FINAL

November 15, 2010

ENVIRONMENTAL ASSESSMENT, REGULATORY IMPACT REVIEW, AND REGULATORY FLEXIBILITY ACT ANALYSIS FOR A TEMPORARY RULE TO IMPLEMENT MEASURES TO LIMIT THE GULF OF MEXICO GAG COMMERCIAL AND RECREATIONAL HARVESTS AND SUSPEND THE RED GROUPER INDIVIDUAL FISHING QUOTA MULTI-USE ALLOCATION

NOVEMBER 2010

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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, NMFS published a Policy Directive 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 stock from overharvest. The most recent stock assessment, as described in detail in Section 2.2.1, 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 3.1-3.3, 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 1.17 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 harvest level currently proposed by the Council in Amendment 32 to set TAC (1.10 MP GW or the optimum yield) is below that which would be achieved if the Council selected the SSC's recommendation for ABC. However, due to issues on the estimation of dead discards in the assessment as described in Sections 1.1 and 2.2.1, the Council requested the temporary rule limit the commercial gag quota to 100,000 pounds and prohibit the recreational harvest of gag. Once these issues are resolved, the Council will develop long-term measures to rebuild the gag stock in Amendment 32.

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 the 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 overfishing, but could result in a shift in effort to other species as highlighted in Section 3.4.2. This shift will likely not affect other species because the most desirable 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. 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 Act and identified in 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 3.4.1. This action should lessen overall impacts to EFH because effort needed to catch the allowable harvest will be reduced, reducing the interactions between the fishing gear used 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.

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 grouper sector in the Gulf operates under an individual fishing quota (see Sections 2.3.1.1 and 2/3/1/2), 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 the derby fishery. The temporary elimination of harvesting gag by the recreational sector is not expected to substantially alter the manner in which the recreational 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. The National Marine Fisheries Service (NMFS) is working closely with the U.S. Food and Drug Administration (FDA) and the States to ensure seafood safety. The first and most important preventive step in protecting the public from potentially contaminated seafood is from NMFS' actions to close fishing and shellfish harvesting areas in federal waters of the Gulf that have been or are likely to be exposed to oil from the spill. In addition, NOAA and FDA are monitoring fish caught just outside of closed areas, and testing them for petroleum compounds, to ensure that the closed areas are sufficiently large so as to prevent the harvest of contaminated fish. NOAA conducts a combination of both sensory analysis (of tissue) and chemical analysis (of water, sediment, and tissue) to determine if seafood is safe. If managers determine that seafood may be affected, the next step is to assess whether seafood is tainted or contaminated to levels that could pose a risk to human health through consumption. So far, fish and macrocrustacean flesh tested from outside the closure and from closed areas that have subsequently been reopened have passed sensory and chemical analyses as described in Section 2.1.

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 fishery is conducted in the Gulf. As discussed in Section 2.2.2, 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 NMFS or result in the destruction or adverse modification of critical habitat. In addition, the Gulf reef fish fishery is classified in the 2010 Marine Mammal Protection Act List of Fisheries as Category III fishery (74 FR 58859, November 16, 2009). 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 affected area. 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.

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 interrelated with natural or physical environmental effects. As discussed in Sections 3.4.3 and 3.4.4, allowing decreased harvest of gag by both the commercial and recreational fishing sectors 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, gag is a small component of the value of the commercial reef fish fishery (~6%). This species is also a minor component of the overall recreational fishery (see question 2).

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 fish stocks and fisheries. The proposed action may be considered politically controversial in the 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 recreational and commercial fishermen in public testimony to the Council have indicated the proposed reductions in gag are too high. 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 ban on 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, Madison Swanson and Steamboat Lumps ecologically-critical areas are closed to bottom fishing as described in Section 2.1. 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. 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. This action proposes to adjust the harvest of gag, in accordance with approved procedures outlined in the Council's Reef Fish FMP. Adjustments to quotas and target catch levels are made regularly in many fisheries, based on updated information regarding the status of a specific stock or stocks.

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 gag management actions with individually insignificant but cumulatively significant impacts. The proposed action to decrease the harvest levels of gag is not expected to substantially alter the manner in which the fishery is conducted. 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 Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf. The current 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 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 regional 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 of Mexico 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 is regulated through individual fishing quotas, size limits, and other fishing restrictions as described in Section 1.1. 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 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 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 Administrative Procedures Act, National Environmental policy Act, and other applicable laws.

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 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.

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 target species or non-target species. In general, the proposed action to decrease the allowable harvest of gag is not expected to substantially alter the manner in which the 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.

There may be some increase in fishing pressure on a variety of other reef fish and non-targeted stocks, because of the decreased ability to harvest gag.

DETERMINATION:

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for this framework action to the FMP for the Reef Fish Fishery Resources of the Gulf of Mexico, it is hereby determined that this framework action will not significantly impact the quality of the human environment as described above anc 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.

11/15/2010

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

Date

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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
DWG	Deepwater grouper
EA	Environmental assessment
EEZ	Exclusive economic zone
EFH	Essential Fish Habitat
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
HAPC	Habitat Areas of Particular Concern
IFQ	Individual fishing quota
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
MMPA	Marine Mammal Protection Act
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
NOS	National Ocean Service
OFL	Overfishing limit
OMB	Office of Management and Budget
OY	Optimum yield
PRA	Paperwork Reduction Act
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
SPR	Spawning potential ratio
SSBR	Spawning stock biomass per recruit
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 2010 commercial gag quota, recreational harvest, and use of multi-use individual fishing quota shares

Type of Action
(X) Administrative
() Draft
( ) Legislative
(X) 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, 2011. Therefore, temporary measures to reduce or end overfishing of gag are needed. Action 1 evaluates reducing the commercial quota including no action (1.49 million pounds), 390,000 pounds, 100,000 pounds (preferred), and zero pounds. The 2011 quota may be adjusted upward in Amendment 32 if a review of the gag update assessment allows a quota increase. Action 2 evaluates three alternatives on the release of red grouper multi-use allocation. The shallow-water grouper individual fishing quota program currently allows some red grouper and gag allocation to be used to harvest the other species. Maintaining the red grouper multi-use allocation could allow the gag quota to be exceeded. Alternatives are the no action alternative with a fixed percentage of the allocation, an alternative that reduces the allocation percentage, and an alternative that suspends the red grouper multi-use allocation until long-term measures can be developed in Amendment 32 (preferred). The final action addresses the recreational harvest of gag. The alternatives evaluate the current two-fish bag limit and 2.14 MP catch target (no action), a reduction in harvest to 620,000 pounds with the sector being closed in May, and no harvest with a reduction in the bag limit to zero until the Council can implement long-term management measures through Amendment 32 (preferred). 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 fishery 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 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 (Personal communication from the National Marine Fisheries Service (NMFS), Fisheries Statistics Division, Silver Spring, MD). 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 Amendments 30B and 31. Information on management of the reef fish fishery as a whole can be obtained by contacting the Gulf of Mexico Fishery Management Council (Council).

For the commercial grouper fishing sector, an individual fishing quota (IFQ) system has been in effect since January 1, 2010. Under this system, percentages of the commercial grouper quotas are allocated to IFQ participants based on the number of shares they own. These participants can then fish or trade their allocation each year. Prior to 2010, the grouper portion of the reef fish fishery was managed with quotas, seasonal and area closures, and minimum size limits (see below). 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 a seasonal area closure of the Edges (i.e., January 1-April 30) and all reef fish fishing is prohibited year round in two restricted fishing areas in the northwestern Gulf (Madison-Swanson and Steamboat Lumps), as well as the Tortugas Ecological Reserves off of the Florida Keys (Figure 2.1.1).

In 2009, new observer data indicated that sea turtle interactions with the bottom longline component of the reef fish fishery in the eastern Gulf were higher than previously estimated. Temporary measures closed the commercial bottom longline component of the reef fish fishery in depths shallower than 50 fathoms in the eastern Gulf by emergency rule from May 18-October 28, 2009, and in all depths after the deep-water grouper quota was filled. Long-term measures implemented in May 2010 through Amendment 31 required an endorsement to fish for reef fish using bottom longlines east of Cape San Blas, a time-area closure during the months of June-August from 35 fathoms shoreward for bottom longline gear, and limiting gear to 1,000 hooks per vessel, of which 750 can be rigged for fishing or fished.

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 response to the assessment, new regulations were implemented in 2000 including an increased minimum size limit; a one month commercial closed season on the harvest of gag, black, and red grouper; and the establishment of two marine reserves (Madison-Swanson and Steamboat Lumps) to protect gag and other aggregate spawning reef fish. In 2006 and 2007, the SEDAR 10 (2006) assessment and a subsequent 2007 reanalysis with corrected dead discard estimates (SEDAR 2007a; SEFSC 2007) concluded that the gag stock was undergoing

overfishing and had been since the 1970s. In response to the SEDAR 10 findings, Amendment 30B implemented new regulations in 2009. These regulations reduced the gag recreational bag limit to two fish and the aggregate grouper bag limit to four fish, while increasing the red grouper bag limit to two fish. A commercial gag quota of 1.32 million pounds gutted weight was adopted representing a 41% decrease from the average landings during 2004-2006. The Edges seasonal area closure, January-April, was added to the existing Madison-Swanson and Steamboat Lumps marine reserves to protect spawning aggregations of gag (Figure 2.1.1).

A 2009 update stock assessment of the Gulf gag stock (SEDAR 2009a) indicated the gag stock had diminished. The stock had shown declines in indices of abundance since 2005. 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[1]. 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. Under the Magnuson-Stevens Act National Standard Guidelines, after a Council is notified of the stock's condition, a plan needs to be developed and implemented within two years of notification to end overfishing and rebuild the gag stock. In response, the Council initiated Amendment 32 to the subject FMP to address this overfishing.

The Council's Scientific and Statistical Committee (SSC) reviewed the update stock assessment (SEDAR 2009a) to make an allowable biological catch (ABC) recommendation to the Council. Based on concerns expressed by the SSC and summarized in Section 2.2.1, the SSC asked for revised stock projections using 2009 landings estimates, which were provided for review in May 2010 (SEFSC 2010a). 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. This is when the 2011 gag individual fishing quota allocation is announced. Therefore, at its June 2010 meeting, 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. 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 were to remain unchanged from the original interim rule request.

It should be noted 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

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

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.

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. This action would be temporary until long-term measures including a gag stock rebuilding plan can be developed and implemented through Amendment 32. These actions 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 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).

As indicated above, the 2009 update stock assessment of the gag stock (SEDAR 2009a) showed the stock has declined since 2005 and is considered overfished and undergoing overfishing. This decline was attributed to a 2005 episodic mortality event resulting in a little over 18% of the gag stock being killed in addition to normal natural and fishing mortalities.[1] 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. However, this level will not be finalized until the treatment of discards in the update assessment has been evaluated through further review in the fall or winter of 2010. In addition, there is a need to implement rulemaking prior to January 1, 2011, so the 2011 commercial gag quota can be set and allow individual fishing quota allocation to be adjusted to reflect any change in the commercial gag quota. Both needs are 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. To further this goal, the Magnuson-Stevens Act requires fishery managers to specify accountability measures to minimize the risk of overharvest (implemented through Amendment 30B), to minimize bycatch and bycatch mortality to the extent practicable, and to ensure that management decision are based on the best available scientific information.

2.0 AFFECTED ENVIRONMENT

The actions considered in this environmental assessment would affect fishing in the Gulf of Mexico (Gulf) region (Figure 2.1). Therefore, the following descriptions of the physical, biological, economic, social, and administrative environments focus primarily on this region.

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 and is incorporated here by reference (GMFMC 2004). The Gulf has a total area of approximately 600,000 square miles (1.5 million kilometers^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily affected by the Loop Current, the discharge of freshwater into the northern Gulf, and a semi-permanent, anticyclonic gyre in the western Gulf. Gulf surface water temperatures normally range from 12º C to 29º C (54º F to 84º F) depending on time of year. In the Gulf, Gag are caught on the west coast of Florida from northern Pinellas County to the northern extent of the state (Schirripa and Goodyear 1994). Adult gag are associated with bottom topographies on the continental shelf which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings (GMFMC, 2004). Eggs and larvae are pelagic with juveniles settling out to coastal seagrass beds.

The effects of the oil on reef fish such as gag are considered to be minimal as long as the oil stays on surface and away from estuaries (http://sero.nmfs.noaa.gov/sf/deepwater_horizon/Fish_economics_FACT_SHEET.pdf). At its maximum extent, oil from the Deepwater Horizon MC252 incident has affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. It is over this area that oil has been detected at the surface. However, thus far the oil has remained outside most of the west Florida Shelf where gag are particularly abundant and contains most of the essential fish habitat (EFH) for this species (GMFMC 2004). Oil is dispersed on the surface, and because of the heavy use of dispersants, oil is also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil has washed onto shore in several areas of the Gulf as have non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles. Oil could exacerbate development of this year's hypoxic "dead" zone in the Gulf.
In response to the incident, the National Marine Fisheries Service (NMFS) has issued a series of emergency rules closing a portion of the Gulf exclusive economic zone (EEZ) to all fishing. The closures were implemented to prevent fishing and harvesting of marine resources from occurring in areas where oil was present or predicted to be present. The first closure was effective on May 2, 2010, and covered an area of the Gulf EEZ approximately 6,817 square miles (17,655 square km) or 3% of the total area of the Gulf EEZ (75 FR 24822, May 6, 2010; Table 2.1.1). Due to the evolving nature of the incident and because of shifting currents and winds, NMFS has adjusted the spatial dimensions of closed area 28 times from May 2 to September 3, 2010, to reflect new information on the areas affected by oil (see http://sero.nmfs.noaa.gov/BPOilSpillArchives.htm). The closed area generally has been centered in the north-central Gulf. Between June 1, 2010, and July 21, 2010 the closure, at any given time

encompassed from 75,920 square miles (196,633 square km) or 31% of the total area of the Gulf EEZ to as much as 88,522 square miles (229,270 square km) or 36.6% of the total area of the Gulf EEZ (Table 2.1.1). As areas have been cleared for fishing to resume, the closure has been reduced. As of September 3, 2010, 39,885sq mi (103,303 sq km) or approximately 17% of the Gulf EEZ waters remain closed to fishing. Before opening areas back up to fishing, fish tissue samples from the area to be opened must pass sensory and chemical analyses (http://www.fda.gov/Food/ucm217598.htm).

Table 2.1.1. Date, size, percent coverage, and change in percent coverage for the fishing area closures due to the Deepwater Horizon/BP Incident (reprinted from http://sero.nmfs.noaa.gov/ClosureSizeandPercentCoverage.htm).

Date of Closure	Area (sq mi)	Area (sq km)	Percent Coverage of Gulf EEZ	Percent Change in Coverage
2-May	6,817	17,648	2.8	N/A
7-May	10,807	27,989	4.5	58.5
11-May	16,027	41,511	6.6	48.3
12-May	17,651	45,717	7.3	10.1
14-May	19,377	50,187	8	9.8
17-May	24,241	62,784	10	25.1
18-May	45,728	118,435	18.9	88.6
21-May	48,005	124,333	19.8	5
25-May	54,096	140,109	22.4	12.7
28-May	60,683	157,169	25.1	12.2
31-May	61,854	160,200	25.6	1.9
1-Jun	75,920	196,633	31.4	22.7
2-Jun	88,522	229,270	36.6	16.6
4-Jun	78,182	202,491	32.3	-11.7
5-Jun	78,603	203,582	32.5	0.5
7-Jun	78,264	202,703	32.3	-0.4
16-Jun	80,806	209,286	33.4	3.2
21-Jun	86,985	225,290	35.9	7.6
23-Jun	78,597	203,564	32.5	-9.6
28-Jun	80,228	207,790	33.2	2.1
4-Jul	81,181	210,259	33.5	1.2
12-Jul	84,101	217,821	34.8	3.6
13-Jul	83,927	217,371	34.7	-0.2
22-Jul	57,539	149,026	23.8	-31.4
10-Aug	52,395	135,703	21.7	-8.9
27-Aug	48,114	124,614	19.9	-8.2
2-Sep	43,000	111,369	17.8	-10.6
3-Sep	39,885	103,303	16.5	-7.2

Environmental Sites of Special Interest Relevant to Gag (Figure 2.1.1)
Longline/Buoy Gear Area Closure - Permanent closure to use of these gears for reef fish harvest. The closure applies to inshore of 20 fathoms off the Florida shelf from September through May, inshore of 35 fathoms off the Florida shelf from June through August, and inshore of 50 fathoms year round for the remainder of the Gulf (72,300 square nautical miles).

Madison/Swanson and Steamboat Lumps Marine Reserves - No-take marine reserves sited on gag spawning aggregation areas where all fishing except for surface trolling during May through October is prohibited (219 square nautical miles).

The Edges – No-take area closure from January 1 to April 30. All commercial and recreational fishing or possession of fish managed by the Council is prohibited. The intent of the closure is to protect gag and other groupers during their respective spawning seasons. Possession is allowed when transiting the area if gear is stowed in accordance with federal regulations. This area is not shown in Figure 2.1.1 due to its recent implementation. The boundaries of the closed area are: Northwest corner = 28º 51'N, 85º 16'W; Northeast corner = 28º 51'N, 85º 04'W; Southwest corner = 28º 14'N, 84º 54'W; Southeast corner = 28º 14'N, 84º 42'W.

Tortugas North and South Marine Reserves - No-take marine reserves cooperatively implemented by the state of Florida, National Ocean Service (NOS), the Council, and the National Park Service (see jurisdiction on chart) (185 square nautical miles). In addition, Generic Amendment 3 for addressing Essential Fish Habitat requirements, Habitat Areas of Particular Concern (HAPC), and adverse effects of fishing prohibited the use of anchors in these HAPCs in the following Fishery Management Plans (FMPs) of the Gulf: Shrimp, Red Drum, Reef Fish, Stone Crab, Coral and Coral Reefs in the Gulf; and Spiny Lobster and the Coastal Migratory Pelagic resources of the Gulf and South Atlantic (GMFMC 2005a).

Individual reef areas and bank HAPCs of the northwestern Gulf including: East and West Flower Garden Banks, Stetson Bank, Sonnier Bank, MacNeil Bank, 29 Fathom, Rankin Bright Bank, Geyer Bank, McGrail Bank, Bouma Bank, Rezak Sidner Bank, Alderice Bank, and Jakkula Bank - Pristine coral areas protected by preventing use of some fishing gear that interacts with the bottom (263.2 square nautical miles). Subsequently, some of these areas were made a marine sanctuary by NOS and this marine sanctuary is currently being revised. Bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots on coral reefs are prohibited in the East and West Flower Garden Banks, McGrail Bank, and on the significant coral resources on Stetson Bank.

Florida Middle Grounds HAPC - Pristine soft coral area protected from use of any fishing gear interfacing with bottom (348 square nautical miles).

Pulley Ridge HAPC - A portion of the HAPC where deep-water hermatypic coral reefs are found is closed to anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots (2,300 square nautical miles).

Stressed Areas for Reef Fish - Permanent closure Gulf-wide of the near shore waters to use of fish traps, power heads, and roller trawls (i.e., "rock hopper trawls") (48,400 square nautical miles).

Alabama Special Management Zone (SMZ) - In the Alabama SMZ, fishing by a vessel operating as a charter vessel or head boat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, is limited to hook-and-line gear with no more than three hooks. Nonconforming gear is restricted to bag limits, or for reef fish without a bag limit, to 5% by weight of all fish aboard.

