (-27%) and gag landings (-45%). The maximum annual commercial fishing revenue by an individual vessel during these two years was approximately $606,000.

Further, of the 660 commercially active gag shareholders, 139 were not active in the harvest of gag between 2008 and 2009, in terms of landings, while 521 were active in one or both years. Significant differences exist between these two groups of shareholders, indicative of very different commercial fishing operations.

First, with respect to their shares and allocations, the gag shareholders that were active in the harvest of gag received much larger allocations of red grouper, gag, and other SWG on average (10,467 pounds in total) than their inactive counterparts (2,852 pounds in total). Conversely, they received smaller allocations of DWG and tilefish on average (709 pounds in total) than their inactive counterparts (2,120 pounds in total). In terms of physical characteristics, gag shareholders that were not active in the harvest of gag had vessels with more horsepower (17%) and a somewhat significantly greater fuel capacity (25%) than those who were active in the harvest of gag. This may be reflective of the fisheries in which they participate and are relatively dependent. For example, average annual gross revenue was $70,972 for gag shareholders that were active in the harvest of gag, while average annual gross revenue was only $50,788 (nearly 28% less) for gag shareholders that were not active in the harvest of gag. The distribution of those revenues across different species and fisheries differed even more significantly. For gag shareholders active in the harvest of gag, revenue from red grouper, gag, and other SWG landings accounted for 45% of gross revenue, revenue from DWG and tilefish landings accounted for 12% of gross revenue, while landings of other species accounted for the other 43%. Conversely, for gag shareholders that were not active in the harvest of gag, only 4% of their gross revenue came from landings of red grouper, gag, and other SWG, 3% came from

landings of DWG and tilefish, almost 8% came from landings of HMS species, while the other 85% came from landings of other logbook species.

Most importantly, for the 139 commercially active gag shareholders who have not been active in the harvest of gag, it is likely that they intend to hold onto or sell their shares at some point in the future. Thus, in the short-term, these shares (5.3% of the total) and accompanying allocations (75,081 pounds, or 540 pounds on average) may not be used for harvesting purposes in the short-term. Commercially inactive gag shareholders and commercially active gag shareholders who have not been active in the harvest of gag together account for nearly 19% of the gag shares and approximately 263K pounds of the 2010 commercial gag quota.

Conversely, for the 521 commercially active gag shareholders who have been active in the harvest of gag, they are likely to continue operating in the sector. The difference between their recent landings and allocations is critical in this respect. On average, their recent gag landings were 1,835 pounds on average and their average gag allocation in 2010 was 2,121 pounds. Thus, they are harvesting at levels close (87%) to their current allocations.

With respect to the 139 commercially active gag shareholders that were not active in the harvest of gag, 114 were not active in the harvest of gag in 2008 while 117 were not active in the harvest of gag in 2009. Like other groups of shareholders, average annual gross revenue decreased from $56,330 in 2008 to $45,388 in 2009, or approximately 19%. In both years, the vast majority of their revenue (85%) still came from other logbook species (e.g. snappers, coastal migratories, dolphin, wahoo, etc.) and thus they remain highly dependent on these fisheries.

Of the 521 commercially active gag shareholders who have been active in the harvest of gag, 483 and 487 shareholders were active in the harvest of gag in 2008 and 2009 respectively. Some important changes occurred in their harvesting behavior between those two years, particularly when considered in relation to their gag shares and allocations. Specifically, their average annual gross revenue fell from $75,883 in 2008 to $66,101 in 2009, a decrease of 13%. The majority of this reduction was due to decreases in revenue from red grouper landings (27%) and gag landings (45%). On average, these vessels' gag landings fell from 2,375 pounds in 2008 to 1,300 pounds per vessel in 2009. It is uncertain whether this reduction is due to longline gear restrictions that were temporarily implemented in 2009 to reduce interactions with sea turtles, a somewhat modified version of which was permanently established in 2010, a decrease in the abundance of gag, which is consistent with the determination that the stock is overfished, or a combination thereof. As previously noted, their average gag allocation in 2010 was 2,121 pounds. If these vessels operate as they did in 2008, they would use all of their allocation and potentially attempt to purchase additional shares or allocation, likely from commercially inactive gag shareholders. Conversely, if they operate as they did in 2009, then they would not use all of their allocation and thus some of the commercial quota they represent (as much as 428K pounds) would not be harvested. If they operate somewhere between the two then, as previously suggested, they would likely harvest at levels comparable to their allocations and thus harvest the entire commercial quota they represent.

2.3.1.3 Bottom Longline Endorsements

As previously mentioned, restrictions on the use of bottom longline were temporarily established in 2009 and a modified version of those restrictions was implemented in 2010. Most critically, these restrictions include: 1) A prohibition on the use of bottom longline gear shoreward of a line approximating the 35-fathom depth contour from June through August; 2) an endorsement requirement to harvest reef fish using bottom longline gear in the eastern Gulf, and 3) a restriction on the number of hooks that may be possessed onboard each reef fish bottom longline vessel operating in the eastern Gulf to 1,000 hooks total, only 750 of which may be fished or rigged for fishing at any given time.

Only federally-permitted vessels with demonstrated average annual landings of 40,000 pounds of reef fish taken by fish traps or longlines during 1999-2007 qualified for the endorsement. Of the 908 initial grouper/tilefish shareholders, 293 vessels had used bottom longline or trap gear for commercial reef fish harvesting purposes. However, only 62 of these vessels met the 40,000 pound threshold and thus qualified for the bottom longline endorsement. Thus, the other 231 vessels will need to either change the gear they use for harvesting reef fish (and possibly the species they target), purchase an endorsement from one of the 62 qualifying vessels, which also requires them to possess a valid commercial vessel permit for Gulf reef fish, or exit the commercial Gulf reef fish sector. Their ability to purchase an endorsement may be highly limited given the relatively small number of available endorsements. This option may be further limited by the potential unwillingness of the qualifying vessel owners to sell their endorsements, which is likely to be quite dependent on their intention to operate in the sector. That is, if they have recently been active in the sector, then they are more likely to continue operating and thus probably less likely to sell their endorsement. Conversely, if they have not been active in the sector, then they would be more likely to sell their endorsement.

Of the 62 vessels that qualified for the bottom longline endorsement, 54 were active, both commercially and in the grouper/tilefish sector specifically in 2008 and 2009, while the other 8 qualifying vessels were not commercially active. As such, the number of bottom longline endorsements available for purchase is likely very small, and thus would potentially command a fairly high market value, all other things being equal.

Comparatively speaking, the commercially inactive vessels with bottom longline endorsements are relatively smaller in length (31 ft) and fuel capacity (460 gallons) on average than their active counterparts (47 ft and nearly 1,400 gallons respectively). As previously implied, this may indicate that "larger" vessels capable of harvesting larger volumes of fish, potentially at greater distances offshore, are necessary to be economically viable in the bottom longline reef fish sector under current market and regulatory conditions. The commercially inactive vessels received a smaller allocation of gag (3,139 pounds) and total grouper/tilefish (52,546 pounds) than their commercially active counterparts (5,507 pounds and 59,380 pounds respectively).

All 54 commercially active vessels with bottom longline endorsements are not only grouper/tilefish shareholders in general but gag shareholders specifically and thus differences in this respect do not exist. For the commercially active gag shareholders with bottom longline endorsements, some important changes occurred in their operations and thus commercial fishing

revenue between 2008 and 2009. First, annual gross revenue fell by nearly 25% from approximately $182K to $137K on average. Practically all of this decrease was due to a reduction in revenue from red grouper landings (37%) and gag landings (48%). Though these vessels are still most dependent on revenue from red grouper landings, that dependency fell somewhat between 2008 and 2009, with such revenue accounting for 51% of gross revenue in 2008 and 43% in 2009. Further, revenue from gag landings accounted for 8.4% of annual gross revenue in 2008 but only 5.9% in 2009. More significantly, in 2008, these vessels' were harvesting gag at levels relatively close to their 2010 allocations (i.e. approximately 3,933 pounds in gag landings on average as opposed to 5,507 in gag allocation). But they were well within their 2010 allocations in 2009, as average gag landings fell to 2,024 pounds per vessel. As such, they will likely not harvest all of their allocation in 2010 and thus some portion of the commercial quota they represent will probably not be harvested.

Most of the commercially active gag shareholders with bottom longline endorsements were specifically active in the harvest of gag in 2008 or 2009. Specifically, 52 of these 54 vessels were active and 2 were not active in each year.[8]

With respect to the 52 vessels active in the harvest of gag, their operations and commercial fishing revenue changed significantly between 2008 and 2009. In particular, average annual gross revenue fell from approximately $181K in 2008 to $131K in 2009, or more than 28%. Practically all of this reduction was due to a decrease in revenue from red grouper landings, which fell from approximately $98K in 2008 to $62K in 2009 on average. Revenue from gag landings also decreased, from approximately $15.9K in 2008 to $8.4K in 2009. Revenue from DWG landings decreased only slightly, from approximately $36K in 2008 to $31K in 2009. As such, these vessels became much more dependent on revenue from DWG landings and much less dependent on revenue from gag and particularly red grouper landings, although the latter still represent the largest portion of their total revenue.

2.3.1.4 IFQ Dealers

Commercial vessels landing reef fish, including gag, can only sell their catch to federally-permitted fish dealers. Because there are no income or sales requirements to acquire a federal dealer permit, the total number of dealers can vary over the course of the year and from year to year. However, under the IFQ program, in addition to possessing a valid federal dealer permit, a dealer must establish an IFQ online account and obtain an IFQ dealer endorsement in order to purchase gag and other grouper/tilefish species managed under the IFQ program. Although 188 dealers possessed valid Gulf reef fish dealer permits on May 12, 2010, only 103 dealers had also established IFQ accounts and obtained dealer endorsements. As such, the descriptive information provided below is only with respect to these 103 dealers or subsets thereof. Also, a single dealer may operate more than one offloading facility, and thus the number of offloading facilities exceeds the number of dealers.

Of the 103 IFQ dealers, 97 were active in either 2008 or 2009 with respect to commercial purchases of seafood, while 6 dealers were not commercially active in this respect. More

[8] Landings and revenue information for these two vessels is confidential and thus cannot be disclosed.

specifically, in 2008, 95 IFQ dealers had commercial purchases of seafood, while 84 dealers had commercial purchases of Gulf grouper/tilefish, and 71 IFQ dealers had commercial purchases of Gulf gag. In 2009, these figures were 93, 85, and 69 respectively and thus relatively unchanged from 2008.

Although the number of active dealers in each of these respects changed little from 2008 to 2009, the value of their purchases declined noticeably. For all commercially active IFQ dealers, total seafood purchases decreased from approximately $110 million to $95.5 million, or more than 13%, of which approximately $5 million was due to a reduction in purchases of Gulf grouper/tilefish. More specifically, the vast majority of this decrease was due to a reduction in purchases of red grouper ($2.5 million) and gag ($2.1 million).

According to data from the ALS, total purchases of Gulf grouper/tilefish were approximately $23.2 million and $17.6 million (2008 dollars) in 2008 and 2009 respectively. These dealers accounted for approximately 91% of all Gulf grouper/tilefish purchases in 2008 and 2009, implying that the other 9% was purchased by Gulf reef fish dealers that no longer have a dealer permit, have not established an IFQ account, or have not obtained a dealer endorsement. This may indicate that some dealers previously active in purchasing Gulf grouper/tilefish have decided to no longer participate in the sector, which may in turn lead to a redistribution of landings and sales to those dealers participating in the IFQ program.

These commercially active dealers are very heterogeneous with respect to their total purchases, ranging from a minimum of approximately $2,000 up to $13.8 million in 2008 and $17.9 million in 2009. The extent to which they are dependent on purchases of Gulf grouper/tilefish also varies greatly, with some not at all dependent and others completely dependent on such purchases in 2008. Although none of these dealers are completely dependent on purchases of red grouper, as much as 85% of their total purchases were red grouper in 2008.

The high degree of heterogeneity between IFQ dealers makes it difficult to discuss the “average” or representative IFQ dealer. In such instances, it is generally more appropriate to use median rather than mean values. Thus, on average, commercially active IFQ dealers averaged approximately $448K and $373K in seafood purchases in 2008 and 2009 respectively, indicating that such purchases decreased by about 17% between those two years. Their dependency on grouper/tilefish purchases also fell slightly with such purchases accounting for nearly 15% of all their seafood purchases in 2009 and approximately 12% in 2009. Their dependency on purchases of gag changed little between 2008 and 2009.

With respect to the dealers active in the grouper/tilefish sector, similar to all commercially active IFQ dealers, their total seafood purchases declined by approximately $13 million, or 12%, from $105.8 million in 2008 to $92.9 million in 2009. Their average total seafood purchases decreased from $468K to $395K, or 16%, from 2008 to 2009. As would be expected, given that they were active with the sector, they are slightly more dependent on grouper/tilefish purchases than all commercially active IFQ dealers. However, their dependency on purchases of grouper/tilefish declined more noticeably relatively to all commercially active IFQ dealers, from nearly 23% in 2008 to less than 18% in 2009. This decline seems to have been primarily caused

by a decrease in purchases of gag, which represented 11% of their seafood purchases in 2008 to but less than 8% in 2009 on average.

With respect to the actions being considered in this proposed rule, IFQ dealers that have been actively participating in the harvest of gag are the most likely to be indirectly affected. These dealers accounted for $89.8 million in seafood purchases in 2008 but only $68.9 million in 2009. This decrease of over $21 million represents a decline of more than 23% in purchases, much higher than all commercially active IFQ dealers or those active in the grouper/tilefish sector. Landings of gag fell from approximately 1.49 MP in 2008 to .82 MP in 2009, with the ex-vessel revenue similarly decreasing from $4.93 million in 2008 to $2.72 million (2008 dollars) in 2009. The IFQ dealers that have been active in the harvest of gag accounted for 96% of all gag purchases in 2008 and 2009 respectively. Thus, dealer participation with this sector is likely to be relatively stable in the short-term, all other factors being equal. On average, these dealers' total seafood purchases decreased from nearly $451K to $373K on average, or 17%, between 2008 and 2009. These dealers are much more dependent on purchases of grouper/tilefish in general and specifically red grouper, though their dependence on gag in declined noticeably from 2008 to 2009. Specifically, purchases of grouper/tilefish accounted for 36% of their seafood purchases in 2008 and 33% in 2009 on average. Further, on average, their purchases of gag fell from more than $20K to less than $9K, a decrease of 57%, from 2008 to 2009.

2.3.1.5 Economic Impacts

Estimates of the economic activity (impacts) associated with the Gulf commercial grouper and tilefish harvests were derived using the model developed for and applied in NMFS (2009c). Based on the annual ex-vessel revenues for red grouper in 2008 of $13.39 million (2008 dollars), the commercial red grouper harvests are estimated to have supported 2,524 full time equivalent (FTE) jobs and generate approximately $176 million in output (sales) impacts and approximately $75 million in income impacts to the U.S. economy. Among the jobs supported, 329 FTE jobs are estimated to have been in the harvesting sector and 201 FTE jobs are in the dealer/processor sector. Given the reduction in annual ex-vessel revenues for red grouper to $10.22 million (2008 dollars) in 2009, these figures fell to 1,926 full time equivalent (FTE) jobs, $135 million in output (sales) impacts, and $57 million in income impacts per year respectively to the U.S. economy. In terms of jobs supported, these figures also fell to 251 FTE jobs in the harvesting sector and 153 FTE jobs in the dealer/processor sector respectively. Thus, the reduction in red grouper ex-vessel revenues has led to a decrease in these various economic impacts of approximately 24%.

Similar but more dramatic changes are seen with respect to the economic impacts resulting from commercial gag harvest. Specifically, based on the annual ex-vessel revenues for gag in 2008 of $4.93 million (2008 dollars), the commercial gag harvests are estimated to have supported 929 FTE jobs and generate approximately $65 million in output (sales) impacts and approximately $28 million in income impacts to the U.S. economy. Among the jobs supported, 121 FTE jobs and 74 FTE jobs are estimated to have been in the harvesting sector and in the dealer/processor sector respectively. Given the reduction in annual ex-vessel revenues for gag to $2.72 million (2008 dollars) in 2009, these figures decreased to 513 full time equivalent (FTE) jobs, $36 million in output (sales) impacts, and $15 million in income impacts per year respectively to the

U.S. economy. In terms of jobs supported, these figures fell to 67 FTE jobs in the harvesting sector and 41 FTE jobs in the dealer/processor sector. Thus, the reduction in gag ex-vessel revenues has led to a decrease in these various economic impacts of approximately 45%.

Finally, with respect to all grouper and tilefish species managed under the IFQ program, annual ex-vessel revenues fell from $23.2 million in 2008 (2008 dollars) to $17.6 million (2008 dollars) in 2009. In 2008, these harvests are estimated to have supported 4,378 FTE jobs and generate approximately $306 million in output (sales) impacts and approximately $130 million in income impacts to the U.S. economy. Among the jobs supported, 121 FTE jobs and 74 FTE jobs are estimated to have been in the harvesting sector and the dealer/processor sector respectively. Given the reduction in annual ex-vessel revenues from these harvests in 2009, these figures decreased to 3,307 full time equivalent (FTE) jobs, $231 million in output (sales) impacts, and $98 million in income impacts per year respectively to the U.S. economy. In terms of jobs supported, these figures also fell to 432 FTE jobs in the harvesting sector and 263 FTE jobs in the dealer/processor sector respectively. Thus, the reduction in grouper/tilefish ex-vessel revenues has led to a decrease in these various economic impacts of approximately 25%.

Approximately two-thirds of the jobs supported by these harvests are estimated to accrue to the restaurant sector. These estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors).

2.3.1.6 Imports

Information on the imports of all snapper and grouper species, either fresh or frozen, from 1993-2006 are provided in GMFMC (2009) and are incorporated herein by reference. Although information on the imports of individual snapper or grouper species is not available, imports of all grouper species combined is available. In 2007, imports of all grouper species rose to a historic high of approximately 4.85 MP valued at approximately $27.75 million (2008 dollars), declined to approximately 3.97 MP valued at approximately $24.75 million in 2008, and increased to 4.30 MP valued at $23.56 million in 2009 (2008 dollars) (NMFS 2010c). These amounts are contrasted with the domestic harvest of all grouper in the Gulf which peaked at approximately 9.49 MP in 1993 and have averaged slightly more than 7 MP in recent years (NMFS 2010d). Although the levels of domestic production and imports are not totally comparable for several reasons, including considerations of different product form, such as fresh versus frozen, and possible product mislabeling, it is clear that import penetration has been fairly significant in the U.S. grouper market.

2.3.2 Recreational Sector

Additional information on the Gulf recreational sector in general is provided in Reef Fish Amendment 25/Coastal Migratory Pelagics Amendment 17 (GMFMC 2005a), the 2005 recreational sector grouper regulatory amendment (GMFMC 2005b), Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007), Reef Fish Amendment 30A (GMFMC 2008b), Reef Fish Amendment 30B (GMFMC 2008a) and is incorporated herein by reference.