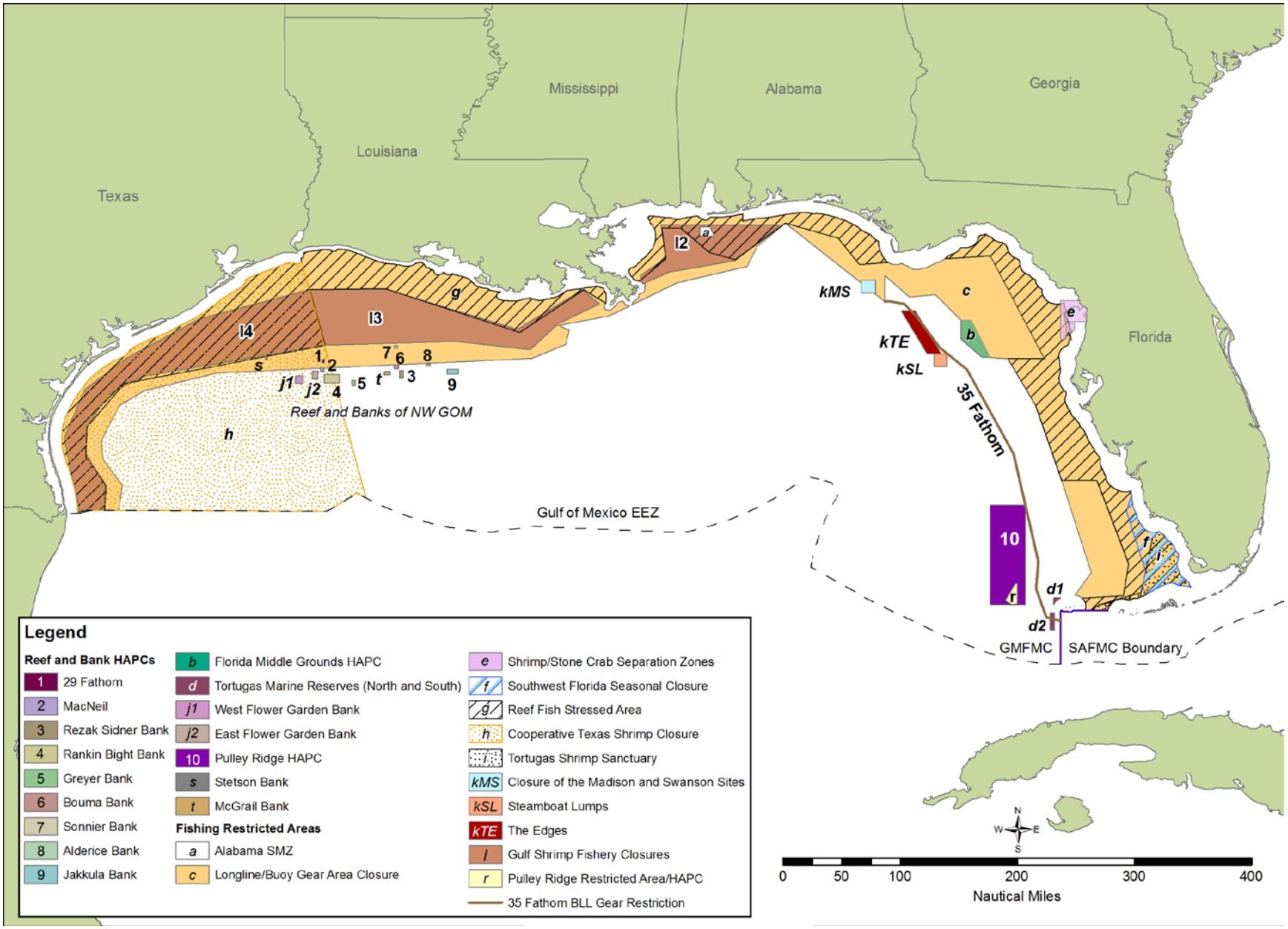

Figure 2.1.1 Map of fishery management closed or gear restricted areas in the Gulf of Mexico.

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).

2.2.1 Gag and Reef Fish

Gag Life History and Biology

Gag are primarily caught on the west coast of Florida from Tampa Bay to the northern extent of the state (Schirripa and Goodyear 1994). Newly settled juveniles are estuarine-dependent, occurring in shallow seagrass beds during late spring and summer (Koenig and Coleman 1998; Strelcheck et al. 2003). At the onset of the first winter, juvenile gag migrate offshore, although some juvenile gag may remain in inshore waters during winter (Heinisch and Fable 1999). As gag mature, they move to deeper, offshore waters to spawn. Gag are protogynous hermaphrodites, transitioning from females to males at older ages. Age and size at 50% sexual transition is approximately 11 years and 42-43 inches total length (TL) (108.5 - 110 cm TL) (SEDAR 10 2006). Maximum age is 31 years (Lombardi-Carlson et al 2006b) and females are mature by 3.7 years of age and 23 inches TL (58.5 cm TL) (Fitzhugh et al 2006b). They form spawning aggregations at depths ranging from 160-400 feet (Coleman et al. 1996). In the eastern Gulf the spawning season is estimated to extend from late January to mid-April (with a peak in March) (Fitzhugh et al 2006b). Often immature female gag are found with spawning aggregations (Coleman et al. 1996). Gag can reach a maximum length of 54 inches (138 cm) TL and weight of 68 pounds (31 kg) (Lombardi et al 2006b).

Oil from the Deepwater Horizon MC252 incident has affected at least one-third of the Gulf area at its maximum extent from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. However, at this point the affected areas are outside west Florida Shelf where gag are primarily found. Some surface oil may have occurred over the west Florida shelf in offshore waters, however, juvenile and adults are demersal and so likely not affected. In addition, the oil would not have been present during the January to April spawning period when pelagic eggs and larvae could be susceptible to oil at the surface. Therefore, the effects of the oil on gag populations and gag essential fish habitat would likely be minimal.

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 2009a). Data sources included both fishery-dependent and fishery-independent indices of abundance. Fishery-dependent abundance indices were available from the commercial handline sector, the commercial longline sector, the recreational headboat sector, and a combined index from the recreational charter and private boat sectors (MRFSS). Fishery-independent abundance indices were developed from the SEAMAP reef fish video survey and age-0 gag abundance using combined data from the FSU estuarine gag survey, NMFS Panama City Laboratory St. Andrew Bay survey, and State of Florida FWC estuarine survey. The assessment included data through

2008. These data were used to calculate catch estimates, and total annual size and age composition.

The 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. This 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.[2] The overfishing limit (OFL) is the yield associated with F_{MAX} (proxy for F_{MSY}), and is 0.88 mp in 2010 in Table 2.2.3.

The SSC reviewed the 2009 assessment update. They felt that the estimated 2009 catches used in the projection model exceeded what would actually be caught and produced a more pessimistic projection than would be the case once the actual landings were known. The model projection used actual catches through 2008, and assumed that the entire TAC would be filled in 2009. At their June 2009 meeting, the SSC asked that projections of the status of red grouper and gag be rerun using updated landings estimates for 2009. The requested gag scenarios used the 'red tide, increasing catchability' model, used updated landings estimates for 2009 data, and either set the 2010 harvest level equal to the current TAC or equal to 2009 estimated landings (NMFS 2010a). For gag, projections were provided for fishing mortality rates associated with rebuilding the stock within 10 years ($F_{Rebuild}$) and with optimum yield (F_{OY}). Given that the 2010 landings to date appeared to better match 2009 harvest levels than in previous years, the SSC selected the model runs where the 2010 projected harvest was equal to the estimated 2009 harvest. However, as the SSC noted, this assumes that landings are down because effort is down. The SSC discussed whether the $F_{rebuild}$ yield stream should be used for the OFL or ABC. Previously, the $F_{rebuild}$ yield stream was chosen for ABC because it was less than OFL (yield at F_{max}) and therefore represented a less than 50% probability of exceeding true OFL. It also represented exactly a 50% probability of rebuilding the stock in 10 years or less. Ultimately 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 fishing years, respectively. This level would be less than the Council's current ACL definition which is the harvest associated with F_{MSY}.

In the course of developing management alternatives for gag, potential inconsistencies in estimates of commercial and recreational discards were discovered. Preliminary estimates of commercial gag discards provided by the SEFSC (2010) indicated commercial discards were two orders of magnitude greater when estimated using reef fish observer data compared with methods used in the stock assessment (SEDAR 2009a). This was most apparent for the vertical line fishery where the average weight for dead discards as estimated by the update assessment for 2000-2008 was 9,275 pounds GW, compared to observer-based estimates from 2007-2009 that averaged 233,912 pounds[3]. Additionally, size and age distributions computed for

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

[3] Memo from Bonnie Ponwith, SEFSC, to Roy Crabtree, SERO regarding a data request to re-evalute commercial dead discard estimates for gag using available reef fish observer data.

recreational discards in the 2009 stock assessment indicated most discards were close to the minimum size limit in more recent years. However, Mote Marine Laboratory tagging data and Headboat and Florida Fish and Wildlife Conservation Commission observer data indicated a broader size range for discarded fish. The Council discussed these discrepancies at their August 2010 meeting and it was agreed that another review of the gag assessment would be conducted in fall/winter 2010 to address these discrepancies. This review would then be forwarded to the Council's SSC for evaluation and possible new ABC recommendations.

It should be noted similar issues regarding dead discards were brought up at the Council's August 2010 meeting regarding the red grouper update assessment that was also conducted in 2009 (SEDAR 2009b). The Council limited its request for red grouper to a sensitivity model run substituting observer-based commercial discard estimates in place of the existing estimates and did not ask for a further review of recreational discards. For red grouper, the recreational discard sizes for all recreational modes were assigned using the headboat observer data and the imputed size distribution was not so truncated near the size limit as for gag. Thus, the Council did not make a similar request for red grouper because the effects of these discrepancies did not trigger the same level of concernas for gag.

General Information on Reef Fish Species

The National Ocean Service (NOS) of NOAA collaborated with NMFS and the Council to develop distributions of reef fish (and other species) in the Gulf (SEA 1998). NOS obtained fishery-independent data sets for the Gulf, including SEAMAP, and state trawl surveys. Data from the Estuarine Living Marine Resources (ELMR) Program contain information on the relative abundance of specific species (highly abundant, abundant, common, rare, not found, and no data) for a series of estuaries, by five life stages (adult, spawning, egg, larvae, and juvenile) and month for five seasonal salinity zones (0-0.5, 0.5-5, 5-15, 15-25, and >25). NOS staff analyzed the data to determine relative abundance of the mapped species by estuary, salinity zone, and month. For some species not in the ELMR database, distribution was classified as only observed or not observed for adult, juvenile, and spawning stages.

Habitat types and life history stages can be found in more detail in GMFMC (2004). In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. In general, both eggs and larval stages are planktonic. Larvae feed on zooplankton and phytoplankton. Exceptions to these generalizations include the gray triggerfish that lay their eggs in depressions in the sandy bottom, and gray snapper whose larvae are found around submerged aquatic vegetation. Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf (<100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. Juvenile red snapper are common on mud bottoms in the northern Gulf, particularly off Texas through Alabama. Also, some juvenile snappers (e.g. mutton, gray, red, dog, lane, and yellowtail snappers) and groupers (e.g. goliath grouper, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981). More detail on hard bottom

substrate and coral can be found in the FMP for Corals and Coral Reefs (GMFMC and SAFMC 1982).

At this time, it is unknown what the effects of the Deepwater Horizon MC252 incident will be on reef fish species. The oil has affected at its maximum extent at least one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. For species distributed within the area impacted by the oil, the populations are likely to be affected. However, because most reef fish species are demersal as juveniles and adults, the impacts are likely to be minimal. Eggs and larvae are found in surface waters, so species such as red snapper (Lyczkowski-Shultz and Hanisko 2007) that spawn during the time period oil affected surface waters may suffer from increased egg and larval mortality rates. To protect the public from consuming oil tainted seafood, NMFS has closed a large portion of the northern Gulf to fishing (See Section 2.1). If unaffected by oil, these closures would provide a refuge from fishing and could provide a benefit to fish populations within the closed area.

Status of Reef Fish Stocks

The Reef Fish FMP currently encompasses 42 species. Stock assessments have been conducted on 11 species: red snapper (SEDAR 7 2005; SEDAR 7 Update 2009), vermilion snapper (Porch and Cass-Calay, 2001; SEDAR 9 2006a), yellowtail snapper (Muller et al. 2003; SEDAR 3 2003), gray triggerfish (Valle et al. 2001; SEDAR 9 2006b), greater amberjack (Turner et al. 2000; SEDAR 9 2006c), hogfish (Ault et al. 2003; SEDAR 6 2004a), red grouper (Schirripa and Legault 1999; NMFS 2002; SEDAR 12 2007, SEDAR 2009a), gag (Turner et al. 2001; SEDAR 10 2006, SEDAR 2009b), yellowedge grouper (Cass-Calay and Bahnick 2002), and goliath grouper (Porch et al. 2003; SEDAR 6 2004b). A review of the Nassau grouper's stock status was conducted by Eklund (1994), and updated estimates of generation times were developed by Legault and Eklund (1998).

Of the 11 species for which stock assessments have been conducted, the first quarter report of the 2010 Status of U.S. Fisheries (http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm) classifies four as overfished (greater amberjack, grey triggerfish, gag, and red snapper), and the same four as undergoing overfishing. Although it should be noted that greater amberjack, grey triggerfish, and red snapper are under rebuilding plans, and a rebuilding plan for gag is presently being developed in Amendment 32. In the most recent red snapper stock assessment update, red snapper overfishing was projected to have ended in 2009. Many of the stock assessments and stock assessment reviews can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) Websites.

2.2.2 Protected Species

There are 28 different species of marine mammals that may occur in the Gulf. All 28 species are protected under the Marine Mammals Protection Act and six are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback and North Atlantic right whales). Other species protected under the ESA occurring in the Gulf include five sea turtle species (Kemp's Ridley, loggerhead, green, leatherback, and hawksbill); two fish species (Gulf sturgeon and smalltooth sawfish), and two *Acropora* coral species (elkhorn [*Acropora palmata*]

and staghorn [*A. cervicornis*]). Information on the distribution, biology, and abundance of these protected species in the Gulf is included in final EIS to the Council's Generic Essential Fish Habitat amendment (GMFMC 2004) and the October 2009 ESA biological opinion on the reef fish fishery (NMFS 2009a). Marine Mammal Stock Assessment Reports and additional information are also available on the National Marine Fisheries Service Office of Protected Species website: http://www.nmfs.noaa.gov/pr/species/.

The Gulf reef fish fishery is classified in the 2010 Marine Mammal Protection Act List of Fisheries as Category III fishery (74 FR 58859). 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[4]. Dolphins are the only species documented as interacting with this fishery. Bottlenose dolphins may predate and depredate on the bait, catch, and/or released discards of the reef fish fishery.

All five species of sea turtles may be adversely affected by the Gulf reef fish fishery via incidental capture in hook-and-line gear (NMFS 2009a). Incidental captures of sea turtle species occur in all commercial and recreational hook-and-line components of the reef fishery, but recent observer data indicate they are most frequent in the bottom longline component of the reef fish fishery. On an individual set basis, incidental captures may be relatively infrequent, but collectively, these captures sum to a high level of bycatch. Observer data indicate loggerhead sea turtles are the species most affected by the bottom longline component of the reef fish fishery and that is why a more detailed description of this species is included below. Mortality of sea turtles caught is particularly problematic in this fishery component, because many are dead or in poor condition upon retrieval of the gear as a result of forced submergence (i.e., drowning). Rulemaking from Amendment 31 constrains the bottom longline component of the fishery to limit sea turtle take. All sea turtles caught on hook-and-line and released alive may later succumb to injuries sustained at the time of capture or from exacerbated trauma from fishing hooks or lines that were ingested, entangling, or otherwise still attached when they were released. Sea turtle release gear and handling protocols are required to reduce the amount of gear on released animals and minimize post-release mortality.

Smalltooth sawfish are also affected by the Gulf reef fish fishery, but to a much lesser extent than hardshell sea turtles. Smalltooth sawfish primarily occur in the Gulf off peninsular Florida. Although the long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in fishing gear, incidental captures in the commercial and recreational hook-and-line components of the reef fish fishery are rare events. Only eight smalltooth sawfish are estimated to be incidentally caught annually, and none are expected to result in mortality (NMFS 2009). Fishermen in this fishery are required to follow smalltooth sawfish safe handling guidelines.

2.3 Economic Environment

[4]The potential biological removal is the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.

2.3.1 Commercial Sector

This section describes the economic environment associated with the commercial fleet that harvested species managed under the Gulf of Mexico Reef Fish Fishery Management Plan (FMP) from 1993-2008. As such, it should be considered as historical background given the implementation of the grouper/tilefish IFQ program on January 1, 2010, a description of which is provided in section 2.3.1.1, as well as new restrictions on the use of bottom longline gear to certain vessels and areas. Although the reef fish fishery in general is discussed, it specifically focuses on the grouper sub-sector which is addressed in this proposed rule, and is expected to be further addressed in proposed Amendment 32 to the FMP. Also, this section uses the basic reporting format of the economic description of the fishery contained in Amendment 29.
The major sources of data summarized in this description include the Federal Logbook System (FLS) and Accumulated Landings System (ALS) for the commercial fishery, with price indices taken from the Bureau of Labor Statistics. Inflation adjusted revenues and prices are reported in 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.
In the following discussion, several species/species groups are presented, namely, reef fish, shallow water grouper (SWG), deepwater grouper (DWG), tilefishes, red grouper, and gag. The SWG information includes red grouper and gag plus all other shallow water groupers, and the group for reef fish includes all grouper and tilefishes, plus all other reef fish.

Annual Landings, Ex-vessel Values and Effort
The commercial reef fish fishing fleet in the Gulf is composed of vessels using different gear types and catching a variety of species. A license limitation program is in place in the reef fish fishery; to harvest commercial amounts of reef fish a vessel is required to have an active commercial permit on board. Commercial reef fish permits are renewable every year, although an owner is granted a grace period of one year to renew his permit. Non-renewal of a permit within this grace period results in permanent loss of that particular permit. According to the Southeast Regional Office website, the Constituency Services Branch (Permits) unofficially listed 893 current holders of Gulf reef fish permits as of March 16, 2010[5].
For the entire 1993-2008 period, Gulf permitted commercial reef fish vessels landed a total of 283 million pounds (MP) of reef fish (gutted weight) valued (ex-vessel) at $639 million in nominal prices or $785 million in 2008 (real) prices. In addition, these vessels landed another 18 MP of non-reef fish species valued at $18 million in current prices or $24 million in real prices. The grouper and tilefish fisheries accounted for 52% of all reef fish landings and 56% of reef fish ex-vessel values.

Gulf permitted commercial reef fish vessels landed annually an average of 7.47 MP of SWG, 1.16 MP of DWG, and 0.51 MP of tilefishes. The respective ex-vessel values are $18.57 million, $3.16 million, and $0.76 million in nominal prices, or $22.77 million, $3.85 million, and $0.94 million in real prices. Within the SWG, red grouper and gag dominated the fishery—red grouper

[5] http://sero.nmfs.noaa.gov/foia/HTML/RR.htm

accounted for 68% of landings and 63% of ex-vessel values; gag accounted for 18% of landings and 21% of ex-vessel values.

Landing and revenue configurations over the years 1993-2008 can be gauged from Table 2.3.1.1, which breaks down average landings and revenues into several periods. One period spans the entire 1993-2008 data years; another covers the years 1999-2004, and, the other two include the years before and after the 1999-2004 period. In the table, SWG includes gag, red, and other SWG. The column "Reef" includes all reef fish species.

Table 2.3.1.1 Average Annual Landings and Revenues for Selected Species, 1993-2008.

Period	Red Grouper	Gag	SWG	DWG	Tilefishes	Reef
Landings (1,000 lbs)						
1993-98	4,803	851	6,854	1,052	511	17,655
1999-04	5,694	1,848	8,750	1,314	528	19,487
2005-08	4,545	1,284	6,464	1,078	480	15,109
1993-08	5,073	1,333	7,467	1,156	510	17,706
Nominal Value ($1,000)						
1993-98	9,876	2,247	15,081	2,498	701	34,133
1999-04	12,915	5,347	21,661	3,557	804	44,324
2005-08	12,541	4,494	19,178	3,536	786	42,106
1993-08	11,682	3,971	18,572	3,155	761	39,948
Real Value ($1,000)						
1993-98	13,807	3,109	21,034	3,481	977	47,654
1999-04	15,654	6,442	26,212	4,304	974	53,619
2005-08	13,189	4,753	20,215	3,740	834	44,379
1993-08	14,345	4,769	22,771	3,854	940	49,072

Average annual landings of all species categories rose from the first period (1993-1998) to the next but fell in the third period (2005-2008); thus, landings of all species categories were highest during 1999-2004. Landings of reef fish experienced two distinct periods of decline because average yearly landings peaked at 19.49 MP during 1999-2004. During 2005-2006 average landings dropped 15% from this high and fell another 17% during 2007-2008. In general, average annual landings of SWG followed a similar trend. Average landings of all SWG rose by 28% in the second period and fell by 26% in the third period. During 2005-2006 average landings dropped 17% from a high of 8.75 MP during 1999-2004 and fell another 22% during 2007-2008. Average annual landings of red grouper rose by about 19% from the first to the second period and fell by 20% in the third period. Landings of red grouper during 2007-2008 declined 26% from those during 1999-2006. Average annual landings of gag showed a dramatic increase of 117% from the first to the second period and fell by 30% in the third period. The major decline in landings of gag took place during 2006-2008 declining 46% from levels reported during 2001-2005. Landings of DWG rose by about 25% in the second period and fell by 18% in the third period, although landings of DWG were 6% higher during 2007-2008 than those during 2005-2006. Landings of tilefishes rose by only 3% in the second period and fell by 9% in the third period. Average landings of tilefishes during 2006-2008 fell 25% relative to those during 2004-2005.

Nominal (current) and real (adjusted for inflation) ex-vessel revenues rose and fell from one period to the next in the same manner as landings. This implies that the second period (1999-2004) registered the highest ex-vessel values for all subject species. Nominal ex-vessel values rose in the second period by 31%, 138%, 44%, 42%, and 15% for red grouper, gag, SWG, DWG, and tilefishes, respectively. A substantial portion of these increases was due to inflation as can be inferred from the corresponding increases in real revenues of 13%, 107%, 25%, 24%, and 0% for the respective species. Decreases in the third period range from 13% for DWG to 26% for gag.

The number of boats actively participating in the fishery may be considered one measure of effort in the fishery. For the entire 1993-2008 period, the number of boats harvesting at least one pound of selected species averaged 742 for red grouper, 581 for gag, 939 for SWG, 359 for DWG, 207 for tilefishes, and 1,078 for reef fish. Although landings in the grouper and tilefish fisheries in particular and reef fish fishery in general have shown patterns of increases and decreases, the number of boats actively participating in the fishery (except for gag) shows a pattern of decline over time. This pattern can be inferred from Table 2.3.1.2, which displays the average number of boats harvesting at least one pound of selected species over several sub-periods in 1993-2008. For reef fish as a whole, the number of boats in the fishery fell from an average high of 1,259 in the first period (1993-1998) to an average low of 798 in the third period (2005-2008). Vessel participation on average decreased 23% during 2007-2008 compared to 2005-2006. In general, a similar pattern can be observed for the grouper fishery and all its component fisheries, except gag. The average number of boats fell from 803 for red grouper, 1,066 for SWG, 401 for DWG, and 231 for tilefishes in the first period to its respective low of 609, 712, 284, and 189 in the third period. Only in the gag fishery did the number of boats rise from 533 in the first period to 659 in the second period, but it did fall in the third period to 536. This increase in the number of boats from the first period to the second could very well explain the large increase in gag landings in the second period. Vessel participation on average decreased 18, 16, 21, 28, and 24% during 2007-2008 compared to 2005-2006 for the red grouper, gag, SWG, DWG, and tilefishes, respectively. The fall in the number of boats in the third period for all fisheries considered here could be due to fish stock, natural, and economic conditions.

The downward trend in the number of boats landing reef fish is partly reflected in the number of trips taken by the remaining boats, but the decline in trips is not as dramatic as that for boats (see Table 2.3.1.2). Before it fell in the third period, the number of trips, except for tilefishes and reef fish, increased in the second period, and this increase could partly explain the increases in landings in the second period. Trips landing at least one pound of selected species averaged annually during 1993-2008 at 6,438 with a range 4,995 (2007) to 7,571 (1994) for red grouper, 4,734 with a range of 3,161 (1993) to 6,004 (2000) for gag, 9,436 with a range of 6,307 (2008) to 11,225 (1999) for SWG, 1,985 with a range of 792 (2008) to 2,957 (2003) for DWG, 790 with a range of 470 (2007) to 1,147 (1994) for tilefishes, and 13,929 with range of 8,098 (2008) to 17,216 (1994) for reef fish. For all species categories except gag, historical lows for trips were reported during 2007-2008; however, average annual trips landing gag during 2007-2008 still declined 30% from that during 1999-2004.

Days away from port may be considered another indicator of fishing effort in the fishery. This indicator, however, may not exactly reflect the time spent for fishing because boats have to travel

to fishing areas before they actually fish. This is true even with vessels that move around while fishing, such as those employing longline and troll gear types. The general pattern over time can provide some broad indications of the trend in fishing days. As can be deduced from Table 2.3.1.2, the pattern over time of days away from port generally mimics that of the number of trips. Days away from port rose in the second period for gag and DWG while they dropped for the other species categories. The third period, however, registered declines in days away from port for all species categories. Days away from port of boats landing at least one pound of selected species averaged annually during 1993-2008 at 31,652 with a range 25,598 to 37,748 for red grouper, 21,155 with a range of 15,643 to 26,088 for gag, 40,972 with a range of 31,437 to 49,524 for SWG, 11,870 with a range of 6,413 to 16,110 for DWG, 6,033 with range of 3,674 to 9,044 for tilefishes, and 50,535 with a range of 62,849 to 36,196 for reef fish. The reported years for the range limits generally mimic those of the number of trips.

Table 2.3.1.2 Average Number of Boats, Trips, and Days Away from Port for Trips Landing at Least One Pound of Selected Species, 1993-2008

Period	Red Grouper	Gag	SWG	DWG	Tilefishes	Reef Fish
Boats						
1993-98	803	533	1,066	401	231	1,259
1999-04	771	659	964	368	193	1,083
2005-08	609	536	712	284	189	798
1993-08	742	581	939	359	207	1,078
Trips						
1993-98	6,492	3,905	10,079	2,110	907	15,489
1999-04	7,051	5,809	10,378	2,422	814	15,052
2005-08	5,438	4,368	7,060	1,140	579	9,904
1993-08	6,438	4,734	9,436	1,985	790	13,929
Days Away from Port						
1993-98	33,296	17,484	44,266	12,940	6,876	55,519
1999-04	33,142	24,595	42,972	13,729	6,312	52,688
2005-08	26,952	21,500	33,030	7,475	4,348	39,832
1993-08	31,652	21,155	40,972	11,870	6,033	50,535

One conclusion that can be drawn from the three indicators of fishing effort pertains to the kind of effort movement over time. With certain limitations, the general conclusion is that effort declined for all selected species, with peaks generally occurring in the second period (1999-2004). There are several potential reasons for the decline in effort for the selected species, such as the increase in fishing costs (particularly fuel cost in recent years), increase in harvesting efficiency, more restrictive regulations particularly for the grouper fishery, and even improvements in the stock status of certain species may contribute to the decline in fishing effort. However, more research is needed to determine which factors did contribute, or contribute significantly, to such decline in fishing effort.

Seasonal Characteristics

Fish stock, market, and harvesting conditions in addition to the regulatory regime are some of the factors that shape the seasonal characteristics of the reef fish fishery in general and the grouper

and tilefish fisheries in particular. How these factors affect seasonal behavior of the fishery will not be explored here.

The monthly pattern of landings and ex-vessel real revenues and prices may be gleaned from Table 2.3.1.3. Monthly landings of reef fish as a whole follows a rather straightforward pattern: landings increased in February and March then fell in a steady fashion the rest of the year. Red grouper, gag, and overall SWG landings follow a slightly different pattern: landings declined in February and March presumably due to the spawning closure, rose through the spring and early summer months, and declined during the rest of the year. Gag landings, however, did show some resiliency in the winter months. DWG and tilefish appear to follow a similar pattern, but somewhat different from the other species: landings increased for a few months starting in February and then some time in May or June slowly declined throughout the rest of the year. The effects of the closure of these fisheries in the summer months are evidenced by the sharp drop-off in average landings beginning in June for these species. For all groups, except DWG and red grouper, landings experienced a perceptible uptick in October.

For the period 1993-2008, landings averaged monthly at 423,000 pounds for red grouper, 111,000 pounds for gag, 622,000 pounds for SWG, 96,000 pounds for DWG, 42,000 pounds for tilefish, and 1,475,000 pounds for reef fish. Peak landings occurred in June for red grouper and SWG, January for gag, May for DWG and tilefish, and March for all reef fish. Monthly landings ranged from 280 (March) to 560 (June) thousand pounds for red grouper, 72 (September) to 156 (January) thousand pounds for gag, 489 (March) to 776 (June) thousand pounds for SWG, 54 (October) to 164 (May) thousand pounds for DWG, 31 (September) to 57 (March and May) thousand pounds for tilefish, and 1,107 (January) to 1,763 (March) thousand pounds for reef fish. Average monthly prices of all selected species, with the exception of tilefish, follow a similar pattern. Prices reached a peak in March, steadily fell until their trough in June, and then gradually rose but only to fall off slightly in the last two months of the year. The peak monthly price for tilefish occurred in January but the trough still occurred in June as with the rest of the selected species. Gag commanded the highest prices in all months, followed by DWG, then SWG, and then by red grouper and all reef fish. Tilefish had the lowest monthly prices. The clear difference in prices for various species, particularly between gag and red grouper, could indicate certain level of product differentiation in the marketing of the species.

Table 2.3.1.3. Average Monthly Landings (gutted weight), Revenues (2008 constant dollars), Ex-Vessel Prices (2008 constant dollars), Number of Boats, Trips, and Days Away from Port for Trips Landing at Least One Pound of Selected Species, 1993-2008.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Landings (thousand pounds)												
Red G	379	310	280	397	485	560	537	525	411	407	382	400
Gag	156	103	116	139	142	117	100	81	72	107	93	108
SWG	637	494	489	638	742	776	722	683	550	597	553	587
DWG	91	101	145	118	164	126	73	83	76	54	69	56
Tilefishes	39	41	57	43	57	43	38	39	31	40	50	30
Reef Fish	1,107	1,722	1,763	1,658	1,659	1,630	1,448	1,401	1,305	1,402	1,305	1,306
Real Value ($1,000)												
Red G	1,168	927	902	1,219	1,317	1,409	1,395	1,461	1,180	1,190	1,106	1,071
Gag	577	375	453	517	494	390	338	283	262	381	330	369
SWG	2,120	1,590	1,692	2,100	2,197	2,117	2,012	2,007	1,668	1,854	1,711	1,703
DWG	320	348	515	414	528	374	229	276	255	181	234	181
Tilefishes	78	78	107	82	98	72	69	73	59	78	92	54
Reef Fish	3,268	4,892	5,391	5,040	4,558	4,064	3,664	3,690	3,540	3,910	3,567	3,489
Real Prices ($)												
Red G	3.08	2.99	3.22	3.07	2.72	2.52	2.60	2.78	2.87	2.92	2.90	2.68
Gag	3.71	3.65	3.90	3.71	3.47	3.32	3.40	3.51	3.62	3.56	3.57	3.42
SWG	3.33	3.22	3.46	3.29	2.96	2.73	2.79	2.94	3.03	3.11	3.09	2.90
DWG	3.52	3.44	3.55	3.51	3.22	2.97	3.13	3.31	3.37	3.36	3.39	3.22
Tilefishes	1.98	1.89	1.88	1.88	1.73	1.69	1.80	1.88	1.90	1.93	1.83	1.80
Reef Fish	2.95	2.84	3.06	3.04	2.75	2.49	2.53	2.63	2.71	2.79	2.73	2.67
Boats												
Red G	301	277	288	341	374	369	358	350	319	303	284	280
Gag	223	225	223	270	278	268	248	234	220	229	217	214
SWG	390	426	438	481	500	480	453	436	412	408	386	377
DWG	93	141	162	149	147	127	94	88	88	83	80	75
Tilefishes	42	46	61	55	72	66	49	53	48	40	43	37
Reef Fish	452	547	566	584	589	561	547	515	489	496	478	472
Trips												
Red G	500	400	430	572	665	661	655	621	528	505	456	446
Gag	375	350	350	469	494	460	420	385	345	379	355	352
SWG	690	756	803	901	947	895	856	801	718	734	676	659
DWG	124	223	272	235	220	189	134	127	130	119	111	101
Tilefishes	54	57	78	67	96	89	64	72	61	50	54	48
Reef Fish	889	1,388	1,489	1,363	1,298	1,194	1,177	1,056	988	1,076	1,002	1,008
Days Away												
Red G	2,413	2,060	2,144	2,866	3,236	3,282	3,186	3,052	2,543	2,460	2,191	2,220
Gag	1,660	1,435	1,460	2,050	2,224	2,216	2,020	1,866	1,560	1,648	1,473	1,542
SWG	2,989	2,928	3,195	3,774	4,218	4,174	3,953	3,780	3,208	3,109	2,822	2,822
DWG	851	1,080	1,349	1,292	1,443	1,244	868	886	787	695	708	667
Tilefishes	416	433	633	522	741	680	466	547	452	379	413	351
Reef Fish	3,479	4,120	4,546	4,681	5,008	4,891	4,713	4,431	3,835	3,797	3,501	3,533

As may be expected, prices for SWG fell in between the relatively high gag prices and low red grouper prices. The landings dominance of red grouper in the SWG complex brought down the prices for SWG nearer to the red grouper prices than to those of gag. Relatively lower prices for other reef fish also brought down the prices for reef fish further below the red grouper prices. After adjusting for inflation, monthly prices per pound for red grouper averaged $2.86 and ranged from $2.52 to $3.22; those for gag averaged at $3.57 and ranged from $3.32 to $3.90; those for SWG averaged at $3.07 and ranged from $2.73 to $3.46; those for DWG averaged at $3.33 and ranged from $2.97 to $3.55; those for tilefish averaged at $1.85 and ranged from $1.69 to $1.98; and, those for reef fish averaged at $2.77 and ranged from $2.49 to $3.06.

Some general measures of effort in the grouper and tilefish fisheries, such as the number of boats, trips, and days away from port, also exhibit certain forms of seasonality. The seasonal patterns for these measures of effort averaged over the 1993-2008 period can be inferred from Table 2.3.1.3. For all selected species except DWG, the average number of boats landing at least one pound of the selected species follows a similar pattern. The number of boats increased over the first few months, peaked in May, and declined slightly through the rest of the year. The number of active boats landing at least one pound of DWG peaked in March and declined significantly in the summer months. This is probably due to closures of the fishery in recent years as the TAC is reached during the summer months. A similar pattern can also be observed for the number of trips taken by these vessels. Trips increased in the first few months, peaked also in May (March for DWG and reef fish), and declined through the rest of the year. The pattern for the number of days away from port is more uniform than those for number of boats and trips. With the only exception being red grouper peaking in June, days away from port increased in the first few months, peaked in May, and declined throughout the rest of the year. The monthly number of boats landing at least one pound of selected species averaged at 320 for red grouper, 237 for gag, 432 for SWG, 110 for DWG, 51 for tilefish and 525 for reef fish. The monthly number of trips averaged at 537 for red grouper, 395 for gag, 786 for SWG, 165 for DWG, 66 for tilefish, and 1,161 for reef fish. Monthly days away from port averaged at 2,638 for red grouper, 1,763 for gag, 3,414 for SWG, 989 for DWG, 503 for tilefish, and 4,211 for reef fish.

Distribution by Gear Type

Various gear types are used in the harvest of reef fish. In the particular case of the grouper and tilefish fisheries, vertical/handlines and longlines are the two dominant gear types, with traps comprising a distant third gear type. There are, however, variations in gear dominance depending on the species caught. One should recall that since February 2007, traps have been prohibited for use in harvesting reef fish. How landings from traps would be distributed among the remaining gear types cannot be determined. The performance of the fishery in 2007-2008 may yield some information, but this is not pursued here.

Table 2.3.1.4. Selected Fishery Performance Measures by Gear Type, 1993-2008.

	Diving	Handlines	Longlines	Other Gear	Traps	Trolling
Landings (thousand pounds)						
Red Grouper	11	1,328	3,068	7	700	2
Gag	29	860	427	5	11	3
SWG	53	2,836	3,862	16	740	7
DWG	0	188	963	2	4	1
Tilefish	0	20	488	1	1	1
Reef Fish	111	10,723	5,702	42	1,164	36
Real Value ($1,000)						
Red Grouper	31	3,747	8,748	21	1,912	6
Gag	105	3,084	1,517	18	38	13
SWG	180	9,073	11,523	52	2,046	25
DWG	1	560	3,280	5	10	3
Tilefish	0	31	906	1	2	1
Reef Fish	296	29,489	16,646	93	2,620	91
Boats						
Red Grouper	41	572	142	9	61	12
Gag	30	458	111	5	27	14
SWG	48	761	160	13	63	26
DWG	4	250	122	3	8	5
Tilefish	2	116	97	2	4	2
Reef Fish	51	896	168	23	66	51
Trips						
Red Grouper	207	4,440	1,252	25	526	21
Gag	172	3,588	787	18	148	34
SWG	319	7,060	1,421	39	573	60
DWG	5	1,282	681	4	12	6
Tilefish	2	344	435	3	10	3
Reef Fish	372	11,038	1,706	80	648	126
Days Away from Port						
Red Grouper	346	17,099	11,394	110	2,833	47
Gag	279	12,543	7,455	48	829	59
SWG	482	24,684	12,794	138	2,942	116
DWG	10	5,520	6,228	22	91	22
Tilefish	5	1,975	4,006	13	51	10
Reef Fish	544	32,001	14,623	210	3,080	270

Table 2.3.1.4 presents several fishery performance measures by gear type. In terms of landings, longlines have dominated the grouper and tilefish fisheries. Handlines have been the dominant gear in the gag and reef fish fisheries. Except for fish traps, all the other gear types accounted for relatively small amounts of grouper and tilefish landings. In addition, trap catches only matter in the SWG fishery (95% red grouper). The distribution of revenues mimics that of landings. That is, longlines generated the most ex-vessel revenues for all grouper and tilefish fisheries, except gag wherein handlines accounted for most of the ex-vessel revenues (as well as all reef fish). In terms of the number of boats, number of trips, and days away from port, handlines dominated the grouper and tilefish fisheries. With more handline boats in all fisheries

considered here, it is only logical to expect that handlines would account for more trips and days away from port than any other gear types in all subject fisheries. However, due to longer trips in deeper waters, longlines account for more days at sea for DWG and tilefishes than handlines. After adjusting for inflation, annual prices per pound for red grouper averaged $2.85 for longlines and $2.82 for vertical lines; those for gag averaged $3.55 for longlines and $3.59 for vertical lines; those for SWG averaged $2.98 for longlines and $3.20 for vertical lines; those for DWG averaged $3.41 for longlines and $2.97 for vertical lines; those for tilefishes averaged $1.86 for longlines and $1.55 for vertical lines; and, those for reef fish averaged $2.92 for longlines and $2.75 for vertical lines.

Distribution by Area

Because grouper caught in the Gulf are landed mostly in Florida, distribution of landings by area is presented by separating Florida into four areas—Southwest FL (statistical reporting areas 1-3; approximately Monroe and Collier counties), South-Central (areas 4-5; approximately Lee-Pinellas counties), West-Central FL (area 6; approximately Pasco to Citrus counties), and Northwest FL (areas 7-10; approximately Levy to Escambia counties). Landings of groupers for Alabama through Texas may include confidential data and are combined with northwest Florida and labeled as the Northern Gulf. Although the case for tilefishes is a little different, because substantial landings also occur in the Gulf States other than Florida, the geographic division is maintained to provide more information on the distribution of grouper.