2.3.2.1 Angler Effort

Recreational effort derived from the MRFSS/Marine Recreational Information Program (MRIP) Survey 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 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 Gulf, regardless of target intent or catch success.

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures, but the three measures of effort listed above are used in this assessment. Given the subject nature of this proposed rule, estimates of gag effort and total marine recreational fishing effort in the Gulf for 2005-2009 are provided in Tables 2.3.2.1-2.3.2.7.

Trips targeting gag only represented approximately 2.4% of all recreational trips in the Gulf on average. No trend between 2005 and 2009 is discernible with respect to the number or percentage of trips targeting gag. However, 2008 appears to have been a peak year in both respects. More trips report catching than targeting gag. Specifically, the number of trips catching gag is typically double the number of trips targeting gag. Trips catching gag represent approximately 4.7% of all recreational trips in the Gulf on average. The number of trips catching gag in 2008 was approximately 75% higher than in 2006, again indicating that 2008 was a peak year in terms of gag effort.

Anglers in west Florida represented nearly all (98.5%) of the target effort for gag from 2005-2009. Alabama anglers reported a minor amount (1.3%) of target effort. Only in 2009 did Louisiana and Mississippi have any targeted effort for gag. The geographic distribution of gag catch effort is similar. Specifically, between 2005 and 2009, anglers in west Florida represented the vast majority (96.6%) of the catch effort for gag. Alabama anglers accounted for most of the remaining catch effort (2.3%), though some catch effort (1%) was also seen in Louisiana. Consistent with other information, the predominance of west Florida anglers in this respect peaked in 2008. Though Alabama and Louisiana accounted for 6% of gag catch effort in 2005, they represented only 2.4% in 2009. Also, only in 2009 did Mississippi have any gag catch effort.

Just as west Florida anglers are dominant with respect to the geographic distribution of target and catch effort, so is the private boat sector with respect to mode. Specifically, private boats represented 87% of target effort and more than 77% of catch effort for gag on average between 2005 and 2009. The shore mode is of secondary importance, accounting for more than 9% of

target effort and more than 12% of catch effort for gag. The charter mode represents nearly 4% of target effort for gag, but is slightly more important in terms of catch effort for gag, accounting for nearly 11% of the total. The shore mode has accounted for a greater percentage of gag target effort between 2005 and 2009, increasing from slightly more than 4% to nearly 13%. The relative importance of the charter sector has declined in this respect during those years, with target effort declining from more than 6% to less than 3%. Further, although the charter mode represented nearly 19% of catch effort in 2005, it only accounted for 7.5% in 2009. Conversely, the private boat sector has increased in importance, representing 70% of gag catch effort in 2005 but more than 80% in 2009.

Table 2.3.2.1.1 Target trips for gag and total recreational trips, 2005-2009.

	Gag Target Trips	Percent	Total Trips
2005	545,191	2.49	21,906,426
2006	458,814	1.92	23,862,890
2007	552,812	2.28	24,267,431
2008	641,576	2.66	24,108,842
2009	483,867	2.17	22,296,834
Average	536,512	2.40	23,288,484

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 2.3.2.1.2 Gag target trips and percent distribution, by state, 2005-2009.

	Gag Target Trips				Percent Distribution			
	AL	WFL	LA	MS	AL	WFL	LA	MS
2005	20,394	525,097	0	0	3.7	96.3	0	0
2006	2,888	455,926	0	0	.6	99.4	0	0
2007	4,033	548,779	0	0	.7	99.3	0	0
2008	1,097	640,478	0	0	.2	99.8	0	0
2009	5,936	474,292	1,793	1,846	1.2	98.0	.4	.4
Average	6,870	528,914	359	369	1.3	98.5	.1	.1

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 2.3.2.1.3 Gag target trips and percent distribution, by mode, 2005-2009.

	Gag Target Trips			Percent Distribution		
	Shore	Charter	Private	Shore	Charter	Private
2005	22,872	34,141	488,478	4.2	6.3	89.5
2006	41,610	16,254	400,950	9.1	3.5	87.4
2007	54,624	13,209	484,979	9.9	2.4	87.7
2008	67,913	23,996	549,666	10.6	3.7	85.7
2009	61,682	12,904	409,281	12.7	2.7	84.6
Average	49,740	20,101	466,671	9.3	3.7	87.0

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 2.3.2.1.4 Catch trips for gag and total recreational trips, 2005-2009.

	Gag Catch Trips	Percent	Total Trips
2005	1,132,599	5.17	21,906,426
2006	821,487	3.44	23,862,890
2007	1,040,240	4.29	24,267,431
2008	1,429,084	5.93	24,108,842
2009	1,091,130	4.89	22,296,834
Average	1,102,908	4.70	23,288,484

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 2.3.2.1.5 Gag catch trips and percent distribution, by state, 2005-2009.

	Gag Catch Trips				Percent Distribution			
	AL	WFL	LA	MS	AL	WFL	LA	MS
2005	53,195	1,064,772	14,632	0	4.7	94.0	1.3	0
2006	16,527	794,493	10,467	0	2.0	96.7	1.3	0
2007	14,708	1,017,867	7,132	534	1.4	97.9	.7	0
2008	20,353	1,401,437	6,607	686	1.4	98.1	.5	0
2009	23,297	1,060,460	3,092	4,282	2.1	97.2	.3	.4
Average	25,616	1,067,806	8,386	1,100	2.3	96.6	1.0	.1

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 2.3.2.1.6 Gag catch trips and percent distribution, by mode, 2005-2009.

	Gag Catch Trips			Percent Distribution		
	Shore	Charter	Private	Shore	Charter	Private
2005	126,162	213,992	792,446	11.1	18.9	70.0
2006	82,499	108,963	630,025	10.0	13.3	76.7
2007	153,387	72,778	814,075	14.7	7.0	78.3
2008	174.401	94,303	1,160,380	12.2	6.6	81.2
2009	134,708	81,995	874,428	12.3	7.5	80.2
Average	134,231	114,406	854,271	12.1	10.7	77.2

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Headboat data do not support the estimation of target or catch effort because target intent is not collected and harvest data (the data reflect only harvest information and not total catch) is collected on a vessel basis and not by individual angler. Table 2.3.2.1.7 provides estimates of the number of headboat angler days for all Gulf States from 2005 through 2009.

Table 2.3.2.1.7 Headboat angler days.

	WFlorida/Alabama	Louisiana	Texas	Total
2005	130,233	na	59,857	190,090
2006	124,049	5,005	70,789	199,843
2007	136,880	2,522	63,764	203,166
2008	130,176	2,945	41,188	174,309
2009	142,438	3,268	50,737	196,443
Average	132,755	3,435	57,267	193,457

*na=not available.
Source: NMFS Headboat Survey.

2.3.2.2 Economic Value

Economic value in the recreational sector is measured in terms of consumer surplus (CS) to anglers and producer surplus (PS) to charter vessel and headboat operations. Consumer surplus is the amount of money that an angler would be willing-to-pay for a fishing trip over and above the cost of the trip. Producer surplus is the amount of money that the operator earns on the trip per angler over and above the cost of providing the trip. Because the PS is unknown, net operating revenue (NOR) is used as the proxy for PS, where NOR is defined as operating revenues minus variable operating costs. Variable operating costs include all trip costs (fuel, ice, bait, food, etc.) except payments to captain and crew (labor). Therefore, the NOR for a trip is the return used to pay all labor wages, returns to capital, and owner profits. A discussion of these variables and estimates of appropriate values are provided in Amendment 17A to the South Atlantic Snapper-Grouper FMP (SAFMC 2010) and Carter and Liese (2010). In summary, the estimated CS for a grouper trip is approximately $85 (2008 dollars) and the estimated NOR is approximately $148 and $49 (2008 dollars) per charter vessel and headboat angler trip, respectively.

2.3.2.3 For-Hire Vessels

The for-hire sector is comprised of charter vessels and headboats (party boats). Although charter vessels tend to be smaller, on average, than headboats, the key distinction between the two types of operations is that the fee charged on a charter vessel trip is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

A federal for-hire vessel permit has been required for reef fish since 1996 and the sector currently operates under a limited access system (GMFMC 2005a). On March 23, 2010, there were 1,376 valid or renewable Gulf reef fish for-hire permits. A valid permit is a non-expired permit. Expired reef fish for-hire permits may not be actively fished, but are renewable for up to one year after expiration. Because of the extended renewal period, numerous permits may be expired but renewable at any given time of the year. The majority of the 1,376 permits valid or renewable on March 23, 2010 were registered with Florida addresses (823 or approximately 60%), followed by 229 permits (nearly 17%) with Texas addresses, 127 permits (approximately 9%) with Alabama addresses, 94 permits (nearly 7%) with Louisiana addresses, and 48 permits

(approximately 3%) with Mississippi addresses. The registration address for the federal permit does not restrict operation to federal waters off that state; however, vessels would be subject to state permitting requirements, should such exist. Although the permit does not distinguish between headboats and charter vessels, an estimated 79 headboats operate in the Gulf. The majority of these vessels, 43 (approximately 54%), operate from Florida ports, followed by 22 vessels (approximately 28%) in Texas, 10 vessels (13%) in Alabama, and 4 (5%) vessels in Louisiana.

Information on Gulf headboat and charter vessel operating characteristics, including average fees and net operating revenues, are included in GMFMC (2007) and is incorporated herein by reference. The average charter vessel is estimated to earn approximately $88,000 (2008 dollars) in annual revenues, while the average headboat is estimated to earn approximately $461,000 (2008 dollars).

2.3.2.4 Economic Impacts

The value estimates provided in Section 2.3.2.2 should not be confused with angler expenditures or economic activity (impacts) associated with these expenditures. Although 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), expenditures do not represent the net value of the good or service (benefit minus cost), nor the change in value associated with a change in the fishing experience.

Estimates of the economic activity (impacts) associated with recreational angling for gag were derived using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the MRFSS to collect economic expenditure information, and described and utilized in NMFS (2009). Estimates of these coefficients for target or catch behavior for individual species are not available. Estimates of the average expenditures by recreational anglers are also provided in NMFS (2009) and are incorporated herein by reference.

Estimates of the economic activity (2008 dollars) associated with recreational gag effort are provided in Table 2.3.2.1.8. Gag target effort (trips) was selected as the measure of gag effort. More individual angler trips catch gag than target gag, however, as described in Tables 2.3.2.1.1 and 2.3.1.1.4. Estimates of the economic activity associated with gag catch trips can be calculated using the ratio of catch trips to target trips because the average impacts per trip are not differentiated by trip intent. For example, if the estimated number of catch trips is three times the number of target trips for a particular state and mode, the estimate of the economic activity associated with these catch trips would equal three times the estimated impacts of target trips. The total 2008 output (sales) impacts for all modes and states (excluding Texas) for trips which targeted gag was approximately $31.1 million, the value added impact was approximately $18.4 million, and the economic activity associated with these trips supported an estimated 315 FTE jobs. It should be noted that output impacts and value added impacts are not additive.

As expected, given the distribution of target effort, the vast majority (more than 97%) of the economic impacts associated with the recreational harvest of gag is experienced in west Florida. With respect to sectors or modes, the private boat sector accounts for more than two-thirds (68%)

of the economic impacts resulting from recreational gag fishing, while the charter and shore sectors account for approximately 21% and 11% of those impacts respectively. These findings are somewhat surprising because the private boat and charter sectors account for 87% and 4% of recreational gag effort respectively. However, this result is because expenditures per trip are higher on charter trips compared to private trips.

Table 2.3.2.1.8. Gag target trips (2005-2009 average) and associated economic impacts (2008 dollars). Output and value added impacts are not additive.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	49,740	0	0	49,740
Output Impact	$0	$3,370,833	$0	$0	$3,370,833
Value Added Impact	$0	$1,958,343	$0	$0	$1,958,343
Jobs	0	36	0	0	36
	Private/Rental Mode				
Target Trips	6,272	459,671	359	369	466,671
Output Impact	$364,914	$20,869,689	$29,276	$10,523	$21,274,402
Value Added Impact	$199,782	$12,409,900	$14,399	$5,043	$12,629,124
Jobs	4	208	0	0	213
	Charter Mode				
Target Trips	597	19,503	0	0	20,100
Output Impact	$310,829	$6,124,072	$0	$0	$6,434,901
Value Added Impact	$171,101	$3,630,944	$0	$0	$3,802,045
Jobs	4	63	0	0	67
	All Modes				
Target Trips	6,869	528,914	359	369	536,511
Output Impact	$675,743	$30,364,594	$29,276	$10,523	$31,080,135
Value Added Impact	$370,883	$17,999,187	$14,399	$5,043	$18,389,513
Jobs	8	307	0	0	315

Source: Effort data from the Marine Recreational Fisheries Statistics Survey/Marine Recreational Information Program; economic impacts calculated by National Marine Fisheries Service Southeast Regional Office using the model developed for NMFS (2009).

2.4 Description of the Social Environment

The social environment was described in a previous EA also looking at gag management measures (NMFS 2010a) and no further revisions of the description of the social environment is

needed for this section. Therefore, this information is incorporated by reference and the EA can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf. Most of the information in NMFS (2010a), which generally only incorporates data through 2007, provides an historical context with respect to the relationships between the commercial harvest of gag and communities around the Gulf. The implementation of the grouper/tilefish IFQ program on January 1, 2010, and new restrictions on the use of bottom longline gear to certain vessels (i.e. those which qualified for longline endorsements) and areas have likely caused significant changes to the nature and strength of these relationships at least with respect to the commercial sector. These factors are discussed in NMFS (2010a). NMFS (2010a) also provides a description and discussion of the relationships between communities and the recreational harvest of gag with their probable effects on certain aspects of the social environment.

2.5 Environmental Justice Considerations

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. This executive order is generally referred to as environmental justice. These factors are described in NMFS (2010a) and are incorporated by reference. This EA which also examined 2011 gag management issues can be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

2.6 Administrative Environment

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. Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. State representation at the council level ensures state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. The administrative environment is described in NMFS (2010a) and are incorporated by reference. This EA which also examined 2011 gag management issues can be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

3.0 MANAGEMENT ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

3.1 Action 1: Gag Commercial Management Measures.

Alternative 1: No Action.

Allow the current temporary rule to expire and allow the 2011 gag quota to increase to the annual catch target of 1.49 million pounds gutted weight (GW) as specified in Amendment 30B. The shallow-water grouper quota will increase from 4.83 million pounds GW to 6.22 million pounds GW. Allow red grouper IFQ allocation to be converted into multi-use allocation. Four percent of red grouper allocation would be converted into multi-use allocation and could be used to harvest gag.

Alternative 2:

Maintain the current gag quota of 100,000 pounds GW. The SWG quota will remain at 4.83 million pounds GW.

Preferred Alternative 3:

Establish a gag commercial quota of 430,000 pounds GW[9]. This quota includes the 100,000 pounds GW already released for 2011. The SWG quota will increase from 4.83 million pounds GW to 5.16 million pounds GW.

Preferred Alternative 4:

Continue the current suspension of the release of red grouper multi-use allocation until replaced by measures in Amendment 32.

Discussion and Rationale:

This action considers alternatives to limit the gag commercial quota consistent with the goals and objectives of the Fishery Management Plan for the Reef Fish Fishery of the Gulf of Mexico (Gulf) while achieving the mandates of the Magnuson-Stevens Act. In Amendment 30B, the Council set the 2009-2011 total allowable catch (TAC) based on constant F_{OY} projections. For 2011, this yield was 3.82 MP GW, of which 1.49 MP GW is the commercial allocation (39% of TAC). The Council selected this approach to setting TAC and the resultant quota because the harvest can increase or decrease based on the condition of the stock. Based on the 2009 SEDAR update assessment rerun, the stock condition had declined and the yield at F_{OY} is 1.28 MP GW (SEDAR 2011), of which 500,000 pounds would be allocated for the commercial quota.

Alternative 1, no action, would allow the temporary rule to expire on June 1, 2011, and the gag quota would revert to 1.49 MP GW as defined in Amendment 30B. This would place the quota near the ABC recommended by the Council's SSC of 1.58 MP GW for 2011 and above the Council's defined F_{OY} yield of 1.28 MP GW. However, to allow the 2010 interim rule to expire would also end management restrictions on the recreational sector and lead to overfishing. Therefore, selecting this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) and the Magnuson-Stevens Act's and Council's management objectives.

[9] For 2011, this quota includes the 100,000 pounds gutted weight released January 1, 2011.

In addition, this would promote overfishing and slow the recovery of the stock. **Alternative 1** would also allow the current the suspension of red grouper multi-use allocations to go back into effect. The percentages originally set in Reef Fish Amendment 29 were that 4% of an IFQ participant's red grouper allocation could be converted into multi-use allocation valid for the harvest of red grouper or gag. Given the current red grouper quota is 4.32 MP GW, this means up to 172,000 pounds GW of red grouper quota could be used to harvest gag if all the IFQ participants decided to use their multi-use allocation for gag. This is more than the gag quota in **Alternative 2** and approximately 40% of the quota in **Preferred Alternative 3.** Therefore, allowing the distribution of red grouper multi-use shares would likely contribute to overfishing.

The quota in **Alternative 2** reflects the request made by the Council last August for the interim rule that published December 1, 2010. This quota of 100,000 pounds GW reflects the uncertainty in the stock status due to questions of how commercial and recreational discards were treated in the assessment update. When this quota was recommended, it was unknown how any revisions to the treatment of discards might influence the stock assessment. If the revisions estimated a more pessimistic condition of the stock, then setting the harvest based on the F_{OY} yield (estimated then at 390,000 pounds) would not reduce overfishing sufficiently to allow the stock to begin to recover within the maximum time frame allowed under the Magnuson-Stevens Act. Part of the rationale for creating the 100,000 pound GW quota was in fishing for other species, some gag would be incidentally caught by the commercial sector. Because of high discard mortality associated with fishing at deeper depths, if these fish were not retained, most would die after being released. Therefore, rather than wasting these fish, the Council set the quota at a level that would allow some retention and allow the fish to be counted against the quota.

As of March 2, 2011, over 65% of the gag IFQ shareholders have less than 50 pounds in allocation available to them[10]. Thus, if the quota were held constant, commercially caught gag would likely be lost through dead discards rather than kept and counted against the quota as fishermen run out of allocation. However, the update assessment rerun results showed a slight increase in the projected yields under the F_{OY} (SEDAR 2011) and would allow the quota to be added to (**Preferred Alternative 3**) providing the FWC adopts compatible regulations for the recreational sector, which they indicated they would do at their April 2011 meeting. If compatible regulations were not adopted, fishing levels by the recreational sector would continue the overfishing of the stock and there would be no justification to increase the commercial quota above the 100,000 pounds GW.

The commercial quota of 430,000 pounds GW in **Preferred Alternative 3** is based on projected F_{OY} yield streams (1.28 MP GW for 2011) and is consistent with the methods used by the Council in Amendment 30B for setting the annual catch target. Based on the 39:61 percent commercial:recreational allocation for this species, the commercial quota from the 1.28 MP GW catch target would be 500,000 pounds GW. However, to set the quota at this level assumes there will be an equal percent reduction in dead discards.

[10] Andy Strelcheck. Personal communication. Southeast Regional Office, 262 13th Ave. S.,St. Petersburg, FL 33701

At its February 2011 meeting, the Council heard public testimony from commercial fishermen who indicated that although they can reduce the number of gag caught by targeting the harvest of other reef fish species, they cannot absolutely avoid gag. Therefore, there will be some incidental gag harvest that will result in dead discards from either the capture of undersized fish or by fishermen without gag IFQ allocation. For 2006-2008, the weight of discards has been between 26% and 32% (Table 3.1.1). In 2009, the percent dead discards increased to 41%, but this increase is believed to be due to a gear shift from longlines to vertical lines when the longline sector was temporarily excluded from fishing within 50 fathoms to reduce sea turtle bycatch. New regulations have been adopted that now allow longlines to fish within 50 fathoms, but with some additional restrictions, which should reduce the level of dead discards (GMFMC 2009). Based on this testimony and this information on the level of dead discards in the sector, the Council recommended the quota be reduced by 14 percent to 430,000 pounds GW as a way to compensate any proportional increase in dead discards that might result from reducing the quota.

Preferred Alternative 3 assumes that Florida will adopt compatible regulations on June 1, 2011, for the recreational sector. Also, under **Preferred Alternative 3,** the increase in the gag commercial quota would also result in an increase in the commercial SWG quota. The SWG quota would need to be increased by 330,000 pounds GW to 5.16 MP GW. Within the SWG quota are separate quotas for gag and red grouper. Finally, under **Preferred Alternative 3,** if rulemaking from Amendment 32 has not been implemented in time to set the 2012 TAC, extending the proposed interim rule as allowed under the Magnuson-Stevens Act, would allow the distribution of IFQ allocations based on the 2011 level of 430,000 pounds. Assuming more quota will be released under Amendment 32, the difference in allocation can be made up later in the year once the amendment's rulemaking has been implemented.

Preferred Alternative 4 would set the percentage of red grouper multi-use allocation equal to zero when the interim rule for gag is in effect and would be a continuation of measures put in place by the 2010 interim rule. For IFQ fisherman, they would still receive 100% of their red grouper allocation, but the conversion of 4% of that allocation to multi-use allocation would not occur. After the gag stock is fully rebuilt, the percentage of red grouper allocation converted into red grouper multi-use allocation valid to harvest gag or red grouper will be determined based on the buffer existing between the gag annual catch limit (ACL) and quota and on the magnitude of the red grouper ACL. The Council is currently developing measures in Amendment 32 such that future changes in ACLs and/or quotas would result in a recalculation of the percentage of red grouper allocation that can be converted into multi-use allocation while preventing the commercial gag harvest from exceeding the commercial gag ACL.

It is worth noting that adjustments to multi-use allocations considered under this action are well within the provisions of the grouper and tilefish IFQ program included in Reef Fish Amendment 29 (GMFMC 2008b). These provisions stipulate that the Council could create new share types and adjust existing share types to further its conservation mission or to improve the management of the IFQ program.

Table 3.1.1. Gag recreational, commercial, and total landings and dead discards by weight, and as a percentage of the total fish killed for discards, in the Gulf of Mexico from 2006-2009 (From NMFS 2011).

Removal type	Year	Recreational	Commercial	Total
Landings	2006	2,286,440	1,369,985	3,656,425
	2007	2,231,762	1,262,181	3,493,943
	2008	2,958,027	1,248,481	4,206,509
	2009	1,613,316	733,292	2,346,608
	Average	2,272,386	1,153,485	3,425,871
Dead discards	2006	904,294	357,397	1,261,691
	2007	1,218,783	371,134	1,589,917
	2008	1,694,804	301,260	1,996,064
	2009	1,003,761	596,291	1,600,052
	Average	1,205,411	406,520	1,611,931
Percent dead discards of total fish killed	2006	28%	21%	26%
	2007	35%	23%	31%
	2008	36%	19%	32%
	2009	38%	45%	41%
	Average	35%	26%	32%

3.2 Action 2: Recreational management measures

Alternative 1: No Action.

Allow the current temporary rule to expire and open federal waters to fishing for gag with a 2-fish daily bag limit.

Alternative 2:

Close the recreational sector in federal waters. Continue the current gag daily bag limit of zero and not allow a recreational harvest of gag.

Preferred Alternative 3:

Set the 2011 recreational season for gag in federal waters with a 2-fish daily bag limit to

Option a:

July 1 - August 15

Preferred Option b:

September 16 - November 15

Discussion and Rationale:

This action considers alternatives to limit the gag recreational harvest consistent with the goals and objectives of the Fishery Management Plan for the Reef Fish Fishery of the Gulf of Mexico (Gulf) while achieving the mandates of the Magnuson-Stevens Act. In Amendment 30B, the Council set the total allowable catch (TAC) based on constant F_{OY} projections. For 2011, this

yield was 3.82 MP GW, of which 2.20 MP GW is the recreational allocation (61% of TAC). The Council selected this approach for setting TAC and the resultant quota because the harvest can increase or decrease based on the condition of the stock.

Based on the 2009 update assessment rerun (SEDAR 2011), the SSC recommended ABC be decreased to 1.58 MP GW as part of the rebuilding process which would allow the ABC to increase as the stock condition improved. The 2011 yield associated with F_{OY} is lower than the ABC and is 1.28 MP GW (Table 2.2.1). Given the 61:39% recreational:commercial allocation, the recreational share of the ABC would be 964,000 pounds GW and of the F_{OY} yield would be 780,000 pounds GW. However, these harvest levels do not account for additional dead discards which would occur from restricting the harvest to these levels. Based on analyses conducted by NMFS (2011), the needed reductions in the recreational harvest are between 48 and 62 percent to end overfishing, and between 58 to 69 percent to reduce the harvest consistent with F_{OY}.

Alternative 1, no action, would allow the current interim rule to expire on May 31, 2011. The recreational catch target would increase to 2.20 MP GW as defined in Amendment 30B and anglers would be able to harvest the gag two-fish recreational bag limit starting June 1, 2011. The reductions in removals (landed fish and dead discards) under this scenario would be between 15 to 20% depending on the years used to estimate the reductions. This level of reduction is insufficient to allow the stock to rebuild and would be inconsistent with the stock rebuilding plan being developed by the Council. In addition, selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because the recreational harvest target would be above the ABC recommended by the Council's SSC of 1.58 MP GW for 2011.

Alternative 2 reflects the current recreational closure implemented through the 2010 interim rule. This alternative would continue the zero bag limit for gag for another 186 days. It was the intent of the Council when requesting the January 2011 gag interim rule that there should be a harvest of gag in 2011, but the harvest would be a part of long-term measures developed by the Council in Amendment 32. Because the rerun of the update assessment was not completed and reviewed until January 2011, there is insufficient time to implement measures from Amendment 32 early enough in 2011 to meet the intent of the Council.

Alternative 2 is the most conservative alternative and would benefit the gag stock by reducing the fishing mortality the most of any of the alternatives. Although this alternative would not allow gag to be landed under the time period the interim rule is in effect, the number of dead discards should be reduced because there would be no fishing trips targeting or directed at gag. Assuming Florida adopts compatible regulations, this alternative would reduce the harvest sufficiently in 2011 to be consistent with the Council's preferred rebuilding plan in Amendment 30B because it would reduce removals between 58 and 67%[11] and end overfishing (Table 3.2.2). If Florida were not to adopt compatible regulations, reductions would be between 43 and 61%. This would likely reduce overfishing, but likely would not be sufficient to end overfishing.

[11] Note the range in reductions is dependent on the baseline used to calculate the removals from the stock. The baselines are for 2006-2008 (the last three years of the assessment) and 2009 (the last full year of landings information. Actual reported removals for 2009 were based on post stratified MRFSS landings, headboat landings, and commercial landings (NMFS 2011).

Preferred Alternative 3 would establish a recreational gag fishing season. The Southeast Regional Office developed a decision model to evaluate different management scenarios (NMFS 2011). The model allowed the Council to vary season length and evaluate the effects of trip type, effort shifting, size limits, bag limits, release mortality rates, and Florida state regulation compatibility. In developing options under **Preferred Alternative 3**, the Council did not choose to change bag or size limits. Bag limit changes did not substantially change season lengths. Reducing size limits substantially reduced the season length and increasing size limits substantially increased the number of dead discards. The Council reviewed several options based the following assumptions: 1) The State of Florida adopts compatible regulations by June 1, 2011, as they have indicated they will do; 2) that all targeted trips (trips where the fishermen said gag was the primary or secondary species targeted on a trip) and directed trips (greater than 1.5 gag caught per angler trip) will not occur when the season is closed; and 3) there is a 150 percent effort shift to gag fishing during a limited fishing season compared to effort in years when there were no closed seasons. As discussed in **Alternative 2**, if the State of Florida were not adopt compatible regulations, there could be no recreational season for federal waters.

A total of nine options were developed from the decision model that met the assumptions above and were provided to the Council at their February 2011 meeting (Table 3.2.2). These options ranged from no opening at all to options that allowed a two-month long fishing season (61 days). To end overfishing, the fishing season needed to reduce removals by 48 to 62%, and to achieve the F_{OY} level, the removals needed to be reduced between 58 to 69%. As mentioned above, it was the Council's intent in requesting the current interim rule that there be a summer recreational season that maximized the number of days the gag season could be open. Possible scenarios included summer, fall, and winter seasons. Two summer seasons (June and June 16-July) and two winter seasons (November and December) could be discounted because they did not achieve the necessary reductions in removals needed for consideration. This is because under the 2009 base, percent reductions were below the needed 48 percent under the 2009 base case. The remaining four scenarios included no season (**Alternative 2**), one summer/fall season (August 16-October 15), and two fall seasons (September-October and September 16-November 15) which would reduce the number of removals sufficiently to end overfishing. The Council recommended a season of September 16-November 15 (**Option b**) as a compromise between a summer and winter season as discussed below.

Option a (July-August 15) would open a gag season during the summer as originally intended by the Council when making recommendations for the 2010 interim rule. It also has one of the longest season lengths evaluated (46 days). It also minimally overlap with the red snapper season which begins June 1. This would provide a greater of number options for for-hire fishermen in marketing summer trips. The reductions under this option (49-60%) are likely to be sufficient to end overfishing under the Council's assumptions.

The Council heard public testimony at their February 2011 meeting from the recreational sector asking for either a summer or winter season depending on location. In general, fishermen from Texas and southwest and central Florida favored a winter season, and fishermen from other areas of the Gulf favored a summer season. In looking for a compromise, the Council recommended the **Preferred Option b** gag fishing season from September 16 through November 15 with no changes to the bag limit or size limit. This season comes close the very end of the summer and

comes very close to the winter months. In addition, this season provides estimated reductions in removals of between 50 and 54 percent, a level likely to end overfishing.

Under **Preferred Alternative 3**, if rulemaking from Amendment 32 does not get implemented prior to the end of November when this rule would likely expire, extending the rule for another 186 days as allowed under the Magnuson-Stevens Act would keep the recreational sector closed to gag fishing until rulemaking from Amendment 32 supersedes this rule or the rule expires.

Table 3.2.2. Gag decision model results for proposed 2011 gag interim rule assuming a minimum size limit of 22 inches, a 2 fish gag bag limit and a 4 fish grouper aggregate bag limit, effort shifting of 150% during open months, and that Florida adopts compatible regulations that go into effect June 1, 2011. Baseline removals were calculated using output from the 2010 gag re-rerun stock assessment (SEDAR 2011). Removals were estimated by using either 2006-2008 data, the last three years of the assessment, or 2009, the last year of complete data (NMFS 2011).

			Percent Change in Removals for Gag Target/Directed Trip Elimination Scenario	
Closed Season	**Open Season**	**Days Open**	**2006-08 base**	**2009 base**
Jan-Dec	---	0	67%	58%
Nov 16-Sep 15	Sep 16-Nov 15	61	54%	50%
Nov-Aug	Sep-Oct	61	58%	54%
Oct 16-Aug 15	Aug 16-Oct 15	61	57%	53%
Jul-May	Jun	30	56%	42%
Aug-Jun 15	Jun 16-Jul	46	56%	46%
Aug 16-Jun	Jul-Aug 15	46	59%	49%
Dec-Oct	Nov	30	55%	41%
Jan-Nov	Dec	31	55%	41%

3.3 Environmental Consequences

3.3.1 Direct and Indirect Effects on Physical Environment

GMFMC (2004, 2008a) and Sections 2.1 and 2.2 in NMFS (2010a) describe the physical environment and habitat use by gag and other groupers and are hereby incorporated by reference. The effects of Actions 1 and 2 on the physical environment are mostly related to fishing effort. Because the reef fish fishery targets bottom dwelling species, as fishing effort increases, the chance of fishing gear interacting with the bottom increases. In the commercial sector, vertical-line gear is used to harvest most gag (an average of 64% from 1993-2008) and nearly all recreational gag. Longline gear has accounted for an average of 32% of the commercial gag landings between 1993 and 2008. With changes in the longline sector in 2009 to reduce sea turtle bycatch and the implementation of the longline endorsement in 2010, it is difficult to predict changes in gag fishing practices that might have occurred from regulatory changes. Other methods to harvest gag such as traps, spears, and “other gears” accounted for the remainder of landings. Traps became illegal for harvest of reef fish after February 7, 2007.

Specific descriptions of how fishing gear interacts with the physical environment are described in GMFMC (2004, 2008a, 2009) and NMFS (2010a) and are incorporated by reference.

Action 1, **Alternative 1** (no action) would maintain the 1.49 MP GW commercial gag quota. Therefore, this alternative should have no additional effects on the physical environment compared to previous years. In fact, the effects from **Alternative 1** are likely to be reduced from previous years because the quota would go into effect June 1, 2010. This means the commercial sector would have less than the whole year to harvest the quota. **Alternative 2** and **Preferred Alternative 3** would reduce to quota to 100,000 pounds GW and 430,000 pounds, respectively. These alternatives would be expected to have fewer impacts on the physical environment when compared with **Alternative 1**, because they would likely result in lower levels of fishing effort and less opportunity for gear interactions with habitat. Similarly, **Alternative 2**, because of its lower quota, would be expected to fewer impacts than **Preferred Alternative 3**. However, because the reef fish fishery is a multispecies fishery, some effort that would be directed towards gag may be directed towards other species in the reef fish complex, such as red grouper or red snapper. These effects would be somewhat mitigated by current management measures such as quotas and IFQ programs for the primary species harvested by the sector.

With respect to red grouper multiuse shares under **Action 1**, **Alternative 1,** some IFQ allocation based on the red grouper quota could be redirected towards harvesting gag while Preferred **Alternative 4** would not allow a redirection of effort from red grouper to gag. Thus under **Preferred Alternative 4,** the physical environment where gag are often found would be affected less by fishing gear and areas where red grouper are often found could have greater effects when compared to **Alternative 1**. However, because only 4% of the red grouper harvest could be converted to multiuse shares, effects from **Alternative 1** would be minimal for this species.

Action 2, **Alternative 1** (no action) would maintain the recreational gag management measures designed to hold the harvest to the target catch level of 2.20 MP GW. Because harvest restrictions would revert to the previous two-fish bag limit after June 1, 2011, this alternative should have reduced effects compared to previous years on the physical environment because fishing by the sector would have been closed for five months in federal waters for 2011, though for only two in Florida state waters (February and March). **Alternative 2** would not allow any harvest of gag in federal waters. Although this measure will not halt reef fish fishing by the recreational sector, it should reduce the effects on the physical environment compared to **Alternative 1** by eliminating trips that target gag. The lower levels of fishing effort would reduce the opportunity for gear interactions with the benthic habitat. However, the extent of the reduction in effort is dependent on how much gag effort would be redirected towards other reef fish species. The effects of **Preferred Alternative 3** would be intermediate to **Alternatives 1** and **2** because it would allow a limited fishing season for gag. It is unlikely the reduction of the effects would be the same as the reduction in the fishing season. Effort intensification would likely increase the effects, although the effects would not be as great as those from **Alternative 1**. Because **Options a** and **b** result in a similar level of reductions in removals, the effects of either option would likely be similar.

3.3.2 Direct and Indirect Effects on Biological/Ecological Environment

Gag demonstrate the typical life history pattern for managed reef fish species as summarized in Section 2.2, GMFMC (2004, 2009), NMFS (2010) and incorporated here by reference. Fishery management actions that affect the biological/ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Effects include changes in growth rates, size distribution, sex ratio, and size and age of sexual maturity. Removal of fish from the population through fishing reduces the overall population size and can change the relationships among species in marine ecosystems. For gag, these effects are exacerbated because they are protogynous hermaphrodites and form spawning aggregations. These removals not only come from harvesting gag, but also from an increased level of dead discards from reductions in IFQ allocation for the commercial sector and longer closed seasons for the recreational sector. The effects of these actions on a stock are summarized in NMFS (2010a) and are incorporated here by reference.

For **Action 1, Alternative 1** is the least conservative of the gag commercial quota alternatives (1.49 MP GW) and would result in the highest probability of overfishing occurring from the commercial sector. This level of harvest is nearly equal to the SSC's recommended ABC level and above the F_{OY} yield. **Alternative 2** is the most conservative quota relative to **Alternative 1** and **Preferred Alternative 3** and would have the highest likelihood of preventing overfishing and allowing the stock to rebuild, although there will be some fish killed as discards as fishermen run out of IFQ allocation as the year progresses. As mentioned in NMFS (2010a), at deeper depths, this discard mortality is very high and the likelihood of a fish surviving would be minimal. **Preferred Alternative 3** would increase the 2011 quota and allow more incidentally harvested gag to be retained for fisherman with gag IFQ allocation and these fish would count against the gag quota. As of March 2, 2011, 65% of gag IFQ shareholders have 50 pounds or less of gag allocation[9]. Therefore, as the fishing year progresses, the likelihood that IFQ participants will run out of gag allocation increases and the chances of incidentally caught gag would be discarded rather than retained will increase. The 430,000 pound GW quota under **Preferred Alternative 3** is sufficiently low enough to end overfishing of gag.

With regard to red grouper multi-use shares**, Alternatives 1** and **Preferred Alternative 4** in themselves would not necessarily affect fishing effort, but would affect where that effort and harvest is directed. Under **Alternative 1**, some IFQ allocation based on the red grouper quota could be redirected towards harvesting gag and would not reduce the likelihood of gag overfishing. It could also redirect fishing effort from red grouper to gag. **Preferred Alternative 4** would not allow a redirection of effort from red grouper to gag, thus providing more protection to the gag stock and help to reduce the likelihood of overfishing.