Table 2.3.1.5 presents several fishery performance measures by area which are identical to those presented by gear type. For the period 1993-2008, South-Central FL led all other areas in the red grouper landings, followed by the West-Central Gulf, then by Southwest FL, and lastly by the Northern Gulf. For gag landings, the Northern Gulf led the group, followed by South-Central FL, West-Central FL, and Southwest FL. It should be noted that the combined gag landings of the four Florida areas significantly outweighed those of AL-TX. The South-Central FL region also led in the landings of SWG, followed by West-Central FL, the Northern Gulf, and Southwest FL. The Northern Gulf led all areas in landings of DWG, followed by South-Central FL, Southwest FL, and West-Central FL. The Northern Gulf also led all areas in landings of tilefishes, followed by South-Central FL, West-Central FL, and Southwest FL.

The revenue configuration by area essentially mirrors that of the landing configuration. The South-Central FL area had the highest revenues for red grouper and SWG while the Northern Gulf area had the highest revenues in gag, DWG, and tilefishes.

Table 2.3.1.5. Distribution of average landings, revenues, boats, trips, and days away from port by area in the Gulf, 1993-2008.

	NorthGulf	W-Central FL	S-Central FL	Southwest FL	Other
Landings (thousand pounds)					
Red Grouper	689	1,186	2,348	757	92
Gag	479	342	424	75	13
SWG	1,666	1,692	3,002	974	132
DWG	647	48	324	117	20
Tilefishes	338	46	76	40	10
Reef Fish	9,557	2,062	3,712	1,976	399
Real Value ($1,000)					
Red Grouper	1,939	3,303	6,683	2,153	268
Gag	1,717	1,223	1,511	272	47
SWG	5,364	5,094	8,992	2,915	407
DWG	2,168	162	1,082	379	63
Tilefishes	666	87	106	61	19
Reef Fish	26,046	5,831	10,720	5,438	1,037
Real Prices ($)					
Red Grouper	2.81	2.79	2.85	2.84	2.90
Gag	3.58	3.57	3.56	3.61	3.71
SWG	3.22	3.01	2.99	2.99	3.08
DWG	3.35	3.35	3.34	3.24	3.20
Tilefishes	1.97	1.90	1.40	1.53	1.91
Reef Fish	2.73	2.83	2.89	2.75	2.60
Boats					
Red Grouper	274	231	250	221	56
Gag	287	179	194	84	31
SWG	428	249	261	254	78
DWG	206	54	98	71	24
Tilefishes	116	28	58	44	12
Reef Fish	514	256	269	308	106
Trips					
Red Grouper	2,118	1,394	1,816	973	138
Gag	2,174	1,060	1,180	251	70
SWG	4,273	1,649	2,000	1,313	201
DWG	1,358	97	302	184	44
Tilefishes	478	49	135	108	20
Reef Fish	7,101	1,743	2,140	2,614	330
Days Away from Port					
Red Grouper	7,179	7,316	11,106	5,327	725
Gag	6,893	4,756	7,354	1,840	311
SWG	14,340	7,788	11,697	6,177	970
DWG	6,415	798	3,032	1,338	288
Tilefishes	3,245	433	1,440	760	154
Reef Fish	20,662	8,014	12,197	8,306	1,356

In terms of the number of boats landing at least one pound of selected species, the Northern Gulf led all areas for all selected species. Considering the landing/revenue contribution of this area to total landing/revenue of grouper and tilefish, it would appear that many boats in this area caught relatively small amounts of fish, possibly even with respect to DWG and tilefish. There were more boats in the South-Central FL region than in the Southwest FL or West-Central FL areas, except for all reef fishes combined. The ranking of trips by area is the same as that for boats, indicating that larger numbers of boats in an area are associated with greater numbers of trips. However, the ranking of days away from port does not match the rankings of boats or trips by area for red grouper and gag. The South-Central area includes the greatest number of days away from port for red grouper, gag and SWG because it includes a concentration of boats with reef fish longlines that take trips of long duration.

Species Composition

As a multi-species fishery, a fishing trip in the reef fish fishery in general and grouper and tilefish fisheries in particular catches a variety of species. To reduce clutter in the next two tables, per trip species composition is presented by major species grouping. An exception to this is the explicit consideration of red grouper and gag, because they comprise the majority of species under consideration in this proposed rule.

Table 2.3.1.6 presents the percent distribution of species caught during trips landing at least one pound of selected species while Table 2.3.1.7 presents the percent distribution of species caught during trips where the selected species produced a majority of trip revenues. The set of percents under the sub-heading "Red Grouper" pertains to the percent composition of species caught in trips landing at least one pound of red grouper (Table 2.3.1.6) or trips where red grouper generated a plurality of revenues (Table 2.3.1.7). Similar descriptions apply to the other sub-headings. All numbers are calculated as percent to the total reef and non-reef fish species caught in a trip. Given this method, the sum of reef fish and non-reef fish numbers should add to 100 percent. Also, the sum of SWG, DWG, tilefish, snappers, ORF (other reef fish) should equal the number for reef fish. In addition, the sum of red grouper, gag, and OSWG (other shallow water grouper) should equal the number for SWG. For example, in the first row of numbers under the red grouper sub-heading in Table 2.3.1.6, reef fish (93.7%) and non-reef fish (6.3%) equal 100%. Also, the sum of SWG (69.5%), DWG (2.9%), tilefish (0.9%), snappers (9.6%), ORF (10.7%) is equal to the number for reef fish (93.7%, approximately). In addition, the sum of red grouper, gag, and OSWG is equal to SWG (52.0 + 7.8 + 9.8 = 69.5%, approximately).

It is not surprising that for trips landing at least one pound of red grouper, gag, or SWG, the dominant species group caught was SWG (see Table 2.3.1.6). It is, however, a little interesting to notice from the table that for trips landing at least one pound of DWG, the dominant species group was not DWG but snappers; however, in recent years these percentages are nearly equal. In fact, until recently there was more SWG caught on those trips than DWG. For trips landing at least one pound of tilefish, this species was the dominant species group caught for the entire 1993-2008 period and all three sub-periods. Within the SWG group, red grouper was clearly the dominant species caught in trips landing at least one pound of any of the SWG species.

Table 2.3.1.6. Percent species composition on trips landing at least one pound of selected species, 1993-2008.

Period	Red G	Gag	OSWG	SWG	DWG	Tilefish	Snappers	ORF	Reef	Non-Reef	All Species
Red Grouper											
1993-98	52.0	7.8	9.8	69.5	2.9	0.9	9.6	10.7	93.7	6.3	100.0
1999-04	52.3	15.2	8.6	76.1	3.0	0.7	9.9	6.0	95.6	4.4	100.0
2005-08	50.9	13.3	5.5	69.7	2.6	0.8	17.3	6.2	96.6	3.4	100.0
1993-08	51.8	12.1	8.2	72.1	2.9	0.8	11.8	7.7	95.2	4.8	100.0
Gag											
1993-98	41.5	15.0	3.0	59.4	4.3	1.1	17.8	12.1	94.8	5.2	100.0
1999-04	41.3	21.0	3.0	65.3	4.8	0.8	17.9	7.8	96.6	3.4	100.0
2005-08	44.5	16.4	3.3	64.2	4.5	1.0	20.6	6.9	97.2	2.8	100.0
1993-08	42.3	17.6	3.1	62.9	4.5	1.0	18.6	9.0	96.2	3.8	100.0
SWG											
1993-98	34.0	6.0	8.5	48.5	4.9	1.6	25.8	13.0	93.8	6.2	100.0
1999-04	35.9	11.8	7.6	55.4	5.0	1.1	26.0	8.2	95.6	4.4	100.0
2005-08	36.9	10.4	5.1	52.4	5.2	1.3	30.5	7.2	96.6	3.4	100.0
1993-08	35.5	9.4	7.2	52.2	5.0	1.3	27.2	9.6	95.3	4.7	100.0
DWG											
1993-98	14.0	2.1	5.5	21.7	18.8	7.4	34.7	10.6	93.1	6.9	100.0
1999-04	14.6	6.1	5.9	26.6	19.7	6.4	35.1	8.1	95.9	4.1	100.0
2005-08	11.8	5.6	4.4	21.7	30.1	10.8	29.3	6.3	98.3	1.7	100.0
1993-08	13.6	4.6	5.3	23.5	22.4	8.0	33.3	8.5	95.6	4.4	100.0
Tilefish											
1993-98	10.3	1.6	6.0	17.8	26.9	17.9	22.6	9.7	94.9	5.1	100.0
1999-04	8.9	4.3	5.4	18.6	34.3	19.3	17.6	6.8	96.7	3.3	100.0
2005-08	7.0	3.2	3.3	13.4	34.9	22.3	21.0	6.3	98.0	2.0	100.0
1993-08	8.8	3.1	5.0	16.9	31.9	19.7	20.3	7.7	96.4	3.6	100.0

On trips landing at least one pound of red grouper, the share of SWG rose in the second period but fell in the third period. A similar scenario happened with respect to the share of red grouper, gag, OSWG, and DWG. The share of tilefish fell in the second period and gained slightly in the third period. Snappers caught on those trips increased over time from about 9.6% to 17.3%. On trips landing at least one pound of gag, the share of SWG increased over time, from 59.4% in the first period to 65.3% in the second period and 64.2% in the third period. The share of DWG increased in the second period and fell in the third period; that for tilefish fell in the second period and gained in the third period. The share of snappers increased over time. On trips landing at least one pound of SWG the share of SWG rose in the second period and fell in the third period; that for red grouper increased over time, from 34.0% in the first period to 36.9% in the third period; that for gag rose in the second period and fell in the third period; that for DWG slightly rose over time; and, that for tilefish fell in the second period and increased in the third period. On these trips, the share of snappers increased from 25% to over 30%.

Table 2.3.1.7. Percent species composition on trips with a majority of revenues generated by selected species, 1993-2008.

Period	Red G	Gag	OSWG	SWG	DWG	Tilefish	Snappers	ORF	Reef	Non-Reef	All Species
Red Grouper											
1993-98	76.7	4.9	6.0	87.6	1.1	0.3	3.2	3.6	95.9	4.1	100.0
1999-04	77.3	8.7	5.2	91.1	0.8	0.2	3.1	2.5	97.7	2.3	100.0
2005-08	77.0	9.5	4.4	90.9	0.6	0.2	4.0	2.1	97.8	2.2	100.0
1993-08	77.0	7.5	5.3	89.8	0.9	0.2	3.3	2.8	97.1	2.9	100.0
Gag											
1993-98	18.2	59.0	3.3	80.5	0.6	0.1	5.7	11.3	98.2	1.8	100.0
1999-04	23.6	58.0	3.4	85.0	1.8	0.2	5.3	5.8	98.1	1.9	100.0
2005-08	22.2	55.6	3.8	81.5	1.5	0.1	9.0	6.8	99.0	1.0	100.0
1993-08	21.7	57.5	3.5	82.7	1.4	0.1	6.6	7.6	98.4	1.6	100.0
SWG											
1993-98	60.9	10.1	12.8	83.8	1.2	0.4	4.3	6.3	96.1	3.9	100.0
1999-04	58.7	18.4	10.7	87.7	1.3	0.3	4.2	4.1	97.5	2.5	100.0
2005-08	63.7	17.0	6.7	87.4	1.0	0.3	5.6	3.6	97.9	2.1	100.0
1993-08	60.8	15.2	10.3	86.3	1.2	0.3	4.6	4.7	97.2	2.8	100.0
DWG											
1993-98	3.1	0.7	2.6	6.4	65.2	13.6	4.3	4.2	93.6	6.4	100.0
1999-04	2.5	1.9	1.9	6.3	66.7	15.5	3.3	4.1	95.8	4.2	100.0
2005-08	1.8	1.7	2.1	5.6	66.3	17.5	4.3	4.5	98.2	1.8	100.0
1993-08	2.5	1.4	2.2	6.1	66.0	15.4	3.9	4.2	95.7	4.3	100.0
Tilefish											
1993-98	0.7	0.1	1.8	2.7	9.2	82.2	0.7	1.0	95.7	4.3	100.0
1999-04	0.4	0.2	0.4	0.9	11.4	84.2	0.8	1.2	98.6	1.4	100.0
2005-08	0.9	0.5	0.5	1.8	13.1	81.2	1.3	1.6	99.1	0.9	100.0
1993-08	0.7	0.3	0.9	1.8	11.3	82.4	0.9	1.3	97.8	2.2	100.0

On trips landing at least one pound of DWG, the share of SWG rose over time, from 21.7% in the first period to 26.6% in the second period, only to fall back to the same level during the third period; those shares for red grouper and gag followed the same trend, although gag rose from 2.1% in the first period to 5.6% in third; that DWG slightly rose in the second period and rose significantly higher in the third period; that for tilefish fell in the second period but rose in the third. On these trips, the share of snappers stayed near 35% in the first two periods while dropping below 30% in the third period. On trips landing at least one pound of tilefish, the share of SWG rose in the second period and fell in the third; that for red grouper fell over the years; that for gag significantly increased in the second period and fell in the third; that for DWG rose in the second period and fell in the third; that for tilefish steadily rose over time. On these trips, the share of snappers stayed relatively high at 17 to 23%.

Vessels by Landing Categories

Vessels in the reef fish fishery caught not only several species but also varying amounts of the species. Table 2.3.1.8 presents landing categories of vessels landing at least one pound of red grouper, gag, SWG, DWG, or tilefish, using average landings per vessel over the years 1993-2008, 1999-2004, and 2005-2008. The species columns indicate that vessels of varying landing

categories landed at least one pound of that particular species. Take for example the first row of the table, with landing category of 1 to 499 pounds. During 1993-2008, an average of 1,012 vessels landed at least one pound of red grouper, 774 vessels landed at least one pound of gag, and so on. Because vessels land a variety of species, the numbers within this landing category are not additive across species. However, vessels are additive across landing categories within each species.

Table 2.3.1.8. Number of vessels by average landing category for trips landing at least one pound of selected species, 1993-2008, 1999-2004, and 2005-2008.

Category	Red Grouper	Gag	SWG	DWG	Tilefish	Grouper/Tilefish
1993-2008						
1 - 499 lbs	1,012	774	994	686	459	963
500-999 lbs	210	189	268	120	62	277
1,000-3,999 lbs	412	378	533	169	104	534
4,000-9,999 lbs	238	235	313	106	57	321
10,000-49,999 lbs	322	314	508	156	89	494
=> 50,000 lbs	320	112	428	94	35	503
1999-2004						
1 - 499 lbs	510	429	446	367	223	428
500-999 lbs	146	110	140	57	33	144
1,000-3,999 lbs	250	270	301	104	64	288
4,000-9,999 lbs	149	195	247	76	35	236
10,000-49,999 lbs	213	212	325	110	46	346
=> 50,000 lbs	187	51	260	41	15	295
2005-2008						
1 - 499 lbs	297	313	267	225	219	260
500-999 lbs	90	78	94	55	26	91
1,000-3,999 lbs	156	197	224	88	35	217
4,000-9,999 lbs	106	114	128	34	30	130
10,000-49,999 lbs	192	142	231	87	36	233
=> 50,000 lbs	111	12	156	21	8	186

As can be observed from Table 2.3.1.8, vessels are concentrated in the lower end of the distribution regardless of the period and/or species considered. Of particular interest is perhaps the last column--vessels landing at least one pound of grouper or tilefish. For the period 1993-2008, there were 963 vessels in the lowest category and 503 vessels in the highest category. In 1999-2004 and 2005-2008, only 428 and 260 vessels were in the lowest category and 295 and 186 vessels in the highest category, respectively. This indicates that many vessels fell out of the fishery during these two time periods, implying further that several vessels active in the years before 1999 or after 2005 were not active in the in-between years. And they could be the same or different vessels. In all three time periods, the lowest two categories included 31 to 40% of all vessels, and the rest of the vessels were practically evenly spread out across the remaining categories. There is a trend towards accumulation in the highest two landings category. From 1999-2008, 37% of vessels were in these categories while only 32% were in these categories from 1993-2008.

Vessels using different gear types land varying amounts of fish, so the distribution of vessels across various landing categories would vary by gear type. To provide some insights into this issue, a table similar to the one above is presented with added information on gear types used, but to avoid clutter only those vessels landing at least one pound of grouper or tilefish are included (see Table 2.3.1.9). This table also provides additional information. First, handline and longline vessels dominate the fishery in all landing categories. Second, there are more handline vessels composing each landing category than vessels using other gear types. Third, handline and longline vessels become more dominant as one moves from lower to higher landing categories. Fourth, there are more longline vessels than handline vessels in the highest category, regardless of the period considered although there would be even more longline vessels under the 1999-2004 period.

Table 2.3.1.9. Number of vessels by average landing category, by gear type, for trips landing at least one pound of grouper or tilefish, 1993-2008, 1999-2004, and 2005-2008.

Category	Diving	Handlines	Longlines	Other Gear	Traps	Troll
1993-2008						
1-499 lbs	131	1,005	40	108	63	204
500-999 lbs	34	264	21	16	22	29
1,000-3,999 lbs	51	544	53	28	33	39
4,000-9,999 lbs	23	330	34	14	27	3
10,000-49,999 lbs	16	482	90	4	43	2
=> 50,000 lbs	2	226	211	0	60	0
1999-2004						
1-499 lbs	75	451	18	27	13	117
500-999 lbs	9	131	11	3	4	14
1,000-3,999 lbs	30	311	26	11	9	18
4,000-9,999 lbs	12	236	20	6	6	1
10,000-49,999 lbs	7	313	52	2	25	0
=> 50,000 lbs	0	109	145	0	36	0
2005-2008						
1-499 lbs	34	272	8	4	0	28
500-999 lbs	13	89	6	0	1	3
1,000-3,999 lbs	16	219	14	1	7	6
4,000-9,999 lbs	11	128	16	0	2	1
10,000-49,999 lbs	3	193	40	0	17	0
=> 50,000 lbs	1	66	103	0	11	0

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 individual fishing quota (IFQ) program was provided in the previous section. 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 fishery, at least with respect to the current analysis, they are no longer considered fishery 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 gag 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 gag fishery 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 gag fishery 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 gag fishery had vessels with more horsepower (17%) and a somewhat significantly greater fuel capacity (25 %) than those who were active in the gag fishery. 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 gag fishery, while average annual gross revenue was only $50,788 (nearly 28% less) for gag shareholders that were not active in the gag fishery. The distribution of those revenues across different species and fisheries differed even more significantly. For gag shareholders active in the gag fishery, 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 gag fishery, 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 gag fishery, 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 gag fishery 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 gag fishery, they are likely to continue operating in the fishery. 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 gag fishery, 114 were not active in the gag fishery in 2008 while 117 were not active in the gag fishery 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 gag fishery, 483 and 487 shareholders were active in the gag fishery 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 all of the 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 Gulf reef fish fishery. 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 fishery. That is, if they have recently been active in the fishery, 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 fishery, 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 fishery 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 fishery 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 gag fishery in 2008 or 2009. Specifically, 52 of these 54 vessels were active and 2 were not active in each year.[6]

With respect to the 52 vessels active in the gag fishery, 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 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.

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

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 gag ($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 fishery, 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 fishery, 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 in the fishery, 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 gag fishery 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 fishery. 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 gag fishery accounted for 96% of all gag purchases in 2008 and 2009 respectively. Thus, dealer participation in this fishery 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 the commercial gag fishery. 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 2010b). 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 2010c). 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 2005b), the 2005 recreational fishery grouper regulatory amendment (GMFMC 2005c), 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 2005b). 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 (2009b). 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 (2009b) 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.

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).

As expected, given the distribution of target effort, the vast majority (more than 97%) of the economic impacts associated with the recreational gag fishery 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 the recreational gag fishery, 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 due to the fact that expenditures per trip are higher on charter trips compared to private trips.

2.4 Description of the Social Environment

2.4.1 Historical Background

Most of the information in this section, which generally only incorporates data through 2007, provides an historical context with respect to the relationships between the commercial gag fishery and communities around the Gulf. The implementation of the grouper/tilefish IFQ program on January 1, 2010, a description of which is provided in section 2.3.1.1, 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. Along with a description of the relationships between communities and the recreational gag fishery, these changes and their probable effects on certain aspects of the social environment are discussed in section 2.4.2.