Under **Action 2**, **Alternative 1** (no action), recreational gag management measures designed to hold the harvest to the target catch level of 2.20 MP GW would be continued. Because harvest restrictions would remain unchanged, this alternative would likely lead to gag overfishing because this harvest level is above the SSC's recommended ABC. **Alternative 2** would not allow for a recreational gag harvest until December 1, 2011 if no other action is taken or rulemaking from Amendment 32 is implemented. **Preferred Alternative 3** would allow a limited fishing season either in the summer (**Option a**) or fall (**Preferred Option b**). These two

options would be expected to have a lower impact on the biological environment when compared with **Alternative 1** because they would result in lower levels of directed gag fishing effort. To harvest the quota allowed under **Preferred Alternative 2**, a 49-60% reduction in the number total removals (landed fish and dead discards) would need to be achieved. Any less of a reduction would mean the season length would need to be shorter to keep the harvest within the recreational allocation of the ABC recovery trajectory recommended by the SSC. Under **Preferred Alternative 3**, directed effort towards gag would be constrained to the open season and overall fishing effort for gag would diminish with the closed period. However, any effort not directed towards gag could be redirected towards other species such as red grouper and greater amberjack. Because **Options a** and **b** result in a similar level of reductions, the effects of either option would likely be similar.

3.3.3 Direct and Indirect Effects on the Economic Environment

Action 1: 2011 Gulf of Mexico Commercial Gag Quota.

The commercial sector's allocation of the gag annual catch limit is implemented as a quota. Table 3.3.4.1 provides the commercial quotas and associated ex-vessel values, gross revenues (ex-vessel value net of 3 percent cost recovery fee), and expected changes in gross revenues for each of the management alternatives considered.

Alternative 1, no action**,** would let the current rule expire and allow the commercial gag quota to revert to 1.49 MP GW, which is the quota set in Reef fish Amendment 30B. Under **Alternative 1**, the annual ex-vessel value of gag that could be harvested under the individual fishing quota program is estimated at approximately $5.24 million (2008 dollars) for 2011.

Alternative 2 would maintain the gag quota of 100,000 lbs set by the interim rule currently in effect. Under **Alternative 2**, the ex-vessel value and gross revenues derived from gag harvests are estimated at approximately $352,000 and $341,440, respectively. Relative to **Alternative 1**, the changes in gross revenues expected from the implementation of **Alternative 2** are estimated to be approximately -$4,746,016.

Table 3.3.3.1: Ex-vessel values and gross revenues under alternative gag commercial quotas.

Alternatives	Commercial quota million lbs (gutted weight)	Ex-vessel Value	Gross Revenues	Changes in Gross Revenues Relative to Alt. 1	Changes in Gross Revenues Relative to Alt. 2
Alternative 1	1.49	$5,244,800	$5,087,456	----------	$4,746,016
Alternative 2	0.1	$352,000	$341,440	-$4,746,016	----------
Preferred Alternative 3	0.43	$1,513,600	$1,468,192	-$3,619,264	$1,126,752

Preferred Alternative 3 would set a commercial gag quota of 430,000 lbs gutted weight. Following the implementation of this interim rule, grouper/tilefish IFQ participants would receive a 330,000 lbs increase in gag allocation because 100,000 lbs of gag allocation were released at the beginning of 2011. Relative to **Alternative 1**, the expected changes in gross revenues anticipated under **Preferred Alternative 3** are estimated at approximately -$3,619,264. Relative to **Alternative 2**, expected changes in gross revenues anticipated under **Preferred Alternative 3** are estimated at approximately $1,126,752. It is important to note that, due to the current status of the gag stock, **Alternative 1** would not be consistent with the Council's management objectives. Given the fact that the interim rule currently in effect limits the commercial quota to 100,000 lbs, the implementation of **Preferred Alternative 3** would constitute a marked improvement due to the additional allocation that it would grant to IFQ participants.

Although IFQ shares are legally considered a privilege that can be revoked, they are assets that can be freely exchanged in markets and used as collateral for loans. Assuming that gag grouper IFQ shares are traded in well-functioning markets, IFQ share prices should be a reflection of the discount rates and revenue streams that are expected to be derived from the IFQ shares. Detailed discussions on IFQ markets and on determinants of share prices in individual fishing quotas markets are provided in Newell et al. (2005a, 2005b), respectively. Therefore, an evaluation of potential economic effects based on changes in overall asset values would capture changes in economic effects in the longer term. However, the expected economic effects of the proposed interim rule, which is inherently a short term management measure, are better approximated by the changes in the aggregate lease value, i.e., the value of gag annual allocations. Average gag IFQ allocation prices are currently estimated at approximately $1.0 per pound (Andy Strelcheck-NMFS, personal communication). Therefore, relative to **Alternative 1**, economic effects expected to result from **Alternative 2** and **Preferred Alternative 3** are estimated at approximately -$1.48 million and -$1.06 million, respectively. As previously indicated, the interim rule currently in effect has already restricted the commercial quota to 100,000 lbs gutted weight (**Alternative 2**). Thus, in practical terms, the implementation of **Preferred Alternative 3** is expected to be associated with economic benefits due to the additional release of gag quota to IFQ participants. Relative to **Alternative 2**, the implementation of **Preferred Alternative 3** would increase gag quota by 330,000 lbs, resulting in added economic benefits estimated at $330,000.

Alternative 1 would, at the expiration of the interim rule currently in effect, continue to convert 4% of the red grouper allocation into multi-use allocation valid to harvest red grouper or gag. **Alternative 1** would provide flexibility to IFQ participants by allowing them to adjust to geographical and temporal variations in the red to gag grouper ratio, possibly contributing to a reduction in the number of gag discards. However, due to the large decrease in the gag commercial quota expected under this interim rule, the percentage of red grouper allocation that will be converted into multi-use allocation could result in gag harvests that would exceed the gag ACL. In addition to the detrimental effects on the gag stock, this scenario would result in adverse economic effects stemming from the corrective measures that would be implemented to address the over-harvesting of gag,

Preferred Alternative 4 would suspend the release of red grouper multiuse allocation until replaced by measures in Amendment 32. It is important to note that the interim rule currently in effect has already suspended the issuance of red grouper multiuse shares. **Preferred Alternative 4,** which constitutes a continuation of the suspension of red grouper multiuse shares currently in effect**,** would limit the pressure on gag stock by preventing any harvest in excess of the specified gag quota. Although it restricts the flexibility that IFQ participants would enjoy under **Alternative 1**, **Preferred Alternative 4** is expected to yield positive economic effects due to the anticipated beneficial impacts to the rebuilding of the gag stock which is currently overfished and is undergoing overfishing.

Economic Activity Associated with Commercial Quota Adjustments

This section provides estimates of the economic activity associated with the potential changes in commercial ex-vessel values that may occur as a result of the proposed management changes. This economic activity is characterized in the form of FTE jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value added impacts (difference between the value of goods and the cost of materials or supplies). Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values. These estimates are provided to inform the decision process of the potential consequences of the proposed management actions. However, it should be emphasized that these estimates should not be confused with potential changes in economic value as a result of the proposed management measures. Table 3.3.4.2 provides estimates of potential changes in economic activity associated with the estimated changes in commercial ex-vessel values relative to **Alternatives 1** and **2**.

Based on an estimated decrease in ex-vessel values of approximately $4.89 million (2008 dollars), **Alternative 2** would be expected to result in the loss of 922 FTE jobs, approximately $27.46 million in income impacts, and approximately $60.981 million in output (sales) impacts relative to **Alternative 1**. **Preferred Alternative 3** is expected to result in the loss of 703 FTE jobs, approximately $20.94 million in income impacts, and approximately $49.13 million in output impacts relative to **Alternative 1**. **Preferred Alternative 3** is expected to result in the gain of 219 FTE jobs, approximately $6.52 million in income impacts, and approximately $15.29 million in output impacts relative to **Alternative 2**.

The estimates of the change in economic activity should be used or interpreted with caution. Although some change (loss or gain) of economic activity would be expected with any change in commercial revenues, the full change (loss or gain) of the estimates provided below should not be expected to occur as a result of the proposed management changes. The primary reason for this caution is the calculation of these results does not account for behavioral changes that would be expected to occur in response to the proposed management changes. The nature of these behavioral changes varies by sector. In the commercial sector, any estimated losses in ex-vessel revenues may be overstated if fishermen are able to direct their fishing effort to substitute species. In the event that gains in revenues for a particular species are forecast, these gains may come at the expense of reduced harvests (and revenues) of other species. As a result, the net gain may be over-stated.

Table 3.3.4.2 Potential changes in economic activity and employment associated with the estimated changes in ex-vessel values relative to Alternatives 1 and 2. All dollar values are in 2008 dollars.

Industry Sector	Losses relative to Alternative 1		Gains relative to Alternative 2	
	Alternative 2	Preferred Alternative 3	Alternative 1	Preferred Alternative 3
Ex-vessel values	$4,892,800	$3,731,200	$4,892,800	$1,161,600
Harvesters				
Employment impacts (FTE jobs)	120	92	120	28
Income Impacts	$4,034,835	$3,076,925	$4,034,835	$957,910
Output Impacts	$10,486,915	$7,997,216	$10,486,915	$2,489,699
Primary dealers/processors				
Employment impacts (FTE jobs)	73	56	73	17
Income Impacts	$3,392,657	$2,587,206	$3,392,657	$805,451
Output Impacts	$10,556,763	$8,050,481	$10,556,763	$2,506,282
Secondary wholesalers/distributors				
Employment impacts (FTE jobs)	62	47	62	15
Income Impacts	$3,320,119	$2,531,889	$3,320,119	$788,230
Output Impacts	$7,784,679	$5,936,518	$7,784,679	$1,848,161
Grocers				
Employment impacts (FTE jobs)	37	28	37	9
Income Impacts	$1,381,562	$1,053,565	$1,381,562	$327,997
Output Impacts	$3,005,504	$2,291,967	$3,005,504	$713,537
Restaurants				
Employment impacts (FTE jobs)	630	480	630	150
Income Impacts	$15,326,465	$11,687,808	$15,326,465	$3,638,657
Output Impacts	$32,587,180	$24,850,655	$32,587,180	$7,736,525
Total				
Employment impacts (FTE jobs)	922	703	922	219
Income Impacts	$27,455,638	$20,937,393	$27,455,638	$6,518,245
Output Impacts	$64,421,041	$49,126,837	$64,421,041	$15,294,204

In addition to uncertainty associated with the estimation of changes in ex-vessel revenues, some categories of economic activity associated with these revenues should not be expected to be affected to the extent encompassed by the model estimates when fishing revenues change. As seen in the tables below, commercial fishing revenues are estimated to generate economic activity in multiple sectors of the economy. These include the harvester, dealer/processor, wholesaler/distributor, grocer, and restaurant sectors. Although the loss of jobs and economic activity in the harvester and dealer/processor sectors may seem reasonable in response of declines in fish revenues due to potentially limited substitution opportunities, similar losses in other sectors are less reasonable. The economic activity associated with the estimated change in ex-vessel revenues is dominated by activity in the restaurant sector. Given dining substitution alternatives, including both imported and domestic seafood, as well as non-seafood fare, there should be little expectation that a reduction in the supply of a single species would result in the loss of either the full amount or a substantial portion of the estimated associated economic activity. The same logic applies to activity in the grocers sector and, to lesser degrees, secondary wholesalers/distributors and primary dealers/processors; each sector would be expected to attempt to locate and promote the sales of similar product from alternative sources or other products. Even should diners choose to eat out less in response to a reduced supply of domestic seafood, a portion of the food component of their affected restaurant expenditures would be expected to be re-directed to grocery expenditures, while a portion of the recreational (entertainment) component of their affected restaurant expenditures would be expected to be re-directed towards other recreational activities. The remaining portion of their affected restaurant expenditures would be expected to be redirected to other budget expenses. As a result, although the resulting economic activity associated with these behavioral changes would no longer be associated with the domestic fishery for the regulated species, the economic activity in certain sectors would likely be maintained rather than lost. In the case of expected gains in revenues, improved employment conditions (greater job stability and improved incomes for current workers) may occur, particularly initially, instead of increased employment in the harvester and dealer/processor sectors, and in the grocer and restaurant sectors, increased consumption or purchases of the subject species may occur at the expense of other species/products rather than represent new economic activity supporting new jobs.

In summary, the following results capture neither the behavioral possibilities within the fishing industry itself nor the substitution possibilities in associated sectors. Some loss of economic activity in some sectors and communities is likely unavoidable in response to reduced commercial ex-vessel revenues. However, loss of the total economic activity associated with these revenues should not be expected. Similarly, some gain in economic activity would likely occur in the event of increased commercial revenues. However, gain of the total potential economic activity associated with these revenues should not be expected.

Action 2: 2011 Gulf of Mexico Recreational Harvest

Analysis of Costs and Benefits

For this action, the potential economic effects on the recreational sector of **Alternative 2**, **Preferred Alternative 3, Option a** (hereafter referred to as **Alternative 3a**) and **Preferred Alternative 3, Preferred Option b** (hereafter referred to as **Preferred Alternative 3b**) are

evaluated relative to **Alternative 1**, no action. These alternatives are considered for the cases with and without a 6-month extension of the interim rule. The alternatives are described in detail in Section 3.2 and the scenarios are summarized in Table 3.3.3.3. The interim rule would manage the sector from June 1, 2011 through November 30, 2011. The interim rule with a 6-month extension would manage the sector through May 31, 2012.

Table 3.3.3.3. Alternatives with Different Assumptions about the Extension of the Interim Rule

Analysis encompasses these dates		
Alternative	Interim rule without extension	Interim rule with 6 month extension
1 (No Action)	June 1, 2011-Nov. 30, 2011	June 1, 2011-May 31,2012
2	June 1, 2011-Nov. 30, 2011	June 1, 2011-May 31,2012
3a	June 1, 2011-Nov. 30, 2011	June 1, 2011-May 31,2012
3b	June 1, 2011-Nov. 30, 2011	June 1, 2011-May 31,2012
Dates sector closed		
Alternative	Interim rule without extension	Interim rule with 6 month extension
1 (No Action)	Feb 1-Mar 31, 2012	Feb 1-Mar 31, 2012
2	June1- Nov. 30, 2011, Feb 1-Mar 31, 2012	June 1-Dec. 31, 2011, Jan. 1-May 31, 2012
3a	June 1-30, 2011, Aug.16-Nov. 30, 2011, Feb 1-Mar 31, 2012	June 1-30 2011, Aug.16-Dec. 31, 2011, Jan. 1-May 31, 2012
3b	June 1-Sept. 15, 2011, Nov.16-Nov. 30, 2011, Feb 1-Mar 31, 2012	June 1-Sept. 15, 2011, Nov. 16-Dec. 31, 2011, Jan. 1-May 31, 2012

The procedure for calculating the economic effects of these alternatives on the recreational sector, from the standpoint of costs and benefits to the nation, involves estimating the expected changes in consumer surplus (CS) to anglers and net operating revenues (NOR) (i.e. producer surplus (PS)) to charter vessels and headboats (for-hire vessels). CS per trip is the amount of money that an angler would be willing-to-pay for a fishing trip over and above the cost of the trip. The CS per fish measures how much the CS per trip changes when the number of fish that the angler is able to harvest changes by one. The CS per fish is assumed to be the same regardless of the number of fish caught per trip and the same for all anglers so that the change in CS for a change in the total allowable harvest is measured as:

(1) $dCS = (H^1 - H^0)*v^*$

where H^0 and H^1 measure the total number of fish harvested by the recreational sector under the no action and proposed alternatives, respectively, and v^* is the constant CS per gag fish harvested.[12]

[12] The assumption of a constant CS per trip is common in popular travel cost models such as those based on count

PS for a for-hire fishing trip is the amount of money the operator earns on the trip over and above the economic cost of providing the trip. In the case of a reduction in the length of the gag season, some trips that formerly targeted gag will now target other species and some trips will be canceled. Assuming that the PS per trip is constant regardless of the species targeted, for-hire operators would only lose value from the trips canceled as a result of the shortened season length. In the absence of reliable information on how many trips will be canceled when the gag season is shortened, this analysis assumes that all of the existing for-hire gag target trips will be canceled. Because some of these trips would probably not be canceled, this assumption, in combination with a constant PS per trip, is expected to overestimate the reduction in PS associated with a shorter season:

(2) $dPS = (X^1 - X^0)*r$

where X^0 and X^1 measure the total number of for-hire fishing trips targeting gag with the no action and proposed alternatives, respectively, and r equals the constant PS per trip. Note that the value for X^1, X^0, and r will be different for charter vessels and headboats.

The information necessary to apply the above framework to the proposed 2011 recreational policies for gag is as follows: 1) the estimated total landings in lbs and numbers of gag for each alternative; 2) an estimate of the constant CS per gag harvested; 3) an estimate of the constant for-hire PS per gag angler trip; and 4) the estimated total number of recreational trips targeting gag that occur in the period between the close of the no action season and the close of the proposed seasons.

Recreational landings of gag in 2011-12 are assumed to be equal to the average of estimated landings from the corresponding period from 2006 to 2008 (Table 3.3.3.4). Under **Alternative 1**, no action, the recreational sector for gag (and other shallow water grouper) in the Gulf of Mexico (Gulf) would be closed during February and March of 2012 and open during the other months. Landings of gag are expected to be 1,134,340 lbs from June 1, 2011-Nov. 30, 2011, and 1,079,212 lbs from Dec. 1, 2011-May 31, 2012.

Therefore, under **Alternative 2**, which would close the sector from June 1, 2011-Nov. 30, 2011, the average reduction in landings would be 1,134,340 lbs relative to **Alternative 1**. If the interim rule is extended for an additional 6 months, then the recreational sector would be closed through May 31, 2012 and the average reduction in landings would be 2,213,552 lbs relative to **Alternative 1**.

Under **Alternative 3a**, which would close the sector from June 1-30, 2011 and Aug. 16-Nov. 30, 2011, the average reduction in landings would be 898,411 lbs. If the interim rule is extended for

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data or discrete choice specifications, especially when the assumption of repeated-choice is employed (Hellerstein and Mendelsohn 1993; Morey 1994). A constant marginal utility of income is also assumed such that there is no difference between compensated or uncompensated measures of CS (Johanssen 1987 pp. 62-66). This assumption implies that demands, including the demand for gag fishing, are independent of income with, for example, a utility function that is separable in a numéraire good.

an additional 6 months, then the recreational sector would be closed through May 31, 2012 and the average reduction in landings would be 1,977,623 lbs relative to **Alternative 1**.

Under **Preferred Alternative 3b**, which would close the sector from June 1-Sept. 15, 2011 and Nov.16-Nov. 30, 2011, the average reduction in landings would be 820,898 lbs. If the interim rule is extended for an additional 6 months, then the recreational sector would be closed through May 31, 2012 and the average reduction in landings would be 1,900,110 lbs relative to **Alternative 1**.

There are no estimates of the value of gag to anglers; however, three potential measures of CS per grouper are reported in Table 3.3.3.5. All of the estimates in the table are relatively close. For current purposes, the value from Carter and Liese (2010) is used because this estimate is based on a model where the angler has the option to take trips for another species (dolphin, grouper, or king mackerel) or not fish at all. The other estimates in Table 3.3.3.5 assume the angler will continue fishing for another species. The estimate of $71 is the additional CS (in 2003 dollars) for the second fish kept on a trip targeting grouper. To evaluate the closed season (or zero bag limit), an estimate of the angler CS for the first fish caught and kept would be needed. However, the value of the first fish kept cannot be estimated from the data available in Carter and Liese (2010). Note, also, that trips not targeting gag will also be prevented from keeping gag during the closed season. The CS per fish for anglers on these trips will likely be less than the $71 estimated for anglers targeting grouper. Using a CPI adjustment factor of 1.192 (CUUR0000SA0, Jun-2003 to Jun-2008), the estimate of $71 in 2003 dollars is equivalent to $85 in 2008 dollars.

The change in CS associated with **Alternative 2**, **Alternative 3a**, and **Preferred Alternative 3b** relative to **Alternative 1** is shown in the last two rows of Table 3.3.3.6. These estimates are calculated according to equation (1) using the anticipated change in landings (converted to numbers of fish) and the constant CS per fish of $85.

The measures of constant PS per trip for charter vessels and headboats comes from the "Response to the 7/10/09 Data Request for Amendment 17a to the Snapper-Grouper Fishery Management Plan of the South Atlantic, 7/27/2009." For charter vessel trips, the estimate of $148 net revenue (cash flow) per angler is used and the estimate of $49 per angler is used for headboat trips. Both of these estimates are in 2008 dollars.

Table 3.3.3.4. Average Annual Recreational Landings of Gag in the Gulf: 2006-2008		
Month	Landings	Cumulative Landings
January	226,742	226,742
February	112,282	339,024
March	166,242	505,266
April	235,282	740,548
May	319,379	1,059,927
June	306,464	1,366,391
July	157,573	1,523,965
August	156,711	1,680,675
September	112,671	1,793,346
October	113,291	1,906,638
November	287,630	2,194,267
December	297,809	2,492,077

Table 3.3.3.5. WTP for one additional keep of grouper on targeted trips in the Southeast U.S. (2003$)

Study	Study Year	Scope	Modes	Substitute Species	Quality measure	starting # of fish	WTP
Carter and Liese 2010	2003	Gulf, and SA	PR, CB	red snapper, dolphin, king mackerel, no trip	hypothetical keep	1	$71 (65, 77)
Gentner 2009	2006	Gulf	PR, CB	none	predicted keep	constant	$87
Haab et al. 2009	2000	Gulf	PR, CB	red snapper, other snappers	5 year average keep	constant	$104 (93, 117)
Notes: Gulf = Gulf of Mexico, SA = South Atlantic, PR = Private Boats, CB = Charter vessels.							

The last item in the list of data requirements is calculated for anglers fishing from charter vessels using MRFSS effort estimates and information on the number of MRFSS intercept trips targeting gag. Table 3.3.3.7 demonstrates the estimation of the number of anglers on charter trips targeting gag in the Gulf (Louisiana through Florida).[13] The first row in Table 3.3.3.7 shows the

[13] Potential trips in Texas are not considered because the harvest of gag in Texas is negligible.

total number of charter anglers intercepted by the MRFSS in the Gulf during each two-month wave from 2006 to 2008. The second and third rows in Table 3.3.3.7 show, respectively, the number and the percent of the intercepts in the first row that targeted gag. The average annual total estimated number of charter trips in the Gulf during each wave from 2006 to 2008 is shown in the fourth row. Finally, the last row shows the estimated total number of charter trips targeting gag in the Gulf as the multiplication of the third and fourth rows.

Table 3.3.3.6. Change in CS to the Recreational Fishery Associated with Alternative 2, Alternative 3a, and Preferred Alternative 3b Relative to Alternative 1

Measure	Alternative 1	Alternative 2	Alternative 3a	Alternative 3b
	Interim Rule without extension			
lbs	1,134,340	0	235,929	313,442
fish	152,876	0	31,796	42,243
Reduction in CS relative to Alternative 1		$12,944,460	$10,291,800	$9,403,805
	Interim Rule with extension			
lbs	2,213,552	0	235,929	313,442
fish	298,332	0	31,796	42,243
Reduction in CS relative to Alternative 1		$25,357,370	$22,654,710	$21,766,715

Notes: The landings in lbs is converted to fish using the average lbs per fish across all modes and waves from 2006 to 2008 of 7.42. The reduction in landings is converted to the reduction in CS using a value of $85 per grouper from Carter and Liese (2010) in 2008 dollars.

The estimated change in NOR on charter trips associated with **Alternative 2**, **Alternative 3a**, and **Preferred Alternative 3b** relative to **Alternative 1** is shown in Table 3.3.3.8. The second and third columns of the Table show how the estimated number of anglers per wave targeting gag on charter trips from Table 3.3.3.7 is converted to estimates per month according to the share of days in each month of each wave. The estimated total NOR per month on charter trips targeting gag is shown in the fourth column. Columns five through eight show the reduction in angler trips targeting gag from column 3 associated with each alternative.[14] The corresponding reduction in NOR is shown in the last four columns. The last two rows of the table shows the estimated total reduction in trips and NOR anticipated with **Alternative 2**, **Alternative 3a**, and **Preferred Alternative 3b** relative to **Alternative 1**.

[14] The reductions in gag target trips are assumed to be relative to a case where the season is open all year, which is not strictly true because the estimated number of anglers targeting gag on charter trips in the last row of Table 3.4.3.7 are based on data from 2006 through 2008. Recreational fishing for gag, red, and black groupers was closed from February 15th to March 14th in 2007-08 so some reduction in trips relative to "open all year" is already in the last row of Table 3.4.3.7. However, because the economic measures of interest concern changes relative to **Alternative 1**, this is not an issue.

The last item in the list of data requirements is calculated for anglers fishing from headboats using the NMFS Headboat Survey estimates for 2006 through 2008 and the information in Table 3.3.3.7 on the percentage of charter angler trips targeting gag. The percentage of angler trips targeting gag on headboats is assumed to be the same as the percentage calculated for charter vessels because target information is not available for headboats. The estimated change in PS (NOR) on headboat trips associated with **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** relative to **Alternative 1** is shown in Table 3.3.3.9. The estimated number of headboat anglers targeting gag in the Gulf is shown in column three and the associated NOR is shown in column four. Columns five through eight show the reduction in angler trips targeting gag from column three associated with each alternative.[15] The corresponding reduction in NOR is shown in the last four columns. The last two rows of the table shows the estimated total reduction in trips and NOR anticipated with **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** relative to **Alternative 1**.

The overall estimated change in economic value to the Gulf recreational fishery associated with **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** relative to **Alternative 1** is shown in Table 3.3.3.10. A summary of the effects is as follows.

Relative to **Alternative 1**, no action, reductions in CS are estimated to be $12.94 million, $10.29 million, and $9.40 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in CS are estimated to be $25.36 million, $22.65 million, and $21.77 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Relative to **Alternative 1**, no action, reductions in NOR (charter plus headboat) are estimated to be $626,915, $562,986, and $463,167 for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in NOR are estimated to be $1,652,973, $1,589,044, and $1,407,454 for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Thus, relative to **Alternative 1**, no action, reductions in net economic benefits are estimated to be $13.57 million, $10.85 million, and $9.87 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in net economic benefits are estimated to be $27.01 million, $24.24 million, and $23.26 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Therefore, of the alternatives under consideration, CS, NOR, and net economic benefits to the recreational sector are maximized under **Alternative 1**. However, the reduction in recreational harvest under **Alternative 1** would only be between 15 to 20%, depending on the years used to estimate the reductions. This level of reduction is insufficient to allow the stock to rebuild and would be inconsistent with the stock rebuilding plan being developed by the Council. In addition, selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because the recreational harvest target would be above the ABC recommended by the Council's SSC of 1.58 MP GW for 2011. In comparing the other alternatives, CS, NOR and net economic benefits to the recreational sector are the greatest under **Preferred Alternative 3b**, followed by **Alternative 3a**, and the least under **Alternative 2**.

[15] See footnote 3.

Table 3.3.3.7. Calculation of Charter Trips Targeting Gag in the Gulf by Wave

2006-2008 Measure	Wave1	Wave2	Wave3	Wave4	Wave5	Wave6	Total
Total Intercepts	2,677	5,327	6,103	4,264	3,720	2,685	24,776
Total Intercepts Targeting Gag	80	111	78	12	17	101	399
% of Total Intercepts Targeting Gag	2.99%	2.08%	1.28%	0.28%	0.46%	3.76%	1.61%
Average Estimated Charter Trips	72,728	163,065	250,261	189,694	90,698	78,838	845,283
Charter Trips Targeting Gag	2,173	3,398	3,198	534	414	2,966	12,684
Notes: Intercepts refer to the intercept survey of the MRFSS. The average annual estimated charter trips by wave are also from the MRFSS.							

Table 3.3.3.8. Estimated Total Net Operating Revenue (NOR) on Charter Trips Targeting Gag in the Gulf

				Total Reduction in Trips (relative to open all year)				Total Reduction in Net Operating Revenue (relative to open all year)			
Month	Share of Wave	Gag Target Trips	NOR on Gag Target Trips	Alt1	Alt2	Alt3a	Alt3b	Alt1	Alt2	Alt3a	Alt3b
Jan	0.65164	1,416	$209,609	0	1,416	1,416	1,416	$0	$209,609	$209,609	$209,609
Feb	0.34836	757	$112,056	757	757	757	757	$112,056	$112,056	$112,056	$112,056
Mar	0.40461	1,375	$203,467	1,375	1,375	1,375	1,375	$203,467	$203,467	$203,467	$203,467
April	0.59539	2,023	$299,410	0	2,023	2,023	2,023	$0	$299,410	$299,410	$299,410
May	0.5082	1,625	$240,568	0	1,625	1,625	1,625	$0	$240,568	$240,568	$240,568
June	0.4918	1,573	$232,807	0	1,573	1,573	1,573	$0	$232,807	$232,807	$232,807
July	0.5	267	$39,505	0	267	0	267	$0	$39,505	$0	$39,505
Aug	0.5	267	$39,505	0	267	134	267	$0	$39,505	$19,753	$39,505
Sept	0.4918	204	$30,169	0	204	204	102	$0	$30,169	$30,169	$15,085
Oct	0.5082	211	$31,174	0	211	211	0	$0	$31,174	$31,174	$0
Nov	0.4918	1,458	$215,857	0	1,458	1,458	729	$0	$215,857	$215,857	$107,929
Dec	0.5082	1,507	$223,036	0	1,507	1,507	1,507	$0	$223,036	$223,036	$223,036
Total		12,684	$1,877,237	2,132	12,684	12,284	11,853	$315,523	$1,877,237	$1,817,906	$1,722,977
Reduction relative to Alt 1: without extension of interim rule					**3,980**	**3,540**	**2,938**		**$589,017**	**$529,760**	**$434,831**
Reduction relative to Alt 1: with extension of interim rule					**10,552**	**10,111**	**9,509**		**$1,561.640**	**$1,502,383**	**$1,407,454**

Notes: Assuming constant NOR per angler on a charter trip of $148 in 2008 dollars. February and March are closed to gag fishing under all Alternatives**.**

Table 3.3.3.9. Estimated Total Net Operating Revenue (NOR) on Headboat Trips Targeting Gag in the Gulf

				Total Reduction in Trips (relative to open all year)				Total Reduction in Net Operating Revenue (relative to open all year)			
Month	Headboat Angler Days	Gag Target Trips	NOR on Gag Target Trips	Alt1	Alt2	Alt3a	Alt3b	Alt1	Alt2	Alt3a	Alt3b
Jan	8,649	258	$12,665	0	258	258	258	$0	$12,665	$12,665	$12,665
Feb	11,089	331	$16,238	331	331	331	331	$16,238	$16,238	$16,238	$16,238
Mar	17,049	355	$17,408	355	355	355	355	$17,408	$17,408	$17,408	$17,408
April	18,513	386	$18,903	0	386	386	386	$0	$18,903	$18,903	$18,903
May	18,241	233	$11,423	0	233	233	233	$0	$11,423	$11,423	$11,423
June	24,399	312	$15,280	0	312	312	312	$0	$15,280	$15,280	$15,280
July	26,026	73	$3,589	0	73	0	73	$0	$3,589	$0	$3,589
Aug	15,709	44	$2,166	0	44	22	44	$0	$2,166	$1,083	$2,166
Sept	8,061	37	$1,805	0	37	37	19	$0	$1,805	$1,805	$903
Oct	10,105	46	$2,263	0	46	46	0	$0	$2,263	$2,263	$0
Nov	6,942	261	$12,795	0	261	261	131	$0	$12,795	$12,795	$6,398
Dec	5,669	213	$10,444	0	213	213	213	$0	$10,444	$10,444	$10,444
Total	178,624	2,549	$124,979	687	2,549	2,454	2,355	$33,646	$124,979	$120,307	$115,417
Reduction relative to Alt 1: without extension of interim rule					773	678	579		$37,898	$33,226	$28,336
Reduction relative to Alt 1: with extension of interim rule					1,863	1,768	1,669		$91,333	$86,661	$81,771

Notes: The monthly number of headboat angler days (trips) is an annual average from the NMFS Headboat Survey from 2006 to 2008. The percent targeting gag is assumed to be the same as for anglers on charter vessels from row 3 in Table 3.3.3.7. Assuming constant NOR per angler on a headboat trip of $49 in 2008 dollars. February and March are closed to gag fishing under all Alternatives.

Table3.3.3.10. Total Change in Economic Value to the Recreational Sector Associated with Alternative 2, Preferred Alternative 3a, and Preferred Alternative 3b Relative to Alternative 1

Measure	Alt2	Alt3a	Alt3b
	--Interim Rule without extension--		
CS: Anglers	$12,944,460	$10,291,800	$9,403,805
PS: Charter vessels	$589,017	$529,760	$434,831
PS: Headboats	$37,898	$33,226	$28,336
Total	$13,571,375	$10,854,786	$9,866,972
	--Interim Rule with extension--		
CS: Anglers	$25,357,370	$22,654,710	$21,766,715
PS: Charter vessels	$1,561,640	$1,502,383	$1,401,454
PS: Headboats	$91,333	$86,661	$81,771
Total	$27,010,343	$24,243,754	$23,255,940
Note: Estimates are in 2008 dollars.			

Analysis of Economic Impacts

The procedure for estimating the economic impacts of the various alternatives on the recreational sector involves tracing the changes in regional or state economic activities from angler expenditures to the supporting industries that directly or indirectly conduct business related to recreational fishing. Economic impacts or activities are generally characterized in the form of FTE jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value added impacts (difference between the value of goods and the cost of materials or supplies). Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values.

The technique used in estimating economic impacts is the so-called input-output analysis. This technique exploits the relations among various sectors/industries, with an industry depending on input from another and supplying its output to another industry. These relations can track the changes ("ripple effects") in all industries due to changes in one or more industries. The input-output model used in this proposed rule was developed for and applied in NMFS (2009 and 2010b). This model, however, includes only the private/shore mode and charter mode, and thus does not account for economic impacts in the headboat sector. The general caveats in using this technique are discussed in GMFMC (2010) and are incorporated herein by reference.

Tables 3.3.3.11 through 3.3.3.16 present estimates of changes in angler trips and economic impacts by state and mode under the **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** relative to **Alternative 1**, no action. As in the effects analysis, these alternatives are

considered for the cases with and without a 6-month extension of the interim rule. A summary of the economic impacts is as follows.

Under **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without and with an extension, respectively, the vast majority (more than 99%) of the economic impacts are expected to occur in west Florida. No economic impacts are expected to occur in Louisiana or Mississippi and minimal economic impacts are expected in Alabama.

Most importantly, all modes within the recreational sector (shore, private/rental, and charter) experience lower adverse economic impacts under **Preferred Alternative 3b** relative to **Alternative 3a** and **Alternative 2** without and with an extension, respectively. Specifically, about 12% of the economic impacts are expected to accrue to the charter mode under **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. While most of the economic impacts are expected to accrue to the private/rental mode without an extension, the distribution of economic impacts between the shore mode and private/rental mode differs somewhat between **Alternative 3a** and **Preferred Alternative 3b**. Specifically, approximately 18% and 70% of the economic impacts are expected to accrue to the shore and private/rental modes under **Alternative 3a** while 13% and 75% of the economic impacts are expected to accrue to the shore and private/rental modes under **Preferred Alternative 3b**. Although both modes experience lower adverse economic impacts under **Preferred Alternative 3b** relative to **Alternative 3a** and especially **Alternative 2**, the reduction in economic impacts is relatively greater for the shore mode compared to the charter mode and particularly the private/rental mode.

Similarly, about 16% of the economic impacts are expected to accrue to the charter mode under **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively. While most of the economic impacts are expected to accrue to the private/rental mode with an extension, the distribution of economic impacts between the shore mode and private/rental mode differs slightly between **Alternative 3a** and **Preferred Alternative 3b**. Specifically, approximately 14% and 70% of the economic impacts are expected to accrue to the shore and private/rental modes under **Alternative 3a** while 11% and 73% of the economic impacts are expected to accrue to the shore and private/rental modes under **Preferred Alternative 3b**. Although both modes experience lower adverse economic impacts under **Preferred Alternative 3b** relative to **Alternative 3a** and especially **Alternative 2**, the reduction in economic impacts is relatively greater for the shore mode compared to the charter mode and particularly the private/rental mode.

Relative to **Alternative 1**, no action, the estimated total reductions in output, value added, and employment are $10.59 million, $6.27 million, and 107 jobs under **Alternative 2,** $8.85 million, $5.24 million, and 90 jobs under **Alternative 3a,** and $6.76 million, $4.01 million, and 68 jobs under **Preferred Alternative 3b** without an extension respectively.

Relative to **Alternative 1**, no action, the estimated total reductions in output, value added, and employment are $21.23 million, $12.57 million, and 215 jobs under **Alternative 2, $**19.49 million, $11.54 million, and 197 jobs under **Alternative 3a,** and $17.47 million, $10.31 million, and 176 jobs under **Preferred Alternative 3b** with an extension respectively.

Therefore, of the alternatives under consideration, adverse economic impacts to the recreational sector are minimized under **Alternative 1**. However, the reduction in recreational harvest under **Alternative 1** would only be between 15 to 20%, depending on the years used to estimate the reductions. This level of reduction is insufficient to allow the stock to rebuild and would be inconsistent with the stock rebuilding plan being developed by the Council. In addition, selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because the recreational harvest target would be above the ABC recommended by the Council's SSC of 1.58 MP GW for 2011. In comparing the other alternatives, adverse economic impacts to the recreational sector are the lowest under **Preferred Alternative 3b**, followed by **Alternative 3a**, and the highest under **Alternative 2**.