This description will begin at the county level in some instances and follow with a description of the communities within each county. Utilizing demographic data at the county level will allow for updated statistics from the Census Bureau which produces estimates for geographies (counties; minor civil divisions; census designated places, etc.) that are larger than 20,000 prior to the decennial census.[7] Because employment opportunities often occur within a wider geographic boundary than just the community level, a discussion of various demographics within the county is appropriate. Profile information on very small communities is highly limited.

The county-level description will focus primarily on the demographic character and a discussion of coastal growth and development that seems to affect many coastal communities, especially those with either or both commercial and recreational working waterfronts. The rapid disappearance of these types of waterfronts has important implications for the disruption of various types of fishing-related businesses and employment and has generated programs to protect and preserve this infrastructure (Stan Mayfield Working Waterfronts Florida Forever Grant Program 2009; North Carolina Sea Grant 2007). The process of "gentrification" which tends to push those of a lower socio-economic class out of traditional communities as property values and taxes rise has become common along coastal areas of the U.S. and around the world. Working waterfronts tend to be displaced with development that is often stated as the "highest and best" use of waterfront property, but often is not associated with water-dependent occupations. However, with the continued removal of these types of businesses over time the local economy becomes less diverse and more reliant on the service sector and recreational tourism. As home values increase, people within lower socio-economic class find it difficult to

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[7] American Community Survey estimates are based on data collected over a three year time period. The estimates represent the average characteristics of population and housing between January 2005 and December 2007 and do not represent a single point in time. Because these data are collected over three years, they include estimates for geographic areas with populations of 20,000 or more. The ACS one-year estimates are only available for geographic areas with populations of 65,000 or more.

live within these communities and consequently spend more time and expense commuting to work if jobs continue to be available. Newer residents often have no association with the water-dependent employment and may see that type of work and its associated gear as unappealing to the aesthetics of the community. Looking at demographic trends within counties and communities can provide some indication as to whether these types of coastal change may be occurring.

Although the most recent estimates of census data have been used here, many of the statistics related to the economic condition of counties and communities do not capture the most recent downturn in the economy which may have significant impacts on current employment opportunities and business operations. Therefore, in the demographic descriptions of both counties and communities, it should be understood that in terms of unemployment, the current conditions could be worse than indicated by the estimates used here. To be consistent, census data are used for the various demographic characteristics and as noted earlier are limited to the most recent estimates which are 2007 and in some cases 2008. More current data are noted when available. Other aspects of trade and market forces as a result of the economic downturn could also affect the business operations of vessels, dealers, wholesalers and retail seafood businesses and may not be reflected in the demographic profile provided here.

Pinellas County

Pinellas County has seen steady growth since 1990 through 2007 as its population has grown to 922,127. A majority of Pinellas County residents were white for all three past decennial censuses, but that number has decreased steadily over the years and has been estimated to have dropped to 85.4% in 2007. Of the minority populations, Hispanics have seen the greatest growth from 2.4% in 1990 to 6.7% in 2007 with African Americans the largest minority population at 10.7%. In 2007, overall, Florida's population was 77.8% white 20.1% Hispanics and 16.0% African Americans. The median age for residents of Pinellas County was estimated to have been 44.8 years which is slightly higher than the median age for the entire state. Coastal urban areas like St. Petersburg and others are popular retirement destinations as they offer numerous medical facilities and other amenities that are desirable to retirees. Unemployment in Pinellas County in 2007, at 5%, was lower than the state-wide unemployment rate of 6%. The percentage of families below the poverty level was estimated at 8.2% which was also below the 9% for the state as a whole during 2007. Pinellas County had a slightly higher owner-occupied housing rate than the state with slightly over 71.2% of owner-occupied housing to the state-wide estimate of 70.3% for 2007. Although the median value of homes in the county has more than doubled since the 1990s at $190,800, it is still below the state average (U.S. Census Bureau 2009).

Pinellas County is highly urbanized with a population density that grew from 1,775 persons per square mile in 1970 to just over 3,132 persons per square mile in 2000. State–wide Florida had an estimated overall population density of 338 persons per square mile in 2007 up slightly from 296 in 2000 (NOAA Spatial Patterns of Socioeconomic Data 1970 to 2000 and the U.S. Census Bureau 2009).

Table 2.4.1. Pinellas County census demographics (Source: U.S. Census Bureau)

Factor	1990	2000	2007
Total population	851,659	921,495	922,147
Population Density (Persons per sq. mi.)*	2895	3132	3351
Median Age	N/A	43	44.8
Ethnicity or Race (Percent)			
White	90.5	87.2	85.4
Black or African American	7.7	9.4	10.6
American Indian and Alaskan Native	0.2	0.7	0.7
Asian	1.1	2.4	3.2
Hispanic or Latino (any race)	2.4	4.6	6.7
Educational Attainment (Population 25 and over)			
Percent with less than 9th grade	6.6	3.9	3.5
Percent high school graduate or higher	78.1	84	87.2
Percent with a Bachelor's degree or higher	18.5	22.9	26.6
Household income (Median $)	26,296	37,111	43,591
Poverty Status (Percent of population with income below poverty line)	9.5	10	11.6
Home Ownership (Percent)			
Owner occupied	69.2	70.8	71.2
Value Owner-occupied Housing (Median $)	73,800	96,500	190,800
Employment Status (Population 16 yrs and over)			
Percent of civilian labor force unemployed	4.5	4.3	5
Occupation (Percent)			
Management, professional, and related occupations	N/A	34.2	35.6
Service occupations	N/A	15.5	16.5
Sales and office occupations	N/A	31	29.5
Farming, fishing, and forestry occupations	1.5	0.2	0.1
Construction, extraction, and maintenance occupations	N/A	8.1	8.9
Production, transportation, and material moving occupations	N/A	11	9.4
Industry (Percent)			
Agriculture, forestry, fishing and hunting	1.6	0.2	0.2
Manufacturing	13	10.1	8.7
Percent government workers	11	10.8	10.8

* Data from NOAA Spatial Patterns of Socioeconomic Data 1970 to 2000 and the U.S. Census Bureau 2009

Pinellas County Communities

Madeira Beach is centrally located among a series of barrier island communities just west of St. Petersburg on the Gulf coast of Pinellas County that have become known as important tourist destinations for their white sand beaches. Madeira Beach is primarily a residential community with few industrial or service businesses, although the John's Pass area continues to grow with a variety of shops and restaurants that cater to both locals and tourists.

The community of Madeira Beach is often called the "Grouper Capital of the U.S." because the majority of grouper harvested in the U.S. waters are landed here (Wilson et al. 1998). Although the community continues to land the majority of grouper, there has been considerable change in

the makeup of the commercial fleet. There were once four fish houses that catered to a commercial fleet estimated to include 130 vessels that offloaded regularly at local docks (Lucas 2001). That number has declined to around 70-75 vessels in recent years, the majority of which are longline vessels and according to one industry representative, they continue to constitute over 95% of the fleet home ported there (R. Spaeth, personal communication). Longline vessels have on average 3-4 crew members including the captain. There were an estimated 441 employees working on vessels and employed at fish houses in 2000 with many living in close proximity if not in the community itself (Lucas 2001). The number of employees for both vessels and fish houses has declined, as the number the number of vessels and fish houses has declined and may be around 300 based on estimates from earlier research (Lucas 2001). It was estimated that there were 48 bandit reel vessels in Madeira Beach in 2000. However, that number has fallen noticeably over the past nine years according to one industry representative (R. Spaeth, personal communication).

In terms of reliance on Gulf reef fish, total landings within Madeira Beach for the time period 1999-2007 indicate substantial reliance upon red grouper in terms of pounds landed at just below 40% and just above 45% of overall value. Other species that are important to the total landings in Madeira Beach are gag and yellowedge grouper (Figure 2.4.1). Shark fins are not measured by the pound and therefore have only a bar representing value. If the majority of vessels that presently off-load in Madeira Beach are longline vessels, Figure 2.4.1 suggests fish dealers in this community rely substantially upon several species harvested with that gear type.

Because the initial rule to prohibit longline gear inside of 35 fathoms off Florida's west-central coast was implemented in 2009, vessel owners have adopted several strategies to mitigate the impacts. Many vessels in the Madeira Beach area have converted either permanently or temporarily to vertical line gear. To reduce the costs of this conversion, some are using rod and reels rather than permanently installed "bandit reels." As a result, many vessels have had reduced landings and are not meeting trip expenses with the amounts of fish landed. Hired captains are taking on increased debt and fish houses are often left with these expenses unpaid as some captains have been let go, while others have quit. Overall landings for one fish house have dropped from 100,000 pounds to 5,000 pounds a month according to the manager who said that several employees have been laid off and leased equipment returned (R. Spaeth, personal communication). According to NMFS port agents, an estimated 75% of longline vessels in this area may have converted to vertical line fishing. Those who have not converted are choosing to fish elsewhere or have chosen to tie vessels to the dock and not fish at all. Some vessels were fishing outside of 50 fathoms until the deepwater grouper component of the fishery closed.

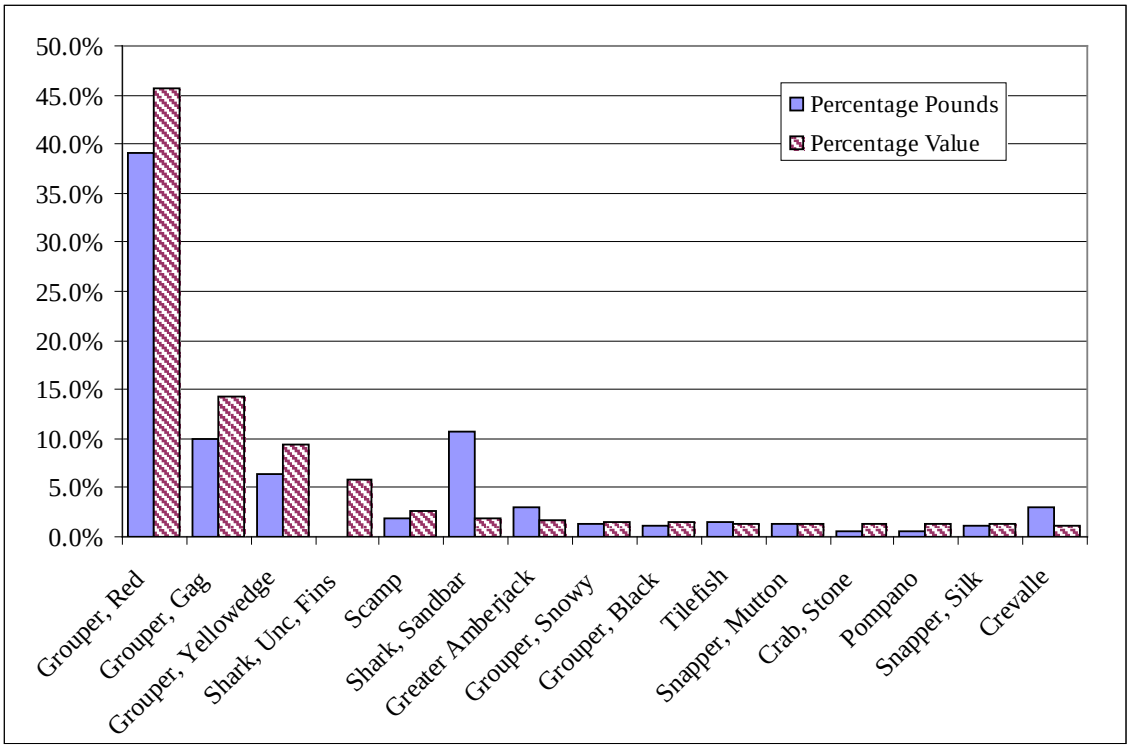

Figure 2.4.1. Percentage of pounds and value for top fifteen species landed from total landings in Madeira Beach 1999-2007 (Source: ALS SEFSC 2009).

The community of Tarpon Springs is approximately 25 miles north of Madeira Beach on U.S. Highway 19. There are longline vessels located within the community that would also be affected by the actions within this proposed rule. This community has a long history associated with commercial sponge fishing, but tourism has capitalized on that image as sponge fishing itself has declined and dockside areas are filled more with tourists than fishermen today. There were as many as 50 fishing vessels home ported in Tarpon Springs in 2002, most of them shrimp vessels. That number may have declined as the shrimp fishery has experienced a severe downturn due to economic hardship from increasing imports and fluctuating fuel prices (Impact Assessment, Inc. 2005).

Of those species that dominate landings in Tarpon Springs in terms of value, pink shrimp is by far the most valuable contributing over 30% of value for total landings from 1999-2007 (Figure 2.4.2). Red grouper is second in terms of value and pounds landed with just over 15% of value and 14% of pounds landed. Stone crab and gag grouper are the next two most valuable species, with accounting for approximately 15% and 7% of landings value, respectively, within the community.

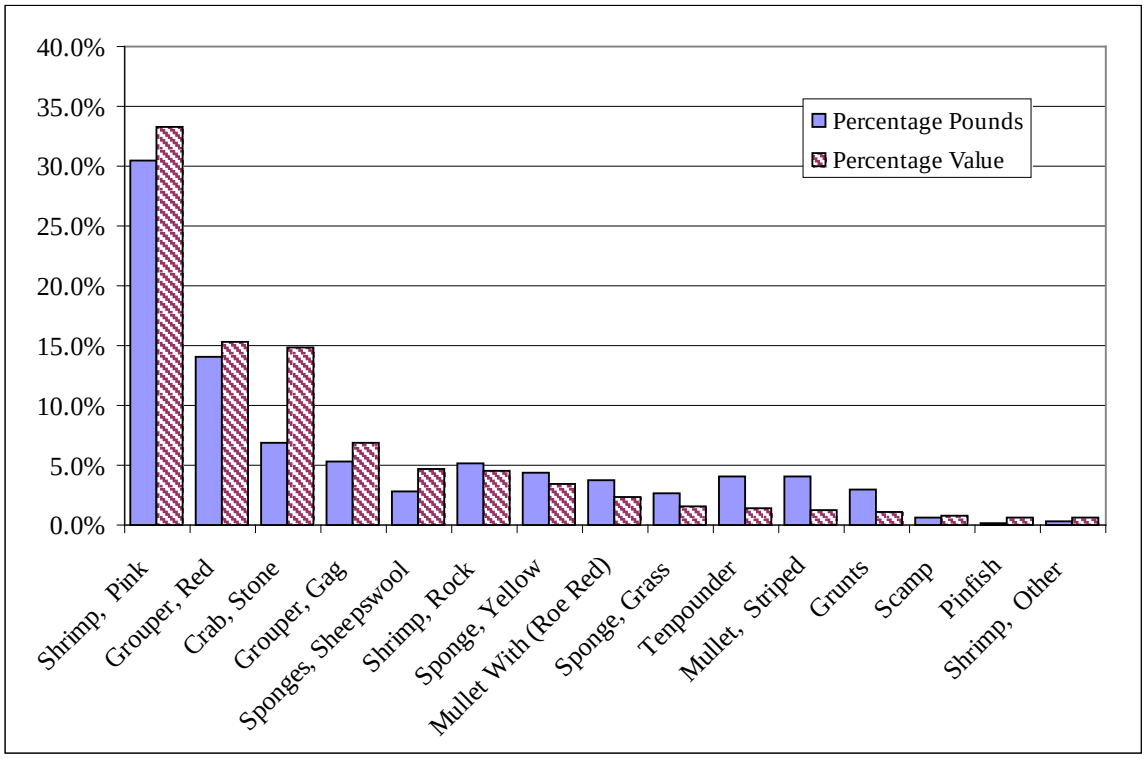

Figure 2.4.2. Percentage of pounds and value for top fifteen species landed from total landings in Tarpon Springs 1999-2007 (Source: ALS SEFSC 2009).

With the implementation of the rule prohibiting longline gear inside of 35 fathoms, according to NMFS port agents, one longline vessel from Tarpon Springs has converted to vertical line gear while another is fishing elsewhere. Other vessels may not be fishing at all or no longer homeporting there.

Both communities within Pinellas County are surrounded by highly urbanized or suburbanized environments that are embedded within a coastal economy that is driven by recreational tourism and seasonal residence by retirees or tourists. The county is the most densely populated county in the state with a population density twice that of the most populous county in Florida, Miami-Dade. Because development pressures have existed for some time, waterfront property that has not experienced some type of redevelopment is likely exceptional. County officials estimate that approximately 80% of Pinellas County's developable land area is now developed. According to one fish house owner, prior to the decline in the housing market, there were offers to purchase the waterfront property his fish house occupied for redevelopment into condos. Although these pressures have lessened with the current recession, economic recovery may result in renewed attempts to acquire these working waterfronts for redevelopment.

Like Madeira Beach and Tarpon Springs, St. Petersburg is part of the large metropolitan area within Pinellas County. With over 234 miles of coastline along Tampa Bay, the Gulf, and the Intracoastal Waterway, St. Petersburg has the largest municipal marina in the Southeast, with 610 boat slips. Population growth has occurred over most of the last decade.

There are now four major seafood processors in St. Petersburg, down from six in 2000. One processor serves as a fish house with dock space reserved for five to six independent Vietnamese grouper fishermen and five or six shrimpers. The others are situated in landlocked areas and receive products trucked from fish houses or independent fishermen in the adjacent communities of Madeira Beach and Tarpon Springs. Although mullet was the primary catch prior to the 1994 gill net ban, processors are now primarily interested in domestic shrimp and grouper– the bulk of which is harvested between Texas and the Florida Keys. Due to a decrease in locally available product, however, these processors now import much of their tuna, grouper, crab, shrimp, and squid from Asia and South America (Impact Assessment, Inc. 2005).

One of the largest frozen bait distributors in Florida is located here, supplying almost all of the bait shops in the area. Mullet was among their best selling products, but cleaned and frozen bait is now the principal product. Unlike Tampa, the City of St. Petersburg has not assigned an industrial area (like the Port of Tampa) to enhance commercial fishing operations. Presently, the total available commercial fishing dockage supports less than 15 spaces; much of the waterfront area is now occupied by hotels, homes, marinas, and tourist attractions. The municipal marina is largely occupied by sailboats. There are approximately ten public boat ramps, mostly located in the western part of St. Petersburg. The St. Petersburg pier was originally built to serve recreational fishermen, but has become more of a sight-seeing and entertainment spot. Marina staff estimate that only 40 to 50% of clientele are interested in fishing. Indeed, local anglers tend to favor Gandy Bridge, Weedon Island fishing pier, Skyway Piers, and the Fort De Soto beaches. Some local fishery participants express concern that increased waterfront development will damage water quality, even though this expansion increases their business. The local fleet is extensive and productive (Impact Assessment, Inc. 2005).

Other Communities

Located in Bay County, demographics for which are presented in Table 2.4.2, **Panama City** has a long history of both commercial and recreational fishing. Today there remains substantial infrastructure devoted to both fisheries. The community had nine active processors and employed 55 persons in 2000. There were numerous docking facilities for both commercial and recreational fishermen at that time (Impact Assessment, Inc. 2005). This community has had the highest percentage of longline vessels home ported in a community. Table 2.4.3 provides the most currently available information regarding fishing infrastructure in Panama City. This information was accurate as of January 2008 according to the local NMFS port agent.

The top species in terms of landings and value from 1999-2007 in Panama City are red snapper and yellowfin tuna with red snapper contributing over 20% of the value of all landings and yellowfin tuna approximately 17%. Gag grouper was next in terms of value and fourth in pounds landed. Red grouper was fourth in percentage of value with just below 15% of value for all landings (Figure 2.4.3).