Table 3.3.3.11. Reductions in Trips and Economic Impacts of Alternative 2 (Without Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	27,491	0	0	27,491
Output Impact	$0	$1,863,039	$0	$0	$1,863,039
Value Added Impact	$0	$1,082,365	$0	$0	$1,082,365
Jobs	0	20	0	0	20
	Private/Rental Mode				
Target Trips	992	166,493	0	0	167,485
Output Impact	$57,716	$7,559,009	$0	$0	$7,616,725
Value Added Impact	$31,598	$4,494,870	$0	$0	$4,526,468
Jobs	1	75	0	0	76
	Charter Mode				
Target Trips	23	3,498	0	0	3,521
Output Impact	$11,975	$1,098,395	$0	$0	$1,110,370
Value Added Impact	$6,592	$651,235	$0	$0	$657,827
Jobs	0	11	0	0	11
	All Modes				
Target Trips	1,015	197,482	0	0	198,497
Output Impact	$69,691	$10,520,443	$0	$0	$10,590,134
Value Added Impact	$38,190	$6,228,470	$0	$0	$6,266,660
Jobs	1	107	0	0	107

Table 3.3.3.12. Reductions in Trips and Economic Impacts of Preferred Alternative 3 a (Without Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	24,366	0	0	24,366
Output Impact	$0	$1,651,261	$0	$0	$1,651,261
Value Added Impact	$0	$959,328	$0	$0	$959,328
Jobs	0	18	0	0	18
	Private/Rental Mode				
Target Trips	514	135,692	0	0	136,206
Output Impact	$29,905	$6,160,601	$0	$0	$6,190,507
Value Added Impact	$16,372	$3,663,325	$0	$0	$3,679,697
Jobs	0	62	0	0	62
	Charter Mode				
Target Trips	23	3,168	0	0	3,191
Output Impact	$11,975	$994,773	$0	$0	$1,006,748
Value Added Impact	$6,592	$589,798	$0	$0	$596,390
Jobs	0	10	0	0	10
	All Modes				
Target Trips	537	163,226	0	0	163,763
Output Impact	$41,880	$8,806,635	$0	$0	$8,848,516
Value Added Impact	$22,964	$5,212,451	$0	$0	$5,235,415
Jobs	0	89	0	0	90

Table 3.3.3.13. Reductions in Trips and Economic Impacts of Preferred Alternative 3b (Without Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	12,969	0	0	12,969
Output Impact	$0	$878,897	$0	$0	$878,897
Value Added Impact	$0	$510,610	$0	$0	$510,610
Jobs	0	9	0	0	9
	Private/Rental Mode				
Target Trips	938	110,633	0	0	111,571
Output Impact	$54,574	$5,022,889	$0	$0	$5,077,463
Value Added Impact	$29,878	$2,986,798	$0	$0	$3,016,676
Jobs	1	50	0	0	51
	Charter Mode				
Target Trips	23	2,536	0	0	2,559
Output Impact	$11,975	$796,321	$0	$0	$808,296
Value Added Impact	$6,592	$472,136	$0	$0	$478,728
Jobs	0	8	0	0	8
	All Modes				
Target Trips	961	126,138	0	0	127,099
Output Impact	$66,549	$6,698,107	$0	$0	$6,764,656
Value Added Impact	$36,470	$3,969,545	$0	$0	$4,006,015
Jobs	1	68	0	0	68

Table 3.3.3.14. Reductions in Trips and Economic Impacts of Alternative 2 (With Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	43,972	0	0	43,972
Output Impact	$0	$2,979,941	$0	$0	$2,979,941
Value Added Impact	$0	$1,731,248	$0	$0	$1,731,248
Jobs	0	32	0	0	32
	Private/Rental Mode				
Target Trips	1,517	330,914	0	0	332,431
Output Impact	$88,261	$15,023,946	$0	$0	$15,112,207
Value Added Impact	$48,321	$8,933,802	$0	$0	$8,982,123
Jobs	1	150	0	0	151
	Charter Mode				
Target Trips	112	9,822	0	0	9,934
Output Impact	$58,313	$3,084,173	$0	$0	$3,142,486
Value Added Impact	$32,099	$1,828,597	$0	$0	$1,860,697
Jobs	1	32	0	0	32
	All Modes				
Target Trips	1,629	384,708	0	0	386,337
Output Impact	$146,574	$21,088,060	$0	$0	$21,234,634
Value Added Impact	$80,420	$12,493,647	$0	$0	$12,574,067
Jobs	2	213	0	0	215

Table 3.3.3.15. Reductions in Trips and Economic Impacts of Preferred Alternative 3a (With Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	40,848	0	0	40,848
Output Impact	$0	$2,768,231	$0	$0	$2,768,231
Value Added Impact	$0	$1,608,251	$0	$0	$1,608,251
Jobs	0	29	0	0	29
	Private/Rental Mode				
Target Trips	1,038	300,113	0	0	301,151
Output Impact	$60,392	$13,625,539	$0	$0	$13,685,931
Value Added Impact	$33,063	$8,102,256	$0	$0	$8,135,320
Jobs	1	136	0	0	137
	Charter Mode				
Target Trips	112	9,492	0	0	9,604
Output Impact	$58,313	$2,980,551	$0	$0	$3,038,864
Value Added Impact	$32,099	$1,767,160	$0	$0	$1,799,259
Jobs	1	31	0	0	31
	All Modes				
Target Trips	1,150	350,453	0	0	351,603
Output Impact	$118,705	$19,374,320	$0	$0	$19,493,025
Value Added Impact	$65,163	$11,477,668	$0	$0	$11,542,830
Jobs	1	196	0	0	197

Table 3.3.3.16. Reductions in Trips and Economic Impacts of Preferred Alternative 3b (With Extension). Trips are based on 2006-2008 MRFSS. The dollar values are in 2008 dollars.

	Alabama	WFlorida	Louisiana	Mississippi	Total
	Shore Mode				
Target Trips	0	29,450	0	0	29,450
Output Impact	$0	$1,995,799	$0	$0	$1,995,799
Value Added Impact	$0	$1,159,494	$0	$0	$1,159,494
Jobs	0	21	0	0	21
	Private/Rental Mode				
Target Trips	1,463	275,055	0	0	276,518
Output Impact	$85,119	$12,487,871	$0	$0	$12,572,991
Value Added Impact	$46,601	$7,425,757	$0	$0	$7,472,358
Jobs	1	125	0	0	126
	Charter Mode				
Target Trips	112	8,861	0	0	8,973
Output Impact	$58,313	$2,782,413	$0	$0	$2,840,726
Value Added Impact	$32,099	$1,649,684	$0	$0	$1,681,784
Jobs	1	29	0	0	29
	All Modes				
Target Trips	1,575	313,366	0	0	314,941
Output Impact	$143,432	$17,266,083	$0	$0	$17,409,515
Value Added Impact	$78,700	$10,234,935	$0	$0	$10,313,635
Jobs	2	174	0	0	176

3.2.4 Direct and Indirect Effects on the Social Environment

Effects from fishing regulations on the social environment are difficult to analyze due to complex human-environment interactions and a lack of quantitative data about that interaction. Generally, social impacts can be categorized according to changes in: human behavior (what people do), social relationships (how people interact with one another), and human-environment interactions (how people interact with non-human components of their environment, including the enforcement and administrative environment). Social scientists are developing quantitative measures to analyze individual and community well-being as affected by regulatory action. Well-being has been operationalized in terms of job satisfaction (Poggie and Pollnac 2006), fishing dependence (Jacob et al. 2010), and vulnerability (Cutter et al. 2003). It is generally accepted that a positive correlation exists between economic impacts and social impacts. Thus, in the preceding section, direct and indirect effects on the economic environment, alternatives predicting positive or negative economic impacts are likely to have correlating positive or negative social impacts.

As stated previously, the management measures laid out in this interim rule are contingent upon Florida enacting compatible regulations for the recreational sector in state waters, which they have indicated they will do. However, social implications are likely to arise from either action taken by the FWC, to enact compatible regulations or not. If the FWC enacts compatible regulations, recreational fishermen are likely to perceive such compliance as the federal administrative environment infringing upon states' rights. If the FWC does not implement compatible regulations, fishing for gag in state waters will be opened to the recreational sector. Although this may provide positive social impacts for Florida's recreational sector in the short term, this would undermine the goals of rebuilding the gag stock and likely lead to a continued closure on gag in federal waters into the future. For the commercial sector, if compatible regulations are not adopted by the state, then the increase in commercial quota outlined in **Action 1**, **Preferred Alternative 3** cannot be implemented as the resulting total harvest from state waters by recreational fishermen would exceed the overfishing level of gag. Should FWC not implement compatible regulations, a potential social implication would be the further polarization between the recreational and commercial sectors.

Action 1: Commercial management measures

This interim rule considers alternatives that affect the commercial quota for gag in 2011 and the provision within the IFQ program for adjusting allocation among target species. Thus, potential direct adverse social effects on communities would occur in relation to the potential reduction in the commercial sector's quota. In general, adverse social effects would be the result of potential reductions in revenue due to reduced commercial gag landings. A reduction in the commercial sector's quota could directly reduce the revenues and profits of businesses in the harvesting sector, and indirectly reduce the revenue and profits of dealers and other associated businesses, such as fishing gear and fuel suppliers, seafood markets, and seafood restaurants, as well as the incomes of individuals and households associated with these businesses. Revenue and profit reductions could lead to job losses in these sectors as well, affecting the well-being of individuals and households in the commercial sector (Pollnac and Poggie 1988, 2006, 2008).

Based on the data presented in section 2.4 (Description of the Social Environment) in NMFS (2010a), the effects on the social environment from **Action 1** are likely to be greatest in Florida, where the majority of gag landings occur. After accounting for the revenue from gag for IFQ dealers, the revenue from gag for initial gag shareholders, and the concentration of shareholder vessels for the years 2008-2010 (Table 2.4.6 in NMFS 2010a), the individual communities of Panama City, Apalachicola, Madeira Beach, and St. Petersburg have the strongest relationship with the commercial gag sector. Clearwater, Panacea, Redington Shores, Steinhatchee, and Tarpon Springs also have relatively strong ties to the gag fishing. At the county level, Pinellas County has the strongest relationship of any county in the Gulf region to the commercial gag harvest. Thus, it is within these areas that adverse effects from **Action 1** are likely to be the greatest, overall.

Alternative 1, no action, would maintain the currently scheduled commercial quota of 1.49 MP in 2011 and, as a result, would not be expected to result in any further adverse social effects on communities. However, this conclusion does not necessarily imply that the commercial sector would harvest the entire quota in 2011. As previously noted, gag landings in 2008 and 2009 were 1.25 and 0.73 MP respectively. Thus, the commercial sector only harvested 49% of its presently scheduled 2011 quota in 2009. The new grouper/tilefish IFQ program was implemented at the beginning of 2010, representing a drastic social change to commercial fishing. Also in 2010, the DeepwaterHorizon MC252 oil spill affected effort in the reef fish fishery as many vessels joined the clean-up process and were not actively fishing. A large area of the Gulf was closed to fishing, including federal waters offshore of the western Florida panhandle (Figure 3.2.4.1). This region is heavily dependent on commercial gag harvest, having substantial commercial gag landings in preceding years (Figure 2.4.10, 2.4.11 in NMFS 2010a), and was thus significantly impacted by the oil spill. It is difficult to isolate potential impacts from this Action given these events. Commercial landings of gag in 2010 totaled approximately 0.5 MP, representing 35% of the 2010 IFQ quota. In addition to the new IFQ program and the oil spill closures, it appears that a reduction in gag abundance, the longline gear restrictions initially implemented in 2009, or a combination thereof led to a relatively significant reduction in landings. When combined with the depressed status of the stock and the limitation on the number of vessels allowed to use this gear under the endorsement program, it would seem likely that landings will continue to be relatively low by recent standards, even though vessels are expected to adapt to the new regulations by changing their gear and/or their gag shares and allocations.

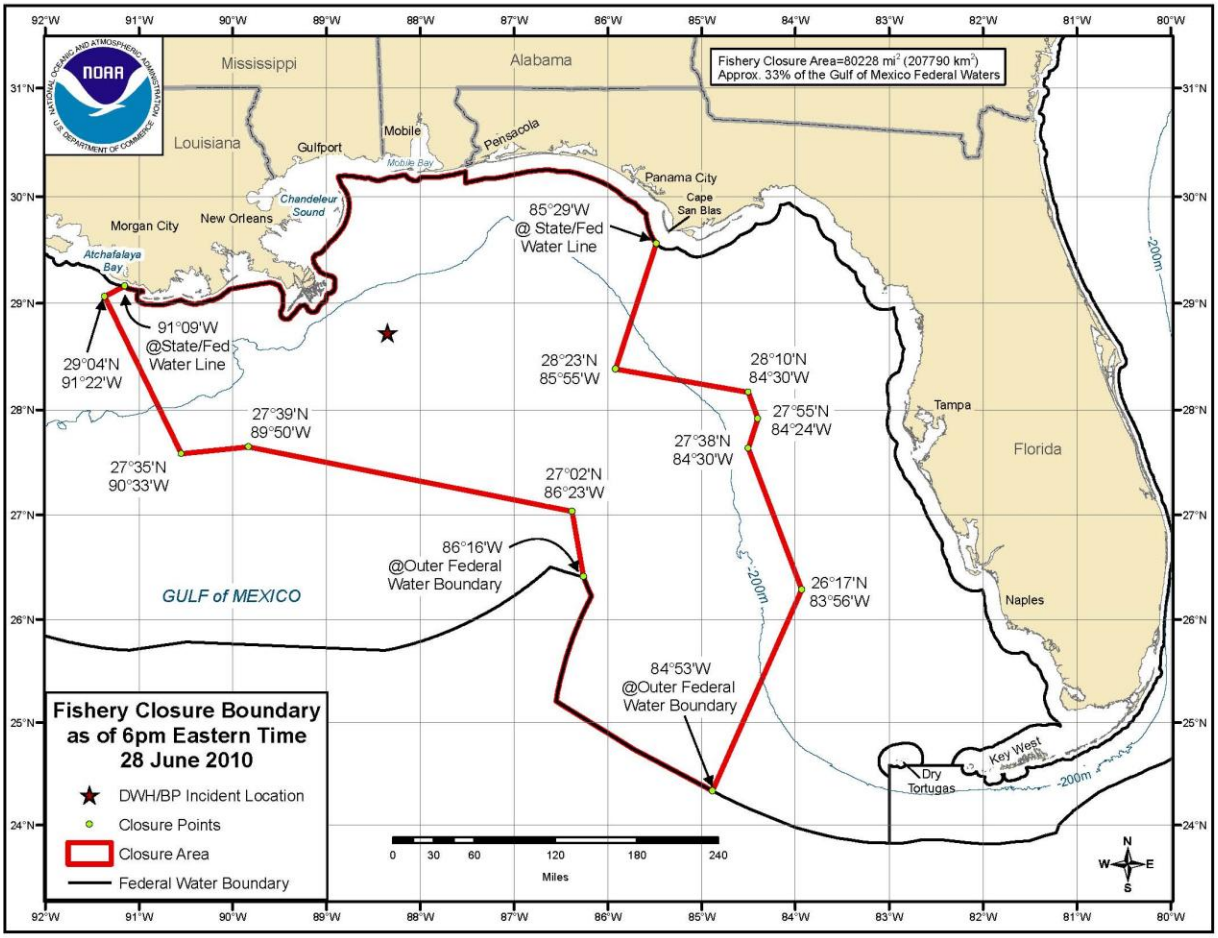

Figure 3.2.4.1 Map of federal fishery closure on June 28, 2010, resulting from the DeepwaterHorizon MC252 oil spill.

Alternative 2 maintains the commercial gag quota at 100,000 pounds GW, as established under the 2010 interim rule. This quota was requested by the Council in August 2010 and represents a significant reduction of the commercial sector's quota which would be reduced by 1.39 MP or approximately 93% relative to **Alternative 1**. Although the quota reduction would not reduce the shares held by gag shareholders, it would reduce each shareholder's allocation proportionally (i.e. by 93%). If the commercial sector would have otherwise harvested its entire quota in 2011, then a proportional reduction in gross revenue would be expected to occur for shareholders and their respective vessels. Although it is not expected that the entire quota would be harvested in the aggregate, this reduced quota is considerably less than the 2008 landings and even the much lower landings in 2009. The quota under **Alternative 2** represents only 20 percent of the gag landings in 2010, the year during which landings were subject to the new IFQ program and impacted by the DeepwaterHorizon MC252 oil spill.

Given the significant reduction in allocations under **Alternative 2**, it is highly likely that the vast majority of shareholders' allocations would be restricted below their intended harvests in 2011. Further, the more restrictive their reduced allocations under **Alternative 2**, the greater the

adverse social effects will be, including a reduction in income and social well-being. The reductions would in turn adversely affect the individuals directly associated with the shareholder's vessel (e.g. captain, crew, and their respective households) and entities that conduct business with the shareholder's harvesting operations. For example, lower landings and revenue will generally translate into reduced spending on fuel, fishing supplies, and boat/gear maintenance services, which reduces the flow of revenue and income for the businesses that supply these products and services. Further, lower landings will lead to reduced purchases for seafood dealers, which will in turn reduce sales to seafood wholesalers and distributors, retailers, and restaurants. In general, the greater the reduction in landings and revenue in the harvesting sector, the greater will be the reduction in the flow of income in other associated sectors and thus social well-being. Shareholders could purchase additional allocation if their reduced allocations under **Alternative 2** are restrictive. However, purchases of quota allocation would constitute an additional expense for shareholders and their vessels under **Alternative 2**, which would still reduce their profits, income, and welfare below what would be experienced under the status quo (**Alternative 1**).

Preferred Alternative 3 would set the commercial quota at 430,000 pounds GW, including the 100,000 pounds GW established by the 2010 Interim Rule, and also increase the commercial SWG quota to 5.16 million pounds GW. As of March 17, 2011, 48.9% of the 100,000 pound quota has been landed. While the 100,000 pounds GW proposed in **Alternative 2** represents a 93% decrease from the 1.49 MP GW quota (**Alternative 1**), **Preferred Alternative 3** is a 71% decrease from that quota. Thus, adverse impacts are still predicted based on the drastically reduced quota, in line with the discussion for **Alternative 2** above, but the adverse social impacts would be less than those expected under **Alternative 2**, while still remaining consistent with current National Standard 1 guidance and the Council's management objectives.

As noted above, the issue is not simply whether the reduced quota would restrict the aggregate harvest, but rather whether each shareholder's intended 2011 landings would be restricted by its reduced allocation under **Preferred Alternative 3** but not its allocation under **Alternative 1**. If a shareholder's intended 2011 landings would be restricted by its allocation under **Preferred Alternative 3** but not its allocation under **Alternative 1**, then **Preferred Alternative 3** would have a direct adverse effect on the shareholder relative to **Alternative 1** via a reduction in landings and gross revenue, which would likely translate into a reduction in profits, income, and social well-being. Again, these reductions would lead to indirect adverse effects. In general, the greater the reduction in landings and revenue in the harvesting sector, the greater will be the reduction in the flow of income in other associated sectors and thus social well-being.

The gap between the quota and the aggregate landings from previous years is also narrowed under **Preferred Alternative 3**. The commercial gag quota was not met in 2009 or 2010, the first years for which a quota has been set for gag. Although commercial gag landings in 2009 were considerably below the quota for that year, the 430,000 pound GW quota proposed under **Preferred Alternative 3** remains a 41percent reduction from the 733,292 pounds GW landed in 2009, and a 13% reduction from aggregate landings in 2010. It remains likely that under **Preferred Alternative 3**, shareholders' allocations will remain restricted below their intended harvests in 2011, although less so than under **Alternative 2**, thereby alleviating the more extreme social impacts that can be expected under **Alternative 2**.

Under **Alternative 2** and **Preferred Alternative 3**, the social impacts will likely be realized in changes in fisher behavior, again, with lesser social impacts under **Preferred Alternative 3**. It is difficult to isolate effects that result directly or indirectly from these alternatives alone, as impacts could be related to other factors, including the newly implemented IFQ program. Without available gag quota, there will likely be an effort shift toward other species. One fisherman in Apalachicola stated that he will likely switch effort and target vermilion snapper and porgys. The fisherman reported, however, that his decision to shift effort is at least in part due to the high cost of leasing shares and not only due to the decreased availability of quota that is available for lease (S. Smeby[16]).

Preferred Alternative 4 extends the provision within the 2010 Interim Rule which suspended the release of red grouper multi-use allocation until replaced by measures in Amendment 32. The multi-use allocation provision provides additional flexibility to IFQ participants by allowing them to adjust to geographical and temporal variations in the red grouper to gag ratio and thus contributes to the reduction in the number of gag discards. However, due to the decrease in the gag commercial quota under **Alternative 2** and **Preferred Alternative 3**, the percentage of red grouper allocation that could be converted into multi-use allocation might result in gag harvests that would exceed the gag ACL. In addition to the detrimental effects on the gag stock, this scenario could lead to adverse social effects in the future stemming from the corrective management measures that would be implemented to address the over-harvesting of gag. On the other hand, the decrease in flexibility provided by the multi-use allocation provision limits would limit IFQ participants' ability to adjust to fluctuations in red grouper to gag catch ratios, but would reduce the risk of overharvesting gag. Therefore, the continued suspension of the red grouper multi-use allocation is not expected to result in future adverse social effects as a result of future corrective management measures. Further, **Preferred Alternative 4** is the most beneficial to the rebuilding of the gag stock which is currently overfished and undergoing overfishing, and thus is expected to yield positive social effects in the long run.

Action 2: Recreational management measures

Action 2 in this interim rule considers alternatives regarding the recreational harvest of gag. All of the alternatives involve a decrease in gag quota from previous years and are likely to result in negative social impacts. Because gag grouper are most abundant off the Gulf coast of Florida, this is also where the majority of recreational gag landings occur. Section 2.4 (Description of the Social Environment) in NMFS (2010a), provided data on the geographical regions where gag fishing is of greatest importance. It is likely that the areas defined as the most important for the gag harvest will also be the areas with the greatest adverse social impacts. Among the for-hire fishermen, Destin, Panama City, and Key West have the highest concentration of reef fish for-hire permits, with Naples, Pensacola, Panama City Beach, and Sarasota also ranking relatively high. For the recreational sector overall (private, shore, and for-hire), Apalachicola and Steinhatchee have the strongest relationship to gag harvest. Therefore geographically, adverse social impacts are expected to be greatest in these areas.

[16] Commercial fishermen Steve Smeby, personal communication, Apalachacola, Florida

Alternative 1, no action, would allow the current temporary rule to expire and open federal waters to fishing for gag with a 2-fish daily bag limit. The recreational catch target of 2.2 MP, as defined in Amendment 30B, would remain in place. This alternative reduces the total allowable catch 15 to 20% from previous years, but remains inconsistent with the goal of rebuilding the gag stock. Therefore, it is likely that **Alternative 1** will contribute to minimal short term negative social impacts, but necessitate more drastic reductions in subsequent years, thereby contributing to long term negative social impacts.

Based on the 2009 update assessment rerun (SEDAR 2011), the SSC recommended a total allowable catch that is much lower than the quota outlined in Amendment 30B (**Alternative 1**). **Alternative 2** would close the recreational sector in federal waters. This would set the bag limit for gag at zero, effectively closing the sector until other recreational measures could potentially be implemented under Amendment 32. Although this alternative would not allow gag to be landed, there will still be gag discards as anglers target other species. The number of dead discards is substantial. **Preferred Alternative 3** would set a 2011 recreational season for gag in federal waters, with a 2-fish daily bag limit. There are two options for the proposed season under **Preferred Alternative 3**. **Option a** would extend from July 1 – August 15, while the **Preferred Option b** would open the recreational season from September 16 – November 15. The relatively minor adverse social impacts anticipated under **Alternative 1** become very significant if the interim rule is extended (**Alternative 2**). By not allowing a recreational season permitting the landing of gag, **Alternative 2** is predicted to have the greatest adverse social impacts on recreational fishermen in the short term. The social impacts under **Preferred Alternative 3** are predicted to be a compromise between the preceding options.

The lower quota recommended by the SSC is part of the rebuilding process for gag. Despite the longer term goal of rebuilding the stock, designed to lead to positive social impacts for the long term, negative social impacts can be expected in the short term. By extending the closure on targeting gag (**Alternative 2**) or creating a shortened season (**Preferred Alternatives 3**), the number of trips targeting gag will be decreased during the rebuilding process. In addition to negatively impacting the number of recreational trips that are possible, negative social impacts may also be expected due to the discordance between observations made by recreational fishermen and the recommendations of the SSC based on scientific data showing the status of gag as overfished. The difference between fishermen's observations while fishing and the conclusions made by fisheries managers will likely contribute to greater mistrust between the recreational sector and management, including the Council and NMFS. This mistrust may be manifested through a decrease in compliance among recreational fishermen, ultimately undermining the goals of the decrease in quota. Such short term change in behavior is likely to have negative consequences in the long term if a lack of compliance becomes normalized behavior.

The two options under **Preferred Alternative 3** are conditional that the FWC adopts compatible regulations, without which there can be no recreational season in federal waters. The two options for a recreational season were selected based on a negotiation between maximizing the length of a recreational season and achieving the necessary reductions to fishing mortality. Both options maintain the bag-limit and size limit for gag under Amendment 30B. **Option a** (July 1 – August 15) allows for a summer season of 46 days in duration. This season would overlap

minimally with the red snapper season which begins June 1. Although shorter in duration, this option provides a greater opportunity for the for-hire operators to book trips during the summer vacation period. Given public testimony, **Option a** is preferred by those fishermen in the central Gulf region, especially Alabama and the western panhandle of Florida. It is important to note that the federal waters offshore this part of the coast was closed during the summer of 2010 due to the DeepwaterHorizon MC252 oil spill (Figure 3.2.4.1). This means that under **Option a**, for-hire operators in this region will be subject to a second summer closed to gag fishing. **Option b** (September 16 – November 15) was selected as a compromise between a summer and winter season and provides a longer, 61 day season. Based on public testimony, **Option b** is preferred among fishermen from Texas and southwest and central Florida. For-hire and private recreational fishermen report that because gag move to shallower waters in the fall and winter months, they can reduce expenses (fuel and time) by decreasing travel to fishing grounds.

3.3.5 Direct and Indirect Effects on Administrative Environment

None of the alternatives in **Actions 1-2** should result in any substantial direct or indirect effects to the administrative environment, because the type of regulations needed to manage the reef fish fishery would remain unchanged regardless of what harvests are set at. NMFS' Office for Law Enforcement, in cooperation with state agencies, would continue to monitor regulatory compliance with existing regulations and NMFS would continue to monitor both recreational and commercial landings to determine if landings are meeting or exceeding specified quota levels. The enforcement and administrative environments were recently enhanced with IFQ and vessel monitoring (VMS) programs for the commercial grouper sector. For the IFQ program, NMFS is required to monitor the sale of grouper IFQ allocation. Recordkeeping requirements for IFQ shares have improved commercial quota monitoring and prevent or limit overages from occurring. **Action 1, Preferred Alternative 4** could reduce the burden by NMFS for monitoring the use of red grouper multi-use allocation by rescinding this allocation; however, with online tracking of an individual's quota allocation, this burden would be minimal. The VMS requirements have reduced the burden of monitoring compliance with commercial fishing regulations, particularly for area closures.

3.3.6 Cumulative Effects

The cumulative effects from setting the red grouper TAC have been analyzed in Amendment 30B, and cumulative effects to the reef fish fishery have been analyzed in previous amendments (GMFMC 2008a, 2008c, and 2009), and are incorporated here by reference. The effects of setting a gag quota and recreational catch target in this temporary rule are most closely aligned with the effects from the revisions to setting gag TAC in Amendment 30B. This analysis found the effects on the biophysical and socioeconomic environments are positive since they would ultimately restore/maintain the stock at a level that allows the maximum benefits in yield and commercial and recreational fishing opportunities to be achieved. However, short-term negative impacts on the fisheries' socioeconomic environment have occurred and are likely to continue due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized by selecting measures that would provide the least disruption to the fishery while maintaining harvest levels consistent with the rebuilding plan. For the recreational sector, this would mean using combinations of bag limits, size limits and closed seasons to minimize

disruptions, and for the commercial sector by using a combination of size limits with the IFQ program.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. The Environmental Protection Agency's climate change webpage provides basic background information on these and other measured or anticipated effects. Global climate changes could have significant effects on Gulf fisheries; however, the extent of these effects is not known at this time. Possible impacts are outlined in Amendment 31 (GMFMC 2009) and the 2010 Red Grouper Regulatory Amendment (GMFMC 2010). In addition, oil from the DeepwaterHorizon MC252 incident that occurred in April 2010 may affect gag populations. However, the effects of this oil on gag and other reef fish populations are incomplete and unavailable (see 40 CFR § 1502.22) at this time because studies of the effects of the oil spill are still ongoing. If the oil impacts important habitat for these species or interrupt critical life history stages, the effects could reduce these species' population sizes.

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. Landings data for the recreational sector in the Gulf is collected through Marine Recreational Fisheries Statistics Survey, NMFS' Head Boat Survey, and the Texas Marine Recreational Fishing Survey. Marine Recreational Fisheries Statistics Survey has been replaced by Marine Recreational Information Program, a program designed to improve the monitoring of recreational fishing. Commercial data is collected through trip ticket programs, port samplers, and logbook programs. Currently, an update SEDAR assessment of Gulf gag is scheduled for 2013. In response to the Deepwater Horizon MC252 incident, increased frequency of surveys of the recreational sector's catch and effort, along with additional fishery independent information regarding the status of the stock are being conducted. This will allow future determinations regarding the impacts of the Deepwater Horizon MC252 incident on various fishery stocks, including red snapper. At this time it not possible to make such determinations.

4.0 REGULATORY IMPACT REVIEW

4.1 Introduction

The National Marine Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: 1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under the criteria provided in

Executive Order (E.O.) 12866 and provides some information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the impacts that the proposed management alternatives in this interim rule would be expected to have on the reef fish fishery.

4.2 Problems and Objectives

The problems and objectives addressed by this action are discussed in Section 1.2 of this document and are incorporated herein by reference. In summary, management measures considered in this regulatory action are intended to decrease or end overfishing of gag and make the resulting recreational and commercial quotas consistent with goals and objectives of the Council's plan to manage gag to achieve the mandates of the Magnuson-Stevens Act.

4.3 Description of Fisheries

A description of the Gulf reef fish fishery is provided in Section 2.3 of this document and is incorporated herein by reference.

4.4 Impacts of Management Measures

4.4.1 Action 1: Gag Commercial Management Measures

A detailed analysis of the economic effects expected to result from this action is provided in Section 3.3.3 and is incorporated herein by reference. The expected economic effects of the proposed interim rule, which is inherently a short term management measure, are approximated by changes in the aggregate value of gag annual allocations. Average gag IFQ allocation prices are currently estimated at approximately $1.0 per pound (Andy Strelcheck-NMFS, personal communication). Therefore, relative to **Alternative 1**, economic effects anticipated from **Alternative 2** and **Preferred Alternative 3** are estimated at approximately -$1.48 million and -$1.06 million, respectively. The interim rule currently in effect has already restricted the commercial quota to 100,000 lbs gutted weight (**Alternative 2**). Thus, in practical terms, the implementation of **Preferred Alternative 3** is expected to be associated with economic benefits due to the additional release of gag quota to IFQ participants. Relative to **Alternative 2**, the implementation of **Preferred Alternative 3** would result in added economic benefits estimated at $330,000.

4.4.2 Action 2: 2011 Gulf of Mexico Recreational Harvest.

A detailed analysis of the economic effects expected to result from this action is provided in Section 3.3.3 and is incorporated herein by reference. In addition to a no action alternative (**Alternative 1**), **Action 2** considers adjustments to the gag recreational season. **Alternative 2** would temporarily prohibit the recreational harvest of gag until recreational management measures to harvest gag in 2011-12 are established in Reef Fish Amendment 32. **Alternative 3a** would establish a recreational gag fishing season of July 1-August15, 2011 while **Preferred Alternative 3b** would establish a recreational gag fishing season of September 16-November 15,

2011. A 2-fish daily bag limit for gag would be maintained under **Alternative 3a** and **Preferred Alternative 3b**.

Relative to **Alternative 1**, no action, reductions in CS are estimated to be $12.94 million, $10.29 million, and $9.40 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in CS are estimated to be $25.36 million, $22.65 million, and $21.77 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Relative to **Alternative 1**, no action, reductions in NOR are estimated to be $626,915, $562,986, and $463,167 for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in NOR are estimated to be $1,652,973, $1,589,044, and $1,407,454 for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Thus, relative to **Alternative 1**, no action, reductions in net economic benefits are estimated to be $13.57 million, $10.85 million, and $9.87 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** without an extension respectively. Relative to **Alternative** 1, no action, reductions in net economic benefits are estimated to be $27.01 million, $24.24 million, and $23.26 million for **Alternative 2, Alternative 3a,** and **Preferred Alternative 3b** with an extension respectively.

Although net economic benefits to the recreational sector are maximized under **Alternative 1**, the reduction in recreational harvest under **Alternative 1** would only be between 15% and 20%, depending on the years used to estimate the reductions. This level of reduction is insufficient to allow the stock to rebuild and would be inconsistent with the stock rebuilding plan being developed by the Council. In addition, selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because the recreational harvest target would be above the ABC recommended by the Council's SSC of 1.58 MP GW for 2011. In comparing the other alternatives, net economic benefits to the recreational sector are the greatest under **Preferred Alternative 3b**.

4.5 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources that can be expressed as costs associated with the regulations. Costs associated with this specific action would include:

Council costs of document preparation, meetings, public hearings, and information dissemination……..$45,000

NMFS administrative costs of document preparation, meetings, and review……..……...$30,000

TOTAL……...$75,000

The Council and Federal costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds were expended directly for this specific action. There are no permit requirements proposed in this interim rule. Under a fixed budget, any additional enforcement activity due to the adoption of this interim rule would mean a redirection of resources to enforce the new measures.

4.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) An annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this action has been determined to not be economically significant for purposes of E.O. 12866.

5.0 REGULATORY FLEXIBILITY ACT ANALYSIS

5.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct an initial (IRFA) for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the RIR, the IRFA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-

keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.

5.2 Statement of the need for, objectives of, and legal basis for the rule

A discussion of the reasons why action by the agency is being considered is provided in Section 1.2 of this document and is incorporated herein by reference. In summary, the purpose of this interim rule is to decrease overfishing of gag so that the stock can begin to rebuild. This rule would be temporary until long-term measures including a gag stock rebuilding plan can be developed and implemented through Amendment 32. The objective of this interim rule is to allow the gag resource in the Gulf of Mexico (Gulf) to recover and allow harvest at optimum yield. The Magnuson-Stevens Act provides the statutory basis for this interim rule.

5.3 Description and estimate of the number of small entities to which the proposed action would apply

This interim rule is expected to directly affect commercial fishing vessels whose owners possess gag fishing quota shares and for-hire fishing vessels that harvest gag. As of October 1, 2009, 970 entities owned a valid commercial Gulf reef fish permit and thus were eligible for initial shares and allocation in the grouper/tilefish IFQ program. Of these 970 entities, 908 entities initially received shares and allocation of grouper or tilefish, and 875 entities specifically received red gag shares and an initial allocation of the commercial sector's gag quota in 2010. These 875 entities are expected to be directly affected by the proposed actions to reduce the gag commercial quota and prohibit the conversion of red grouper allocation to multi-use allocation.

Of these 875 entities, 215 were not commercially fishing in 2008 or 2009 and thus have no commercial fishing revenue during these years. On average, these 215 entities received an initial allocation of 874 pounds of gag in 2010. Eight of these entities also received a bottom longline endorsement in 2010. These eight entities received a higher initial allocation of gag in 2010, with an average of nearly 3,139 pounds. The other 660 entities that received gag shares and initial allocations in 2010 were active in commercial fisheries in 2008 or 2009.

Of the 660 commercial fishing vessels with commercial landings in 2008 or 2009, 139 vessels did not have any gag landings in 2008 or 2009. Their average annual gross revenue in these two years was approximately $50,800 (2008 dollars). Their average allocation of gag in 2010 was approximately 540 pounds. The vast majority (85%) of these vessels' commercial fishing revenue is from landings of snapper, mackerel, dolphin, and wahoo.

The other 521 commercial fishing vessels did have landings of gag in 2008 or 2009. Their average annual gross revenue from commercial fishing was approximately $71,000 (2008 dollars) between the two years. On average, these vessels had 2,375 pounds and 1,300 pounds of gag landings in 2008 and 2009 respectively, or 1,835 pounds between the two years. Gag landings accounted for approximately 8% of these vessels' annual average gross revenue, and

thus they are somewhat though not significantly dependent on revenue from gag landings. These vessels' average initial gag allocation in 2010 was 2,121 pounds. Therefore, on average, their 2008 gag landings were very near but their 2009 gag landings were considerably less than their 2010 gag allocation. Fifty-two of these vessels also received a bottom longline endorsement in 2010. These particular vessels' average annual revenue was approximately $156,000 (2008 dollars) in 2008 and 2009. Revenue from gag landings fell from approximately $15,900 to $8,400 in 2009 and thus they became relatively less dependent on gag landings. These vessels are highly dependent on revenue from red grouper landings, which accounted for 54% and 47% of their gross revenue in 2008 and 2009 respectively. Revenue from DWG landings decreased only slightly, from approximately $36K in 2008 to $31K in 2009, and thus these vessels became relatively more dependent on revenue from DWG landings. Their average initial 2010 allocation of gag was approximately 5,507 pounds while their average gag landings were 3,933 and 2,204 pounds in 2008 and 2009 respectively. Thus, they have been harvesting well within that allocation in recent years, particularly in 2009.