Table 2.4.2. Bay County Census Demographics (Source: U.S. Census Bureau)

Factor	1990	2000	2007
Total population	126,994	148,217	163,805
Population Density (Persons per sq. mi.)*	166.3	194.1	216.2
Median Age	33.2	37.4	39.4
Percent under 5 years of age	7.3	6.1	6.9
Percent 65 years and older	12.0	13.4	14.3
Ethnicity or Race (Percent/one or more races)			
White	86.3	85.8	85.4
Black or African American	10.8	11.2	12.1
American Indian and Alaskan Native	.7	1.5	1.7
Asian	1.8	2.3	2.6
Hispanic or Latino (any race)	1.8	2.4	3.5
Non-Hispanic (White alone)	N/A	82.8	80.4
Educational Attainment (Population 25 and over)			
Percent with less than 9th grade	7.6	5	4.1
Percent high school graduate or higher	74.7	81.0	86.3
Percent with a Bachelor's degree / higher	15.7	17.7	20.9
Household income (Median $)	24,684	36,092	48,516
Poverty Status (Percent Pop below poverty line)	14.4	13.0	11.7
Owner Occupied Housing (Percent)	65.5	68.6	66.2
Value Owner-occupied Housing (Median $)	61,600	93,500	182,300
Civilian Labor Force Unemployed (% 16 yrs & over)	3.9	4.9	5.6
Occupation (Percent)			
Management, professional, and related	N/A	28.5	32.4
Service	N/A	19.7	18.5
Sales and office	N/A	28.1	27.6
Farming, fishing, and forestry	2.0	0.6	0.2
Construction, extraction, and maintenance	N/A	12.3	12.6
Production, transportation, and material moving	N/A	10.8	8.7
Industry and Class of Worker (Percent)			
Agriculture, forestry, fishing and hunting	1.8	.9	0.5
Manufacturing	8.4	6.5	5.9
Percent government workers	20.7	17.7	18.5
Self-employed workers	6.8	6.7	6.3

Table 2.4.3. Fishing Infrastructure in Panama City

Infrastructure or Service	Quantity
Air fill stations (diving)	Several
Bars/clubs (dockside or in town)	Several
Boat yards/ Boat builders (recreational/commercial)	Several
Churches with maritime theme	None observed
Docking facilities (commercial)	4
Fishing Gear, Electronics, Welding, and other repair	25
Fishing associations (recreational/commercial)	3
Fish processors, Wholesale Fish House	6
Fisheries research laboratories	1
Fishing monuments	0
Fishing pier	3
Hotels/Inns (dockside)	6
Marine railways/haul out facilities	0
Museums—fishing/marine-related	1
Net makers	10
NMFS or state fisheries office (port agent, etc.)	1 Fed/1State
Public boat ramps	30
Recreational docks/marinas	28
Bait & Tackle/fishing supplies	108
Recreational Fishing Tournaments	Several
Sea Grant Extension office	0
Seafood restaurants	100+
Seafood retail markets	20+
Trucking operations	0
Site-seeing/pleasure tours	12
Charter/Head Boats	100+
Commercial Boats	100+

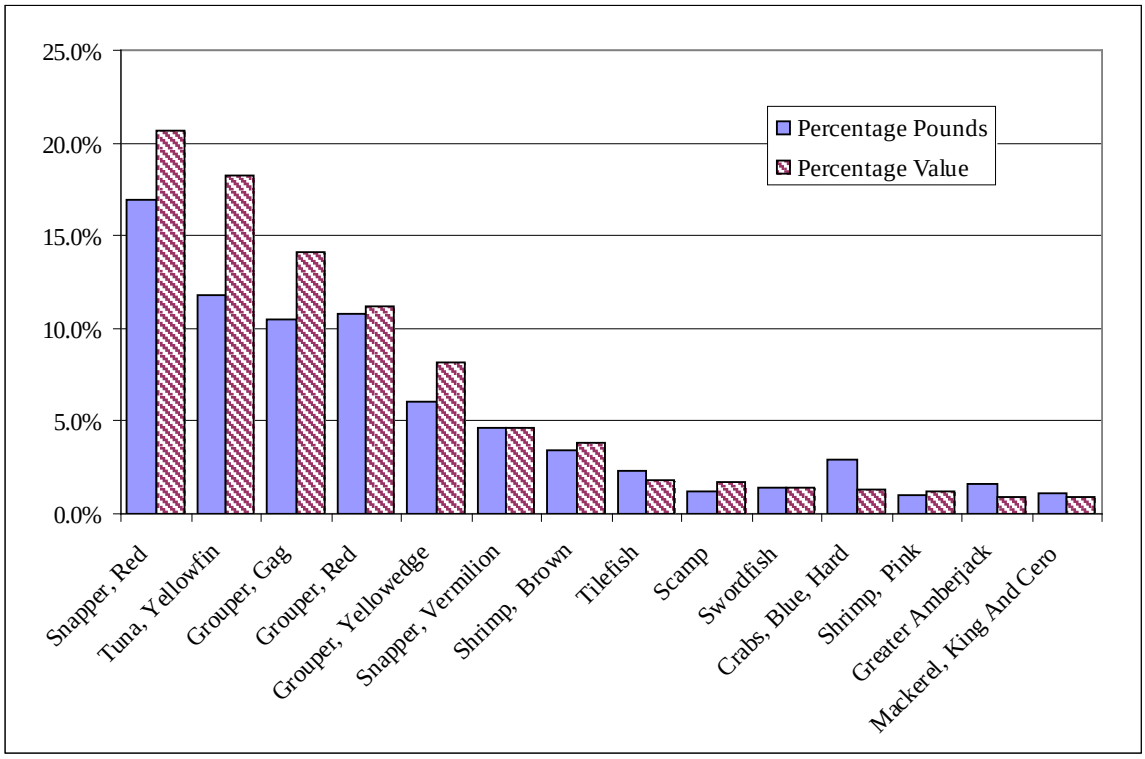

Figure 2.4.3. Percentage of pounds and value for top fifteen species landed out of total landings in Panama City, Florida 1999-2007 (Source: ALS SEFSC 2009).

Located in Franklin County, demographics for which are presented in Table 2.4.4, **Apalachicola** also has a long history with both commercial and recreational fishing. Today there remains a working waterfront with landings of various species including shrimp, oysters, and grouper. The community has a substantial amount of infrastructure devoted to both commercial and recreational fishing, but is seeing an increasing growth in tourism which could increase pressure for development on the working waterfronts (Impact Assessment, Inc. 2005).

Oysters are by far the most important species in terms of value of landings for the community, with just below 25% of value for all landings over the time period of 1999-2007 as seen in Figure 2.4.4. Oysters represent slightly over 23% of landings in terms of pounds. Pink shrimp is the second most valuable species with just over 20% of the value for all landings within the community. Gag is the third most valuable species representing slightly more than 10% of landings value within the community. Red grouper makes up 9.4% of total value for landings.

Table 2.4.4. Franklin County Census Demographics (Source: U.S. Census Bureau)

Factor	1990	2000	2007
Total population	8,967	11,057	11,291
Population Density (Persons per sq. mi.)*	N/A	73.0	74.1
Median Age	N/A	40.8	N/A
Percent under 5 years of age	6.3	4.6	5.8
Percent 65 years and older	18.0	15.7	18.1
Ethnicity or Race (Percent/one or more races)			
White	86.7	82.4	867
Black or African American	12.4	16.6	11.3
American Indian and Alaskan Native	0.5	1.2	0.5
Asian	0.2	0.3	0.4
Hispanic or Latino (any race)	0.7	2.4	1.7
Non-Hispanic (White alone)	N/A	79.8	85.1
Educational Attainment (Population 25 and over)			
Percent with less than 9th grade	17.5	8.1	8.0
Percent high school graduate or higher	59.5	68.3	N/A
Percent with a Bachelor's degree or higher	12.4	12.4	N/A
Household income (Median $)	17,247	26,756	35,182
Percent of Population below Poverty Line	26.6	17.7	18.6
Owner Occupied Housing (Percent)	80.5	79.2	79.2
Value Owner-occupied Housing (Median $)	51,700	105,300	N/A
Percent of Civilian Labor Force Unemployed (16 yrs and over)	8.5	3.6	4.0
Occupation (Percent)			
Management, professional, and related occupations	N/A	21.2	N/A
Service occupations	N/A	21	N/A
Sales and office occupations	N/A	23.2	N/A
Farming, fishing, and forestry occupations	12.2	9.7	3.0
Construction, extraction, and maintenance occupations	N/A	13	N/A
Production, transportation, and material moving occupations	N/A	11.9	N/A
Industry and Class of Worker (Percent)			
Agriculture, forestry, fishing and hunting	12.6	9.2	N/A
Manufacturing	6.0	4.8	N/A
Percent government workers	17.9	18.5	21.3
Self-employed workers	17.3	19.4	N/A

* Data from NOAA Spatial Patterns of Socioeconomic Data 1970 to 2000 and the U.S. Census Bureau 2009

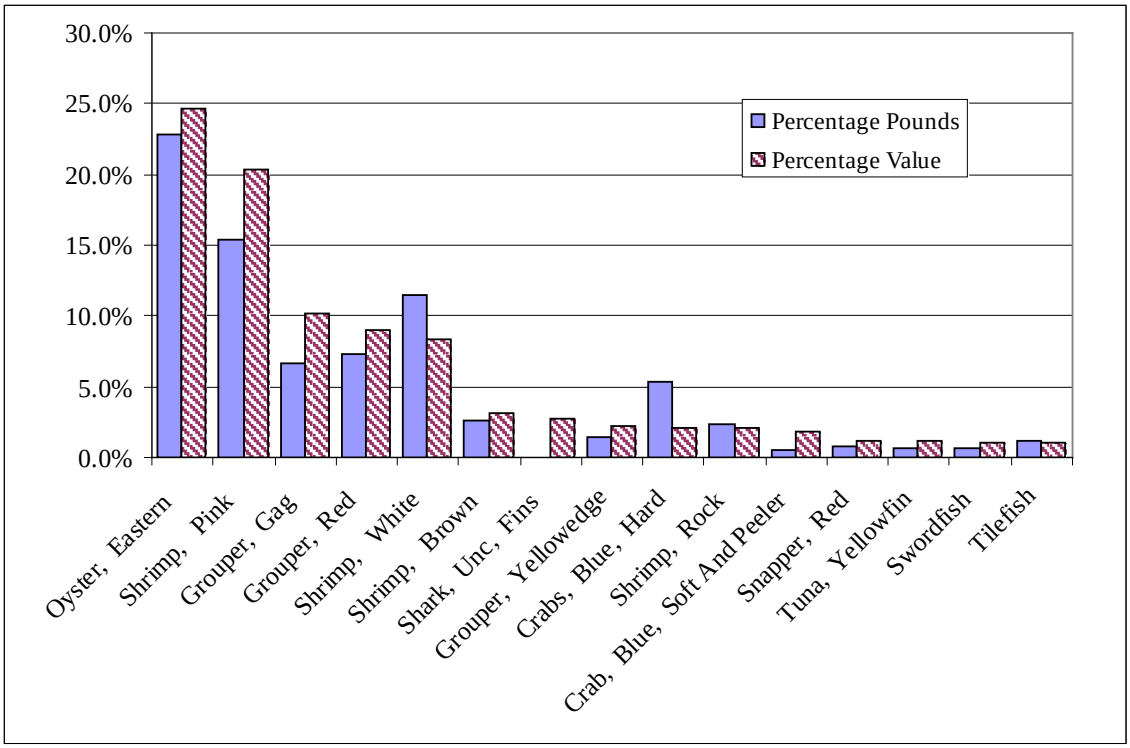

Figure 2.4.4. Percentage of pounds and value for top fifteen species landed out of total landings in Apalachicola, Florida 1999-2007 (Source: ALS SEFSC 2009).

The community of **Steinhatchee** was originally documented by Jacob et al (2000). The open waters of the Gulf are some four miles west. The small town of Jena is located immediately across the river in adjacent Dixie County. The entire area is quite rural, and large tracts of low-lying forests characterize the region. Residents often travel the 45 miles to Chiefland or Perry for certain goods and services.

Steinhatchee (unincorporated, pop. 1,128 in 2000) is smaller than both Panama City and Apalachicola, but does have fishing infrastructure devoted to commercial fishing for reef fish. Its history is based in the Taylor County cedar milling industry. The timber industry remains regionally significant. Commercial fishing has reportedly diminished in economic importance as a result of the Florida gill net ban. Over the years, the community has seen a transition to an increasing reliance upon the recreational fishing although there were substantial landings of stone crab, grunts and red snapper in 2000 (Impact Assessment, Inc. 2005). Several businesses offer various seafood products for retail sale. Over the time period of 1999-2007, stone crab dominates in terms of value and blue crab is the largest in terms of pounds landed (Figure 2.4.5). Red grouper and blue crab are second in terms of landings value with each representing just over 11% of total value. Gag ranks fourth in terms of value and is seventh in percentage of pounds landed.

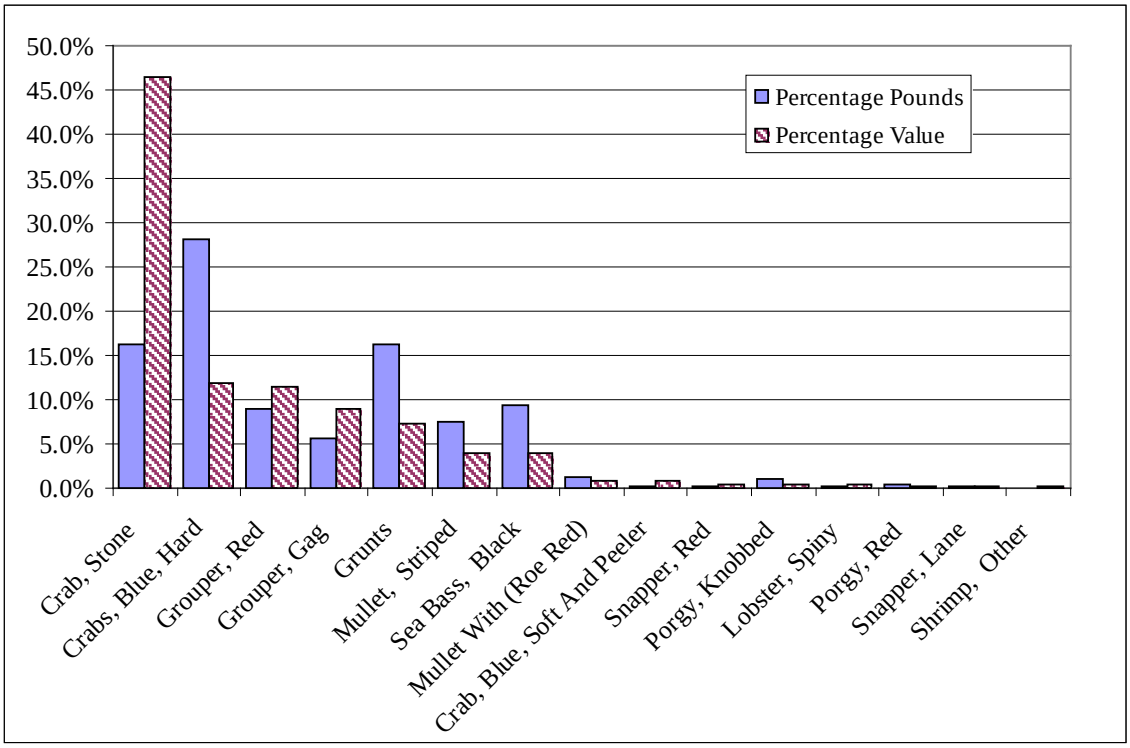

Figure 2.4.5. Percentage of pounds and value for top fifteen species landed out of total landings in Steinhatchee, Florida 1999-2007 (Source: ALS SEFSC 2009).

Fort Myers Beach (population 6,561 in 2000) has substantial fishing infrastructure for both commercial and recreational fishing. At one time there were three commercial docking facilities with space for approximately 60 shrimp fishing vessels. These facilities offered most of the support services needed for the shrimp fleet including offloading, maintenance, fuel, ice and net repair (Impact Assessment, Inc. 2005). With the recent downturn in the shrimp fishing industry, it is not known to what extent these facilities remain or the number of vessels that continue to dock there. However, according to Figure 2.4.6, pink shrimp continue to dominate the landings and value among all species harvested for the community. Red grouper is second in terms of pounds landed and in value, but represents less than 5% of both landings and value for the community overall. Gag ranks sixth in terms of landings and value.

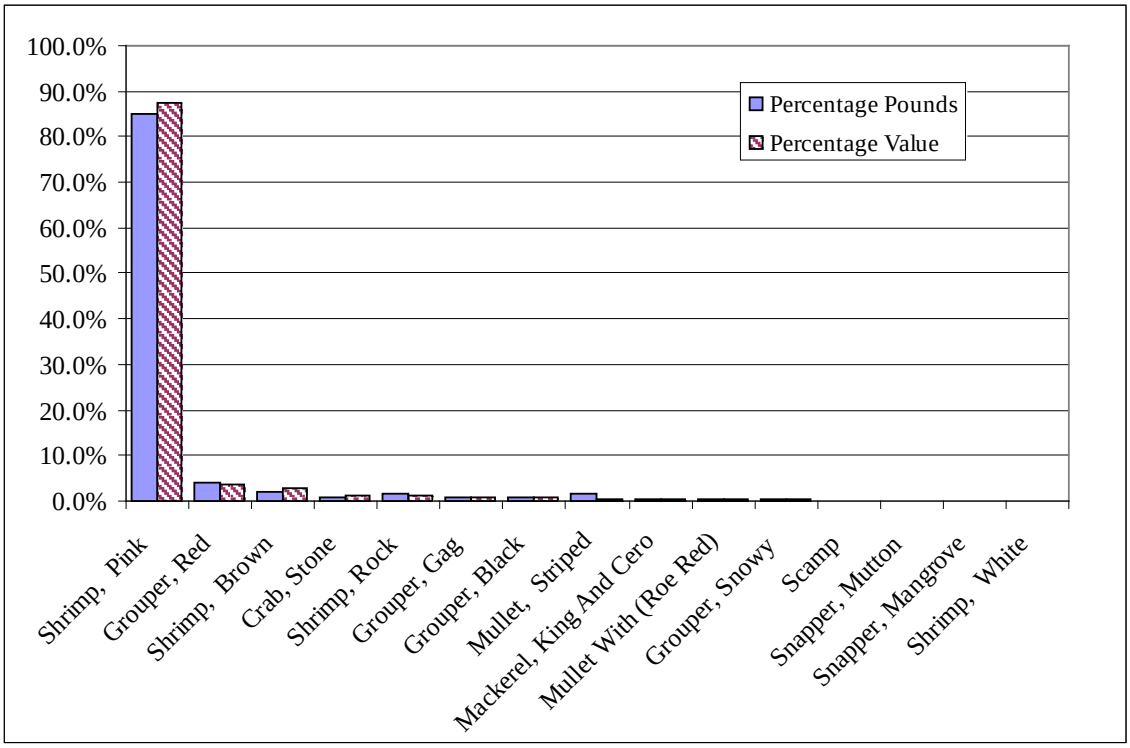

Figure 2.4.6. Percentage of pounds and value for top fifteen species landed out of total landings in Fort Myers Beach, Florida 1999-2007 (Source: ALS SEFSC 2009).

Destin (population 11,119 in 2000) sits on the western end of Moreno Point at the bottom of Choctawhatchee Bay in Okaloosa County (see Table 2.4.5 for county demographics). Destin was reportedly homeport to 161 vessels, with136 of those holding charter permits according to the Gulf EFH EIS (2004).

Destin is a major tourist destination with its white sand beaches and azure waters being the main attraction. Like many coastal communities with a strong tourism economy, recreational fishing is also an important part of the mix. Known as the Billfish Capital of the Gulf, offshore fishing for blue and white marlin takes place from August through October. Fishing tournaments are scheduled throughout the year, but primarily in early Spring, Summer, and early Fall.

Panacea (unincorporated, pop. 1,149 in 2000) is a small rural community located on U.S. Highway 98 in Wakulla county (see Table 2.4.5 for county demographics). The town's location at the northern end of Dickenson Bay above Porter Island makes for safe anchorage. The adjacent waters and series of islands are productive grounds for crab, mullet, and oysters, the principal landings of the local fleet. Tallahassee is approximately 30 miles to the north, and residents typically travel to the city for various services.

Residents have long been involved in commercial fisheries, though the gill net ban reportedly led to extensive problems for local participants (Jacob et al. 2002). Local job opportunities are limited. Panacea was recently named a Florida Waterfronts Community. Residents are optimistic that the designation will enhance funding for waterfront redevelopment and thereby

reduce some of the economic challenges encountered by the commercial fleet and community as a whole.