The for-hire fleet is comprised of charter vessels, which charge a fee on a vessel basis, and headboats, which charge a fee on an individual angler (head) basis. The harvest of gag in the EEZ by for-hire vessels requires a charter vessel/headboat (for-hire) for Gulf reef fish permit. On March 23, 2010, there were 1,376 valid or renewable for-hire Gulf reef fish permits. A valid permit is a non-expired permit. Expired reef fish for-hire permits may not be actively fished, but are renewable for up to one year after expiration. Because of the extended renewal period, numerous permits may be expired but renewable at any given time of the year. The majority (823, or approximately 60%) of the 1,376 valid or renewable permits were registered with Florida addresses. The registration address for the federal permit does not restrict operation to federal waters off that state; however, vessels would be subject to state permitting requirements, should such exist. Although the permit does not distinguish between headboats and charter vessels, it is estimated that 79 headboats operate in the Gulf. The majority of these vessels (43, or approximately 54%) operate from Florida ports. Given that nearly 99% of target effort for gag and 97% of the economic impacts from recreational fishing for gag are in west Florida, it is assumed that the 823 for-hire vessels (780 charter vessels and 43 headboats) in Florida are expected to be directly affected by the proposed action to establish a recreational gag fishing season of September 16, 2011-November 15, 2011.

The Small Business Administration has established size criteria for all major industry sectors in the U.S. including fish harvesters. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $4.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide. For for-hire vessels, the other qualifiers apply and the receipts threshold is $7.0 million (NAICS code 713990, recreational industries).

In 2008 and 2009, the maximum annual commercial fishing revenue by an individual commercial fishing vessel with gag fishing quota shares was approximately $606,000 (2008 dollars). The average charter vessel is estimated to earn approximately $88,000 (2008 dollars) in annual revenue, while the average headboat is estimated to earn approximately $461,000 (2008 dollars). Based on these values, all commercial and for-hire fishing vessels expected to be

directly affected by this interim rule are determined for the purpose of this analysis to be small business entities.

5.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records.

This interim rule would not establish any new reporting, record-keeping, or other compliance requirements.

5.5 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed rule

No duplicative, overlapping, or conflicting federal rules have been identified.

5.6 Significance of economic impacts on small entities

Substantial number criterion

This interim rule, if implemented, would be expected to directly affect 875 of the 908 (96%) commercial fishing entities that initially received shares and allocations in the grouper/tilefish quota share program in 2010. It would also be expected to directly affect 823 of the 1,367 (60%) federally permitted Gulf reef fish for-hire operations. All affected entities have been determined, for the purpose of this analysis, to be small entities. Therefore, it is determined that the proposed rule will affect a substantial number of small entities.

Significant economic impacts

The outcome of "significant economic impact" can be ascertained by examining two factors: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities expected to be directly affected by the measures in this proposed rule are determined for the purpose of this analysis to be small business entities, so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profits for a substantial number of small entities?

Of the 875 entities that received gag shares and an initial allocation of the commercial gag quota in 2010, 215 entities did not participate in commercial fishing in 2008 or 2009. Thus, they had no commercial fishing revenue and did not earn profits from commercial fishing in those two years. On average, these vessels received an initial allocation of 874 pounds of gag quota in

2010. Under the proposed action to reduce the 2011 commercial gag quota from 1.49 million pounds to .43 million pounds, their average allocation of gag in 2011 would be reduced from 952 pounds to 275 pounds, or by approximately 677 pounds. Using the average 2008 price of $3.52 per pound, this loss in allocation could potentially represent a loss of nearly $2,400 (2008 dollars) in gross revenue per entity. Using the 2010 average price of $1.00 per pound of gag allocation, this loss in allocation could potentially represent a loss of $670 (2008 dollars) in net revenue per entity. For eight of these 215 entities that also possess longline endorsements, their average allocation of gag in 2011 would be reduced from 3,418 pounds to 987 pounds, or by 2,431 pounds. Thus, their potential loss in gross revenue and net revenue, estimated to be nearly $8,600 and $2,500 (2008 dollars) respectively, are expected to be somewhat higher.

However, in general, these potential losses in gross revenue and net revenue would only be realized if these 215 entities not only become active in commercial fishing but also specifically intend to harvest gag in 2011 and at a level above their reduced allocation. That is, a reduction in allocation can only lead to a reduction in landings, and thus gross revenue, if these entities intend to harvest at levels above their reduced allocation. Alternatively, losses in gross and net revenue could be due to these entities' inability to sell the allocations they are losing under the proposed action, though this possibility presumes that a demand for these allocations exists. Regardless, the significance of these potential losses in gross revenue and net revenue to these 215 entities cannot be evaluated given the lack of information on potential gross revenue, net revenue, and profits from commercial fishing in general and specifically for gag.

Similarly, for the 139 entities with gag shares that participated in commercial fisheries other than gag, they earned approximately $50,800 in annual gross revenue on average in 2008 and 2009. Profit estimates for these vessels are not currently available. However, because they did not have any gag landings, none of their gross revenue and thus none of their potential profits were the result of gag harvests. Under the proposed action to reduce the commercial gag quota from 1.49 million pounds to .43 million pounds, their average allocation of gag in 2011 would be reduced from 588 pounds to 170 pounds, or by 418 pounds. Using the average 2008 price of $3.52 per pound, this loss in allocation could potentially represent a loss of nearly $1,500 (2008 dollars) in gross revenue per entity. Using the 2010 average price of $1.00 per pound of gag allocation, this loss in allocation could potentially represent a loss of approximately $410 (2008 dollars) in net revenue per entity.

However, these potential losses in gross and net revenue could only lead to a loss in profits if these entities intend to commercially harvest gag in 2011 and at a level above their reduced allocation. That is, a reduction in allocation can only lead to a reduction in landings and thus gross revenue if these entities intend to harvest at levels above their reduced allocation. Thus, for example, if these vessels intended to harvest gag in 2011 at a level equivalent to their 2011 allocation, and this harvest was in addition to rather than in place of their recent commercial fishing activities, the reduction in allocation could lead to a maximum loss of approximately 3% in gross revenue, which could in turn reduce net revenue and profits. Alternatively, losses in gross and net revenue could be due to these entities' inability to sell the allocations being lost under the proposed action, though this possibility presumes that a demand for these allocations exists.

For the 521 entities with gag shares commercially harvested gag in 2008 or 2009, they earned approximately $71,000 (2008 dollars) in annual gross revenue on average in 2008 and 2009. Profit estimates for these vessels are not currently available. However, gag landings accounted for approximately 8% of these vessels' annual average gross revenue, and thus they are somewhat but not significantly dependent on revenue from gag landings. Under the proposed action to reduce the commercial gag quota from 1.49 million pounds to .43 million pounds, these vessels' gag allocations would be reduced from 2,310 pounds to 667 pounds, or 1,643 pounds on average. As these vessels have been harvesting at levels near their 2010 allocation in recent years on average, this reduction in gag allocation is likely to lead to an equivalent reduction in gag landings and therefore gross revenue. Using the average 2008 price of $3.52 per pound, it is estimated that these vessels could lose nearly $5,800 (2008 dollars), or approximately 8%, in annual gross revenue on average. Using the 2010 average price of $1.00 per pound of gag allocation, this loss in allocation would represent a loss of approximately $1,600 (2008 dollars) in net revenue per entity. Since net revenue is assumed to be representative of profits for commercial vessels, these vessels are expected to experience a reduction in profits.

However, 52 of these 521 vessels also received a bottom longline endorsement in 2010. These particular vessels' average annual gross revenue was approximately $156,000 (2008 dollars) in 2008 and 2009, with gag landings accounting for approximately 8% of that gross revenue. These vessels are highly dependent on revenue from red grouper rather than gag landings. Under the proposed action to reduce the commercial gag quota from 1.49 million pounds to .43 million pounds, their allocation of gag in 2011 would decrease from 6,215 pounds to 1,953 pounds, or by 4,262 pounds. As these vessels have been harvesting at levels near their 2010 allocation in recent years on average, this reduction in gag allocation is likely to lead to an equivalent reduction in gag landings and therefore gross revenue. Using the average 2008 price of $3.52 per pound, it is estimated that these vessels could lose $15,000 (2008 dollars), or nearly 10 %, in annual gross revenue on average. Using the 2010 average price of $1.00 per pound of gag allocation, this loss in allocation would represent a loss of approximately $4,200 (2008 dollars) in net revenue per entity. Since net revenue is assumed to be representative of profits for commercial vessels, these vessels are expected to experience a reduction in profits.

No additional economic effects would be expected to result from the revised SWG quota because the updated SWG quota simply reflects the reduction in the commercial gag quota, the effects of which have already been discussed.

Under the proposed action to suspend the conversion of red grouper allocation into multi-use allocation valid toward the harvest of red grouper or gag, minimal adverse economic effects are expected as a result of commercial fishing entities not being allowed to convert 4% of their red grouper allocation into multi-use allocation. Multi-use allocation that has been converted from red grouper allocation can only be used to possess, land, or sell gag after an entity's gag and gag multi-use allocation has been landed, sold, or transferred. Given the proposed reduction in the commercial gag quota, it is likely these entities will exhaust their gag and gag multi-use allocations relatively quickly. Gross revenue from gag landings is greater than gross revenue from an equivalent amount of red grouper landings because gag commands a relatively higher market price. Thus, gross revenue from commercial fishing and, therefore, profits per vessel could be slightly lower than if the conversion were allowed to continue.

Net operating revenues (NOR) are assumed to be representative of profits for for-hire vessels. It is assumed that 823 for-hire vessels, 780 charter vessels and 43 headboats, participate in the recreational harvest of gag. Estimates of NOR from recreational fisheries other than gag and thus across all fisheries in which these charter vessels and headboats participate are not currently available. However, on average, NOR for charter trips targeting gag are estimated to be approximately $1.56 million per year while NOR for headboat trips targeting gag are estimated to be $91,300 per year. Thus, NOR for all trips targeting gag are estimated to be approximately $1.65 million per year. The average annual NOR from trips targeting gag is estimated to be $2,000 per charter vessel and $2,124 per headboat.

When the length of the gag season is reduced and the daily bag limit for gag is set at zero, some trips that formerly targeted gag will instead target other species while other trips that formerly targeted gag will be cancelled. Assuming the NOR per trip is constant regardless of the species targeted, for-hire operators will only lose NOR from trips cancelled as a result of the shortened season length. Information regarding the number of trips cancelled as a result of the shortened season is not current available. Thus, this analysis assumes that all of the current for-hire trips targeting gag will be cancelled when the recreational sector is closed. Because some of these trips would probably not be cancelled, this assumption is expected to overestimate the actual reduction in NOR associated with a shorter season. Thus, the following estimates of losses in NOR and profit for charter vessels and headboats should be considered maximum values.

Under the proposed action to establish a recreational gag fishing season of September 16-November 15, 2011, the losses in NOR for charter vessels and headboats are estimated to be approximately $435,000 and $28,000, respectively, if the interim rule is not extended. Thus, NOR for all trips targeting gag is estimated to be approximately $463,000 if the interim rule is not extended. The average annual losses in NOR for trips targeting gag are estimated to be $560 and $660 per charter vessel and headboat, respectively. These losses in NOR represent a loss in profits of approximately 28% and 31% per charter vessel and headboat, respectively. If the interim rule is extended, the losses in NOR for charter vessels and headboats are estimated to be approximately $1.41 million and $81,800, respectively. Thus, the losses in NOR are estimated to be $1,808 and $1,902 per charter vessel and headboat, respectively. These losses in NOR represent a loss in profits of approximately 75% and 65% per charter vessel and headboat, respectively.

The estimated losses in NOR represent a loss in profit for all charter vessel and headboat trips targeting gag. The proposed action is not expected to affect profit from trips not targeting gag for charter vessels and headboats. For-hire vessel dependence on fishing for individual species cannot be determined with available data. Although some for-hire vessels are likely more dependent on trips that target gag than other for-hire vessels, overall, about three percent of for-hire anglers are estimated to target gag. As a result, while the proposed action would be expected to substantially affect the NOR derived from gag trips, overall, gag trips do not comprise a substantial portion of total for-hire trips nor would they, by extension, be expected to account for a substantial portion of total for-hire NOR.

5.7 Description of significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities

Two alternatives, including the status quo, were considered for the action to set the gag commercial quota at 430,000 pounds. The first alternative, the status quo, would have maintained the gag commercial quota at 1.49 million pounds. This alternative is not consistent with the goals and objectives of the Council's plan to manage gag to achieve the mandates of the Magnuson-Stevens Act. Specifically, selection of this alternative would be inconsistent with current National Standard 1 guidance because the commercial quota would be above the commercial annual catch target of 500,000 pounds, which is based on the acceptable biological catch (ABC) recommended by the Council's SSC of 1.58 million pounds and the Council's defined F_{OY} yield of 1.28 million pounds for 2011. In addition, this alternative would promote overfishing and slow recovery of the stock.

The second alternative would have set the gag commercial quota at 100,000 pounds. This alternative is based on the request made by the Council in August 2010 for the interim rule that published December 1, 2010 and reflects the uncertainty in the stock status at that time due to questions regarding how commercial and recreational discards were treated in the assessment update. When this commercial quota was recommended, it was unknown how revisions to the treatment of discards might influence the rerun of the updated stock assessment. If the rerun of the updated assessment yielded a more pessimistic condition of the stock, then setting the harvest based on the F_{OY} yield (estimated then at 390,000 pounds) would not reduce overfishing sufficiently to allow the stock to begin to recover within the maximum time frame allowed under the Magnuson-Stevens Act. The 100,000 pound commercial quota was recommended because some gag are expected be incidentally caught by the commercial sector while fishing for other species. Further, most discarded gag die after being released due to the high discard mortality associated with fishing at deeper depths. Rather than waste all of these fish, the Council set the quota at a level that would allow some fish to be retained and thus would also be counted towards the commercial quota.

As of March 2, 2011, over 65% of the gag IFQ shareholders have less than 50 pounds in allocation still available to them. Thus, if the commercial quota is not set at a level above 100,000 pounds, commercially caught gag would likely be lost through dead discards rather than kept and counted towards the commercial quota as fishermen run out of allocation. However, the rerun of the updated assessment showed a slight increase in the projected yields under the F_{OY} (SEDAR 2011) which would allow for a higher commercial quota, assuming the FWC adopts compatible regulations for the recreational sector as they have indicated they will do. If the FWC does not adopt compatible regulations, fishing levels by the recreational sector would lead to overfishing of the stock and thus there would be no justification to set the commercial quota above 100,000 pounds.

One alternative, the status quo, was considered for the action to suspend the ability of allocation holders to convert red grouper allocation into multi-use allocation valid toward the harvest of red grouper or gag. This alternative, the status quo, would continue to allow 4% of the red grouper allocation to be converted into multi-use allocation. This alternative is expected to result in gag harvests that would exceed specified annual catch limits, promote overfishing, and therefore

slow recovery of the stock, contrary to the Council's objectives. Further, this alternative is also expected to result in greater adverse economic effects stemming from the corrective measures that would be implemented to address the over-harvesting of gag.

Three alternatives, including the status quo, were considered for the action to establish a recreational fishing season for gag of September 16-November 15, 2011. The first alternative, the status quo, would maintain the recreational catch target at 2.20 MP as defined in Amendment 30B and anglers would be able to harvest the 2-fish daily bag limit for gag starting June 1, 2011. Depending on whether 2006-08 or 2009 is used as the baseline, the estimated reduction in removals under this alternative would be between 15% and 20%, which is insufficient to allow the stock to rebuild and would be inconsistent with the stock rebuilding plan being developed by the Council. In addition, selection of this alternative would be inconsistent with current National Standard 1 guidance because the expected level of harvest would be above the recreational annual catch target of 780,000 pounds, which is based on the acceptable biological catch (ABC) recommended by the Council's SSC of 1.58 million pounds and the Council's defined F_{OY} yield of 1.28 million pounds for 2011. Further, this alternative would promote overfishing and slow recovery of the stock.

The second alternative would set the gag bag limit to zero and thereby prohibit the recreational harvest of gag. When the Council requested the current interim rule, it intended to allow some recreational harvest of gag in 2011 and establish that level of harvest under the long-term measures being developed in Amendment 32. However, because the rerun of the updated assessment was not completed and reviewed until January 2011, there is insufficient time to implement measures from Amendment 32 early enough in 2011 to meet the Council's intent.

The second alternative is the most conservative alternative. This alternative would reduce fishing mortality the most of any of the considered alternatives and therefore generate the greatest biological benefits to the gag stock. Although this alternative would not allow the recreational harvest of gag while the proposed interim rule is in effect, the number of dead discards would be reduced because no recreational fishing trips would be expected to target or be directed at gag. Assuming the FWC adopts compatible regulations as they have indicated, this alternative would reduce the harvest sufficiently in 2011 to be consistent with the Council's rebuilding plan in Amendment 30B as it would reduce removals between 58% and 67% and, as such, end overfishing. If the FWC were not to adopt compatible regulations, the estimated reduction in removals would be between 43% and 61%, which would reduce but might not be sufficient to end overfishing.

The third alternative would establish a recreational fishing season for gag of July 1-August 15, 2011 and thus would allow for some recreational harvest of gag in 2011 as the Council intended when it requested the current interim rule. This alternative would establish a 46-day recreational fishing season, which is less than the 61-day season under the proposed action. This alternative also minimally overlaps with the red snapper season, which begins on June 1. This alternative would provide for-hire vessels with a greater of number options when marketing summer trips. The expected reduction in removals under this alternative is between 49% and 60% and therefore might be sufficient to end overfishing.

The Council heard public testimony regarding potential recreational seasons for gag at their February 2011 meeting. Participants in the recreational sector asked for either a summer or winter season depending on their geographic location. In general, recreational participants from Texas, southwest Florida, and central Florida favored a winter season, while recreational participants from other areas of the Gulf favored a summer season. In looking for a compromise, the Council recommended the proposed recreational season with no changes to the bag limit or size limit. The proposed recreational season would cover the end of the summer recreational fishing season and run through the beginning of the winter recreational fishing season. In addition, the estimated reduction in removals under the proposed recreational season are between 50% and 54%, which might be sufficient to end overfishing.

6.0 OTHER APPLICABLE LAW

The Magnuson-Stevens Act (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the exclusive economic zone including a habitat conservation provision known as Essential Fish Habitat. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making are the Administrative Procedures Act, Coastal Zone Management Act, Data Quality Act, Endangered Species Act, Marine Mammal Protection Act, and Paperwork Reduction Act. In addition, there are several executive orders that apply to federal fisheries management act including E.O. 12630: Takings, E.O. 12866: Regulatory Planning and Review, E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, E.O. 12962: Recreational Fisheries, E.O. 13089: Coral Reef Protection, E.O. 13132: Federalism, and E.O. 13158: Marine Protected Areas. These acts and executive orders are summarized in NMFS (2010a) and are incorporated herein by reference. This EA can be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf.

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