Many residents continue to rely upon commercial fishing as a primary source of income. Because the net ban's effects on mullet harvest, commercial participants have focused on blue crab and some offshore species. Some participants have made the transition to charter and guide fishing. Many residents hold recreational saltwater licenses.

Table 2.4.5. Census Demographic Estimates for Okaloosa and Wakulla Counties (U.S. Census Bureau)

Factor	Okaloosa Co	Wakulla Co
Total population	181,205	30,092
Population Density (Persons per sq. mi.)*	195.1	49.0
Median Age	39.0	38.6
Percent under 5 years of age	7.2	5.3
Percent 65 years and older	13.3	12.5
Ethnicity or Race (Percent/one or more races)		
White	85.1	85.9
Black or African American	10.8	13.3
American Indian and Alaskan Native	1.4	1.4
Asian	4.1	0.8
Hispanic or Latino (any race)	5.7	3.0
Non-Hispanic (White alone)	78.3	81.9
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	2.6	3.6
Percent high school graduate or higher	91.0	83.0
Percent with a Bachelor's degree / higher	27.9	14.7
Household income (Median $)	57,11	53,595
Poverty Status (Percent Pop below poverty line)	8.9	13.4
Owner Occupied Housing (Percent)	67.4	83.0
Value Owner-occupied Housing (Median $)	166,700	142,300
Civilian Labor Force Unemployed (% 16 yrs & over)	4.4	6.1
Occupation (Percent)		
Management, professional, and related	36.9	28.4
Service	18.8	18.2
Sales and office	24.6	28.3
Farming, fishing, and forestry	0.3	0.1
Construction, extraction, and maintenance	11.9	16.2
Production, transportation, and material moving	7.5	8.9
Industry and Class of Worker (Percent)		
Agriculture, forestry, fishing and hunting	0.4	0.7
Arts, entertainment, recreation, accomm, food services	11.0	4.4
Percent government workers	20.3	27.9
Self-employed workers	5.6	6.7

2.4.2 Current and Projected Social Environment

The purpose of the information in Tables 2.4.6-2.4.8, and also in Figures 2.4.7-2.4.20, is to provide a more accurate representation of these communities' current and near-term relationship with the gag fishery in 2010 and 2011. Providing a more current picture of these relationships is

important since the actions in this proposed rule consider alternatives which would affect the 2011 commercial gag quota and the recreational gag bag limit.

Certain aspects of Table 2.4.6, which illustrates these communities' relationship with the commercial sector of the gag fishery, require some explanation. First, only current IFQ dealers and initial 2010 gag IFQ shareholders and allocation recipients are considered. Thus, dealers and vessels that were active in the gag fishery in 2008 or 2009 but are not current IFQ dealers or initial gag IFQ allocation recipients were not considered in the analysis because they are not current participants in the fishery and thus not likely to be directly or indirectly affected by the actions in this proposed rule. For IFQ dealers, "current" refers to dealers that possessed a valid Gulf reef fish permit, had established an IFQ dealer account, and obtained an IFQ dealer endorsement as of May 13, 2010. Further, a dealer's community is based on the physical location of its primary business as opposed to mailing address or "off-site" unloading locations. An "initial" shareholder and allocation recipient refers to those "persons" who were given gag allocations effective January 1, 2010, based on information as of October 1, 2009. A shareholder's community is based on the primary permit owner's residential address. Second, a community will only receive a ranking, and implicitly ranking "points," if it has a positive (i.e. non-zero) value for that indicator. So, a null cell indicates that a particular community was not "active" with respect to that particular indicator.

Third, because most communities had less than three IFQ dealers purchasing gag in 2008 and 2009, the actual revenue figures are not provided in the table in order to ensure confidentiality. However, this information is presented in relative terms, not only in Table 2.4.6 based on the rankings, but more precisely in Figures 2.4.7-2.4.16, where the size of each circle indicates the each factor's magnitude in a community relative to other communities. Similarly, if the number of gag shareholders in a community is less than three, their initial 2010 gag allocations are suppressed in Table 2.4.6 in order to protect confidentiality, although the community's ranking is still provided. Most communities had more than three gag shareholders and thus the information is provided in most instances. Fourth, information regarding the number of longline endorsement qualifiers in each community is not confidential and therefore is also provided.

Finally, shareholders' gag revenue, number of active shareholder vessels in the gag fishery, and projected 2010 landings in each community are based on shareholders' 2008 or 2009 fishing activities and geographic landing patterns as indicated in the table. Projected 2010 landings are also determined by the 2010 initial allocations for shareholders residing in each community. That is, the geographic distribution of gag landings by each shareholder's vessel in 2008 and 2009 was "applied" to its 2010 initial gag allocation and then aggregated at the community level. Because shareholder gag revenue in one or both years was confidential in many communities, some shareholders were not active in the fishery in 2008 or 2009, and some shareholders' vessels and landings could not be attached to a current IFQ dealer and thus an associated community, only the rankings are provided in this table. However, as with dealer revenue, this information is illustrated in a relatively more precise manner in Figures 2.4.7-2.4.16.

Indicators reflecting fishing activities and geographic landing patterns in 2008 were weighted less (by 50%) than those in 2009 when calculating ranking points for those particular indicators and are therefore less influential on a community's overall rank. The rationale for the lower

weight applied to 2008 based indicators, and implicitly higher weights for the indicators based on 2009 and 2010 information (actual and projected), is that the fishery's regulatory environment changed substantially in 2009 and 2010 due to the new longline gear restrictions, longline endorsements, and most importantly the IFQ program. Further, available information suggests that stock abundance likely decreased in 2009 and the expectation is that this lower abundance will continue at least in the short-term. As such, it is logical to conclude that fishing and landings patterns for 2009, particularly in combination with the 2010 IFQ allocations and information on longline endorsement qualifiers, will be much more indicative of the fishery's structure and performance in 2010 and 2011 than those in 2008.

For each indicator, ranking points are equal to the inverse of the ranking relative to the total number of communities receiving a ranking for that indicator. Thus, for example, if a community ranks first out of 43 communities receiving a ranking for that indicator, then it receives 43 ranking points. Conversely, if it ranked 43rd out of 43 communities, that community receives one ranking point. If a community does not receive a ranking for an indicator, then it receives no (zero) ranking points. A community's overall rank is based on the aggregation of ranking points across all indicators, again noting the lower weights attached to the indicators based on 2008 fishing activities and geographic landing patterns. In instances where communities were "tied" with respect to a particular indicator, which was particularly an issue with respect to the number of longline endorsement qualifiers, the projected 2010 gag landings based on 2009 patterns was used as the "tiebreaker" indicator. Thus, for example, if two communities had the same number of longline endorsement qualifiers, the community with the higher level of projected 2010 gag landings, as based on 2009 patterns, was given the higher ranking. This indicator was chosen as the "tiebreaker" as it is believed to be the most important factor with respect to predicting the commercial fishery's structure and performance in 2010 and 2011.

As seen in Figures 2.4.7 and 2.4.8, the majority of revenue from gag landings with IFQ dealers in 2008 and 2009 was concentrated in Panama City, Apalachicola, Destin, and along Florida's west central coast, particularly in Pinellas County (Madeira Beach, St. Petersburg, Tarpon Springs, Redington Shores, and Clearwater). These figures also illustrate some significant changes that occurred between 2008 and 2009. Specifically, revenue from gag landings decreased for almost all communities, with a few exceptions. For example, although Apalachicola and Panama City continued to rank highly, revenue from gag landings decreased by 60% or more in each community respectively. Conversely, revenue from gag landings only decreased by slightly more than 20% in Madeira Beach and actually increased by approximately 200% in Redington Shores. In general, a significant redistribution of revenue from gag landings took place from 2008 to 2009, shifting away from communities in the Panhandle and Big Bend regions to the west central coast, particularly communities in Pinellas County.

Table 2.4.6. Ranking of Communities Associated with the Commercial Gag Fishery Based on Key Indicators

STATE	CITY	2008 Gag Dealer Revenue Rank	2009 Gag Dealer Revenue Rank	2010 Initial Gag Allocation (lbs)	2010 Initial Gag Allocation Rank	2010 Initial Shareholders' Gag Revenue 2008 Rank	Number of Active Gag Shareholder Vessels 2008 Rank	Projected 2010 Gag Landings (2008 Pattern)	2010 Initial Shareholders' Gag Revenue 2009 Rank	Number of Active Gag Shareholder Vessels 2009 Rank	Projected 2010 Gag Landings (2009 Pattern)	Number of Longline Endorsement Qualifiers	Longline Endorsement Rank	Overall Rank
FL	PANAMA CITY	1	1	243,377	1	1	1	1	1	1	2	7	1	1
FL	APALACHICOLA	2	3	90,176	2	2	3	2	2	4	3	1	12	2
FL	MADEIRA BEACH	3	2	29,870	11	7	5	3	12	2	1	4	7	3
FL	ST PETERSBURG	5	5	54,205	4	3	4	6	10	6	11	1	13	4
FL	CLEARWATER	9	8	36,249	9	13	19	8	14	14	6	4	6	5
FL	PANACEA	8	12	42,834	6	5	11	7	6	13	5			6
FL	REDINGTON SHORES	18	7	26,676	14	12	9	10	13	9	7	1	15	7
FL	STEINHATCHEE	13	11	55,014	3	18	15	11	11	15	9			8
FL	TARPON SPRINGS	7	6	29,178	13	28	8	12	19	5	10			9
FL	TAMPA	11	13	26,134	15	15	18	22	15	22	28	2	9	10
FL	DESTIN	4	4	6,282	45	31	2	4	36	3	4			11
FL	TALLAHASSEE	6	9	10,375	33	25	7	9	38	7	8			12
FL	FT MYERS BEACH	15	15	7,367	41	21	22	17	20	20	17			13
FL	LARGO			53,514	5	8			3			7	2	14
FL	SEMINOLE			42,210	7	6			4			4	4	15
FL	VALRICO			29,618	12	4			5			5	3	16
FL	PALM HARBOR			39,690	8	17			7			4	5	17
FL	SAINT MARKS	10	16	5,598	48	32	13	15	45	18	18	1	24	18
FL	HUDSON	30	26	17,025	23	34	32	23	26	21	23			19
FL	CRYSTAL RIVER	19	18	9,757	35	58	10	13	53	12	14			20
FL	LYNN HAVEN			34,499	10	9			9			1	14	21
FL	DUNEDIN	28	31	19,983	18	22	33	28	16			1	17	22
FL	SPRING HILL			21,044	17	11			8			1	16	23
FL	NAPLES	23	22	5,898	46	36	25	19	42	26	20			24
FL	CORTEZ			21,878	16	16			30			2	10	25
FL	FT MYERS	27	25	10,580	32	27	37	32	29	37	30			26
FL	FT WALTON BEACH	26	27	9,693	36	52	26	24	39	27	22			27
FL	PENSACOLA	25	20	10,967	31	45	30	35	46	24	27			28
FL	GAINESVILLE	16	17	***	80	48	14	18	40	17	16			29
FL	BRADENTON			18,232	20	38			35			3	8	30
FL	CRAWFORDVILLE			11,775	29	14			17					31
FL	TREASURE ISLAND			12,331	28	23			24			1	22	32
FL	YOUNGSTOWN			14,682	26	10			25					33
FL	SOUTHPORT			11,086	30	19			21					34
FL	SOPCHOPPY			17,250	22	26			32					35
FL	HOLIDAY			19,017	19	55			33			1	18	36
FL	HAVANA			6,354	44	20			18					37
FL	YANKEETOWN			6,941	43	24			27					38
FL	NEW PORT RICHEY			7,852	38	43			23					39
FL	SARASOTA			10,062	34	47			34			1	23	40
FL	CARRABELLE			18,201	21	33			52					41
FL	HERNANDO	14	21	4,064	54	49	29	33	57	34	36			42

	BEACH													
FL	ST PETE BEACH			7,590	40	56			28					43
STATE	CITY	2008 Gag Dealer Revenue Rank	2009 Gag Dealer Revenue Rank	2010 Initial Gag Allocation (lbs)	2010 Initial Gag Allocation Rank	2010 Initial Shareholders' Gag Revenue Rank (2008)	Number of Active Gag Shareholder Vessels Rank (2008)	Projected 2010 Gag Landings (2008 Pattern)	2010 Initial Shareholders' Gag Revenue Rank (2009)	Number of Active Gag Shareholder Vessels Rank (2009)	Projected 2010 Gag Landings (2009 Pattern)	Number of Longline Endorsement Qualifiers	Longline Endorsement Rank	Overall Rank
FL	SAFETY HARBOR			***	60	37			22					44
FL	PANAMA CITY BEACH			7,598	39	44			43					45
FL	ODESSA			4,289	52	41			37					46
FL	FORT WHITE			8,286	37	54			47					47
FL	LAKELAND			***	24	74			65			1	19	48
FL	KEY WEST	24		3,583	61		6	5	101	8	15			49
FL	RIVERVIEW			***	58	39			41					50
FL	HOMOSASSA SPRINGS			***	50	50			44					51
TX	PORT ISABEL	33	35	2,192	70	81	28	31	81	23	25	2	11	52
FL	PORT ST JOE			4,665	51	35			60					53
FL	ALACHUA			***	85	30			31					54
FL	SANTA ROSA BEACH			5,679	47	51			62					55
FL	MARIANNA			***	49	62			61					56
FL	PERRY			3,896	56	59			56					57
FL	LAND O LAKES	35	24	***	105	46	39	39	48	31	32			58
FL	PALMETTO			***	53	60			69			1	25	59
FL	LAKE CITY			4,021	55	40			73					60
FL	MEXICO BEACH			***	66	67			51					61
FL	JACKSONVILLE			3,569	62	42			70					62
GA	MACON			***	77	57			55					63
FL	INDIAN SHORES	12	10				17	16		16	13			64
FL	MORRISTON			1,473	78	53			59					65
FL	EASTPOINT	20	19				12	14		10	12			66
FL	BOKEELIA	37	29	3,427	64	76			72					67
FL	GRAND RIDGE			***	71	66			64					68
LA	LEEVILLE	17	14				16	20		11	19			69
TX	GALVESTON			13,019	27	107				38	37	1	21	70
AL	NEWTON			16,040	25							1	20	71
CT	GREENWICH			***	73	73			63					72
FL	CHIEFLAND			***	69	69			75			1	26	73
FL	LECANTO			876	90	61			54					74
TX	CORPUS CHRISTI			7,028	42	105			83					75
MS	PASCAGOULA	36		3,557	63	95	36	30	96	36	26			76
FL	WEWAHITCHKA			***	117	29			49					77

*** - Data is confidential

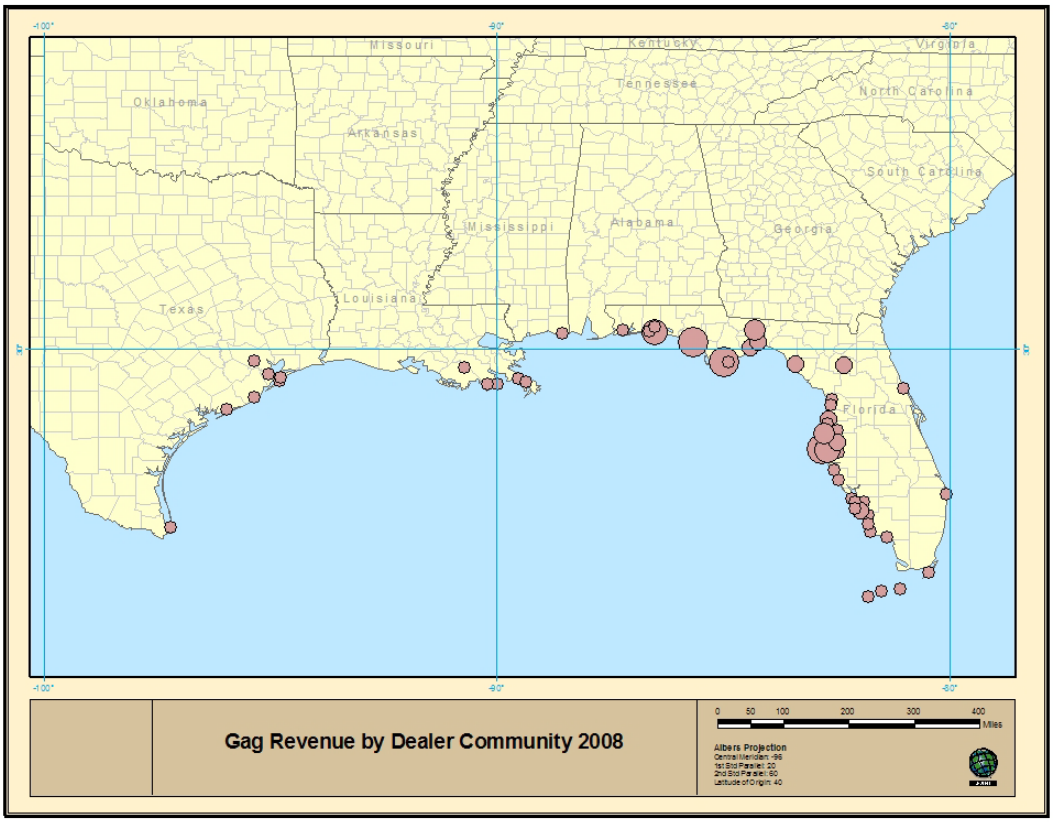

Figure 2.4.7. Gag revenue by dealer community 2008. Note actual revenue figures are not provided order to ensure confidentiality.

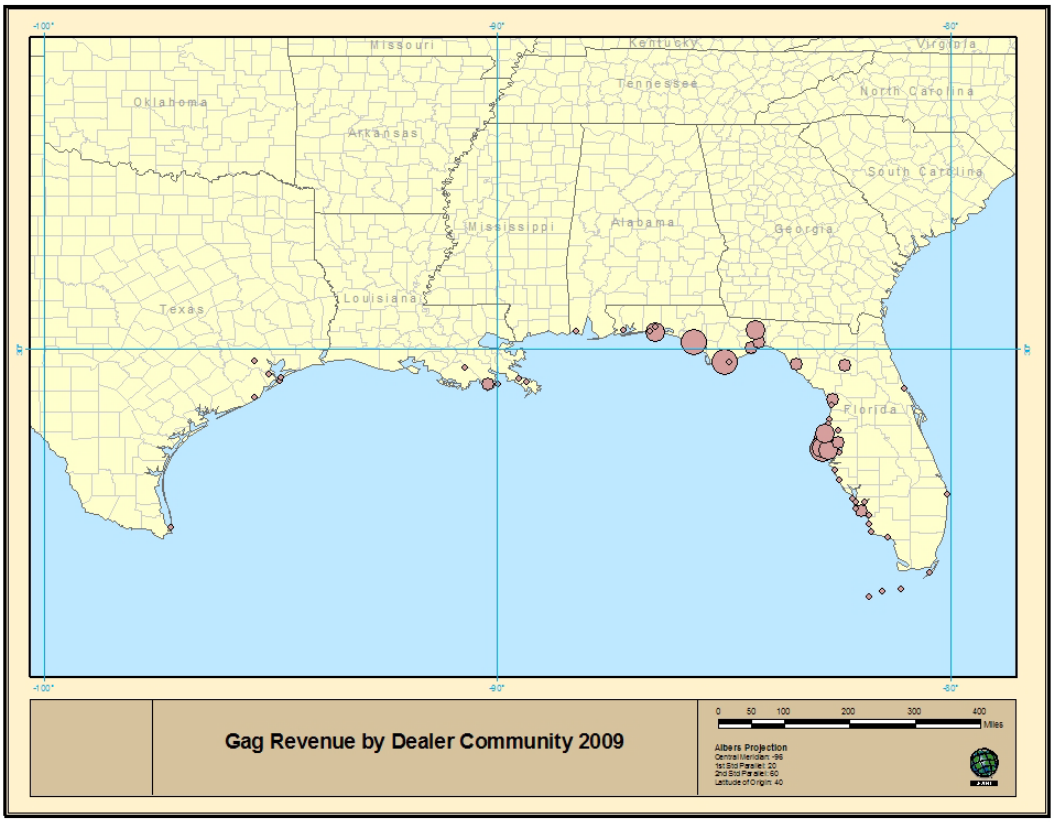

Figure 2.4.8. Gag revenue by dealer community 2009. Note actual revenue figures are not provided order to ensure confidentiality.

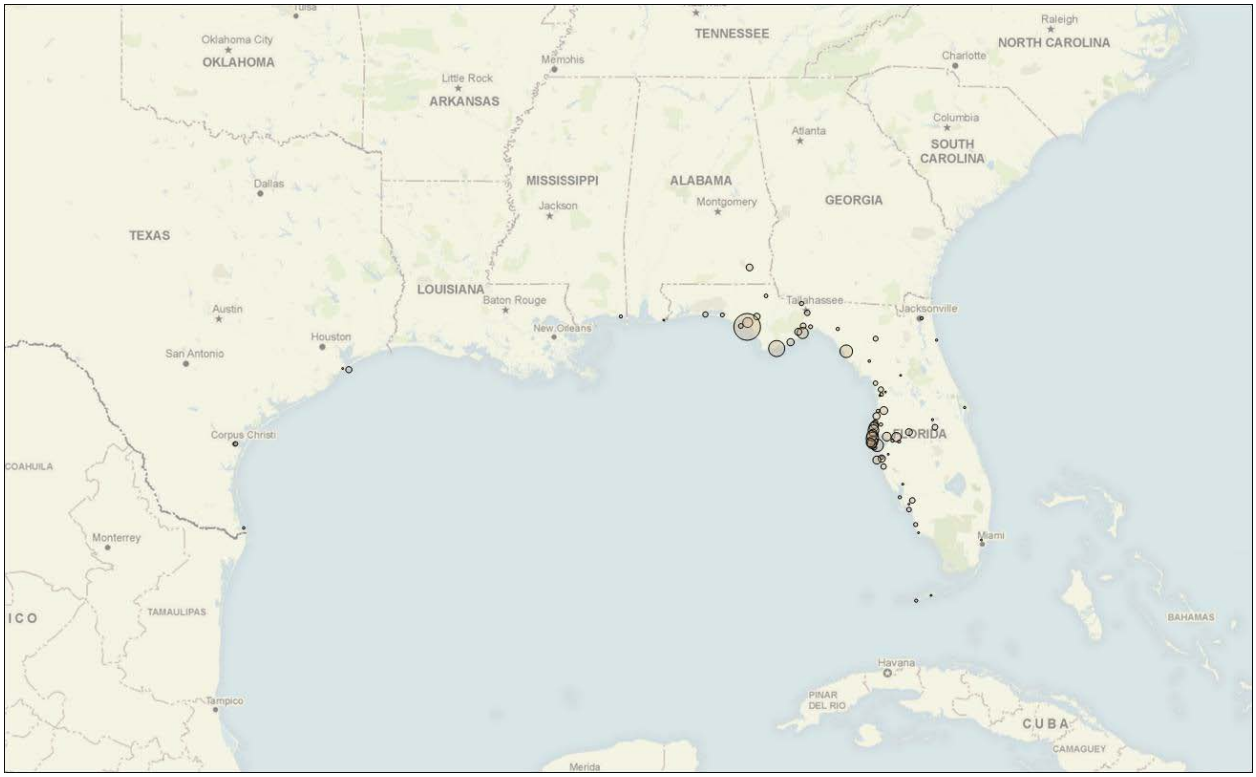

Figure 2.4.9 Initial 2010 Gag Allocation by Shareholder Community. Note specific allocation amounts are not provided order to ensure confidentiality

Somewhat similar to the distribution of gag revenue by dealer community, the information illustrated in Figure 2.4.9 indicates that Panama City has the highest concentration of initial 2010 gag allocation by shareholder community, though Apalachicola also has a high concentration of gag allocation. Gag allocation is also concentrated in Steinhatchee, Panacea, and along Florida's west central coast, particularly in Pinellas County (St. Petersburg, Largo, Seminole, Palm Harbor, Clearwater, and Madeira Beach).

Figures 2.4.10 and 2.4.11 illustrate the geographic distribution of gag revenue in 2008 and 2009 for initial 2010 gag shareholders. According to this information, again, gag revenue by shareholders in these two years was heavily concentrated along Florida's west central coast, particularly in Pinellas County (Largo, Clearwater, St. Petersburg, Madeira Beach, Seminole, and Palm Harbor) but also Manatee county (Cortez and Bradenton), Valrico, and Tampa. Again, the highest concentration of gag revenue by shareholders was in Panama City though Apalachicola was also prominent in this respect.

Figures 2.4.12 and 2.4.13 demonstrate the geographic distribution of active gag shareholder vessels in 2008 and 2009. This indicator attempts to capture the number of vessels in the harvesting sector that have been and are likely to continue being active in the gag fishery rather than the gross value of those vessels' activity and thus offers a somewhat different perspective on the extent to which each community is engaged in the fishery. Although vessels are somewhat concentrated in Pinellas county (St. Petersburg, Madeira Beach, and Tarpon Springs), and this concentration did increase from 2008 to 2009, significant concentrations also exist in

Panama City, Key West, Apalachicola, Destin, and Tallahassee.[8] This finding suggests that these latter communities support relatively more, but also relatively smaller, vessel operations compared to those in Pinellas County. Within Pinellas County, a noticeable redistribution of vessels took place between 2008 and 2009 with vessel concentration shifting from St. Petersburg to Tarpon Springs and particularly Madeira Beach. Further, and consistent with the trend in dealer revenue, the number of shareholder vessels landing in Key West decreased significantly from 2008 to 2009.

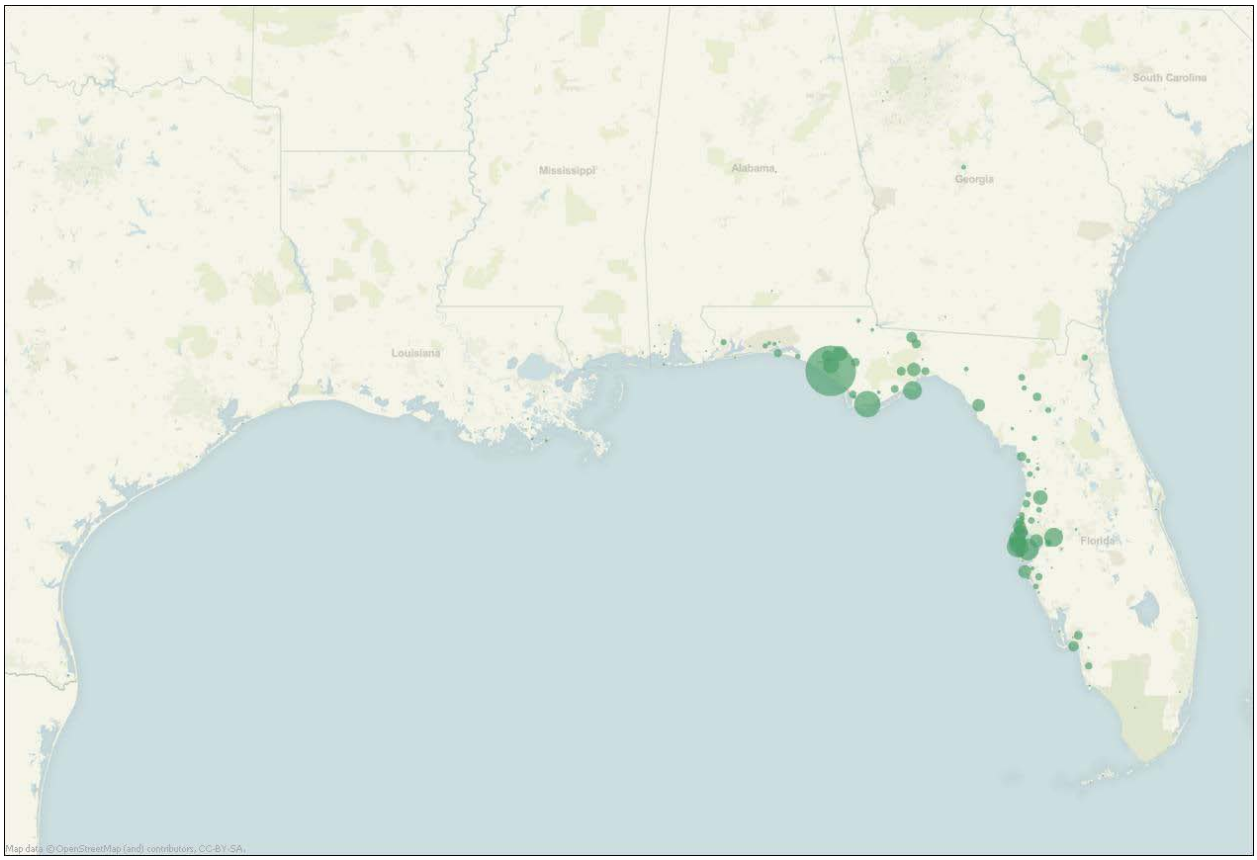

Figure 2.4.10 Gag Revenue in 2008 for Initial 2010 Gag Shareholders. Note actual revenue figures are not provided order to ensure confidentiality

[8] Because Tallahassee is not a water-based "port," vessels associated with this community must be landing in another port and selling their product to dealers who transport it to Tallahassee.

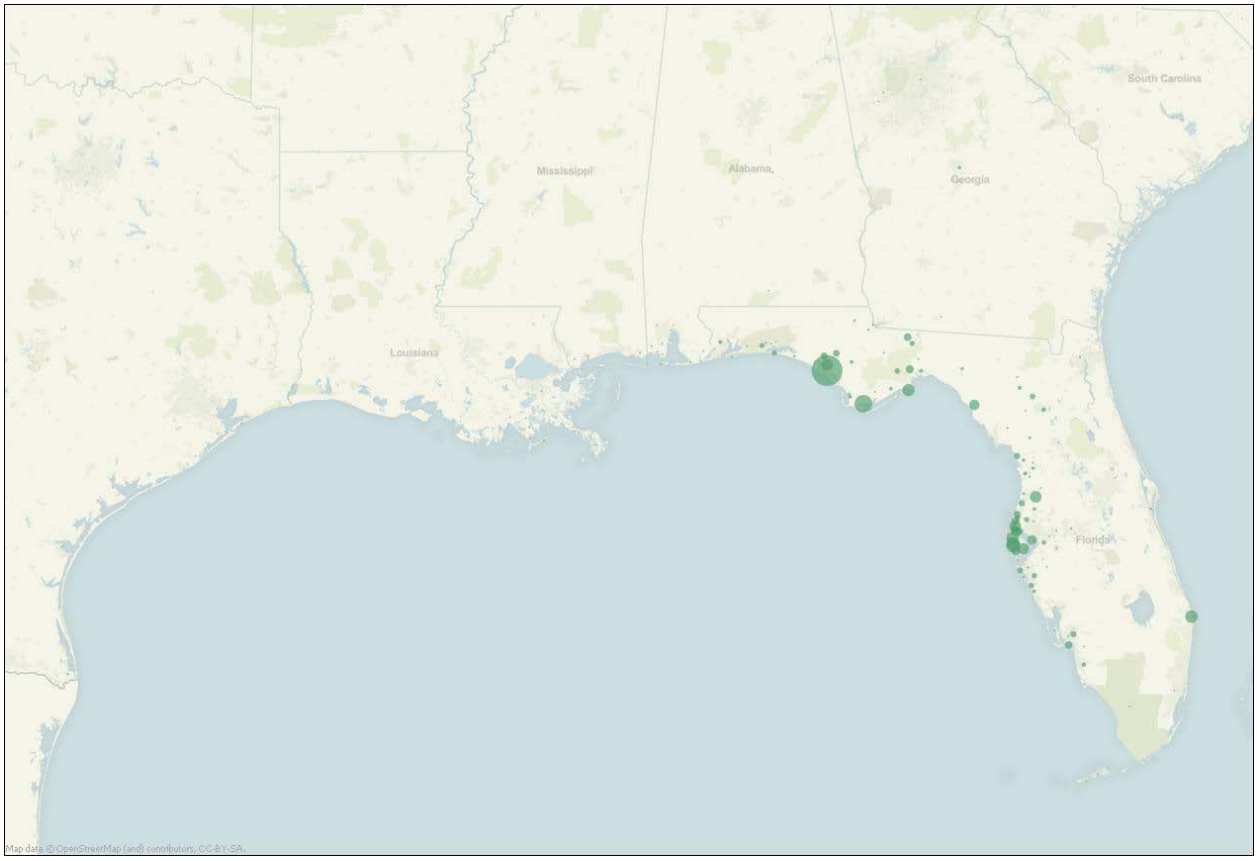

Figure 2.4.11 Gag Revenue in 2009 for Initial 2010 Gag Shareholders. Note actual revenue figures are not provided order to ensure confidentiality

Figure 2.4.12 Number of Initial 2010 Gag Shareholder Vessels withGag Landings in 2008.

Figure 2.4.13 Number of Initial 2010 Gag Shareholder Vessels with Gag Landings in 2009.

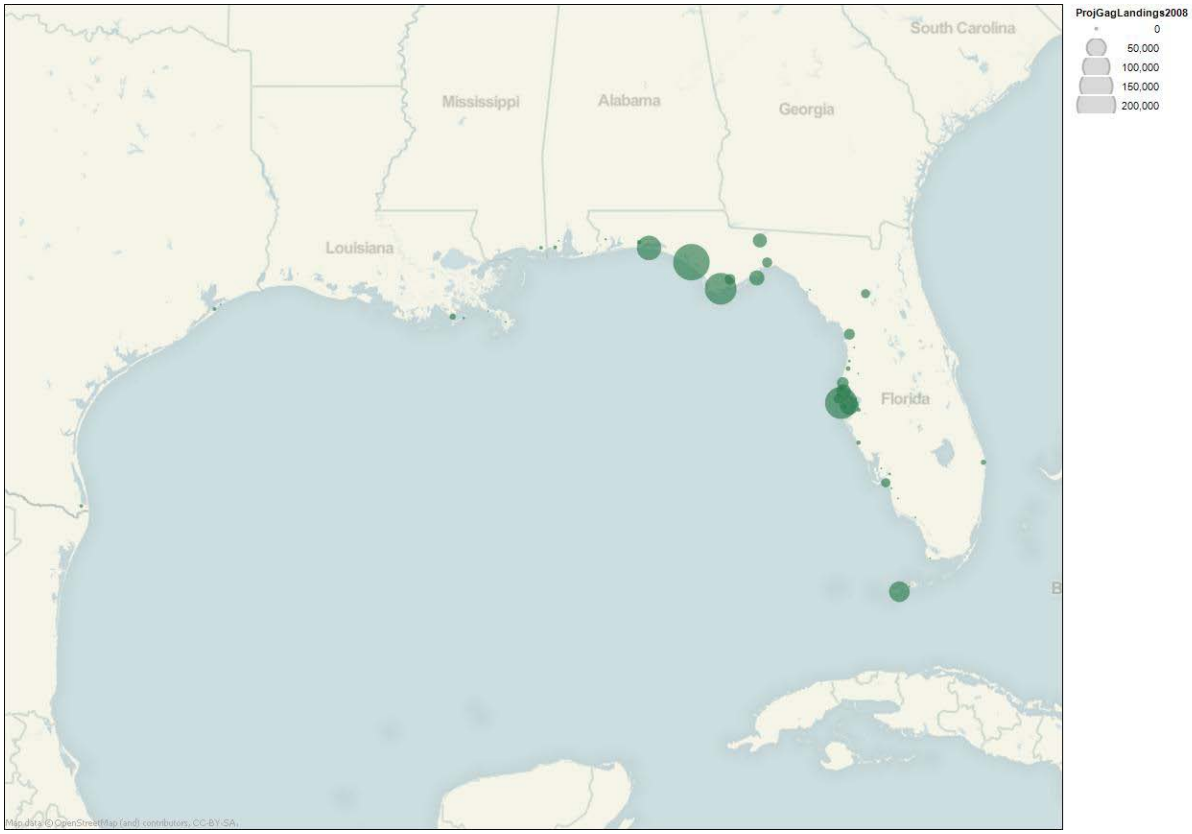

Figure 2.4.14 Projected 2010 Gag Landings Based on Initial 2010 Gag Shareholders' 2008 Landing Patterns

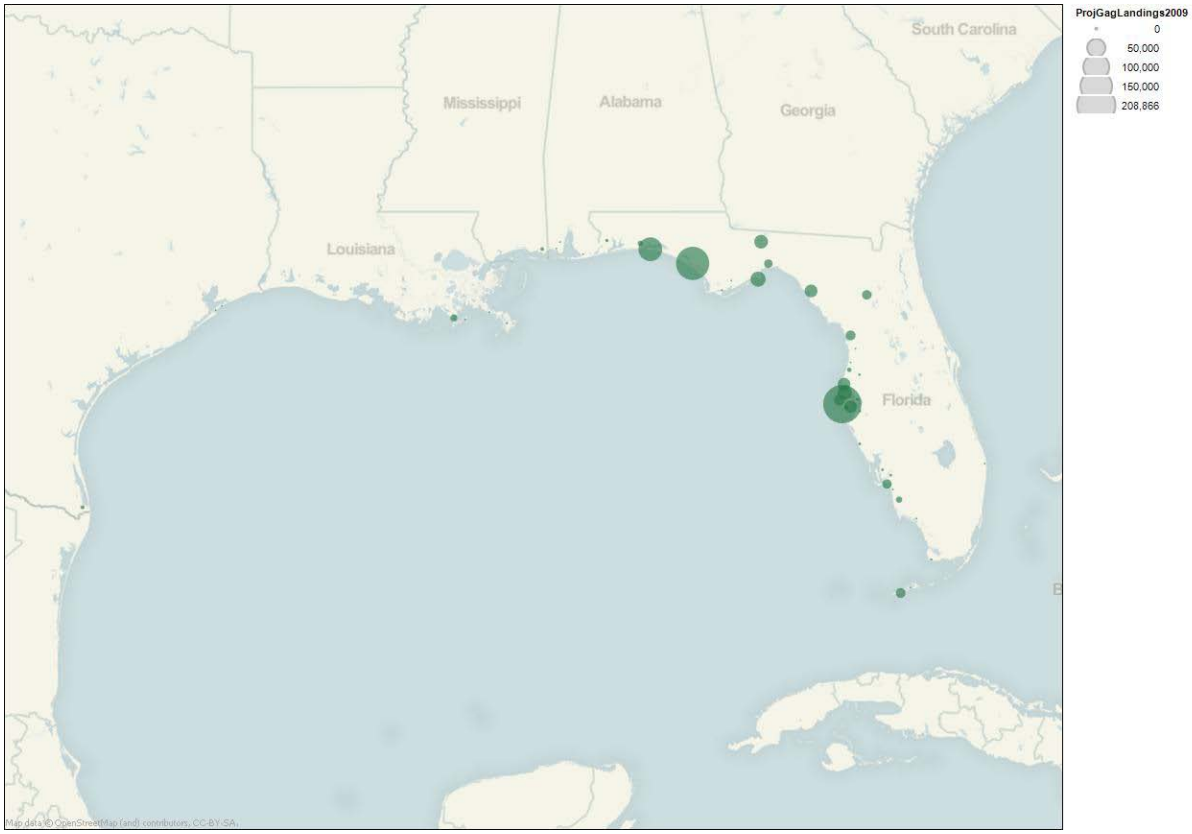

Figure 2.4.15 Projected 2010 Gag Landings Based on Initial 2010 Gag Shareholders' 2009 Landing Patterns

The information in Figures 2.4.14 and 2.4.15 illustrates the potential distribution of gag landings in 2010 based on the initial 2010 gag allocations in combination with vessels' 2008 or 2009 landing patterns respectively. According to this information, landings are likely to be most concentrated along Florida's west central coast, particularly in Pinellas County (Madeira Beach, Redington Shores, St. Petersburg, and Tarpon Springs) and Crystal River, with lower concentrations taking place in, Panama City and, to a lesser extent, Key West and Destin. If landing patterns in 2010 are more similar to those in 2009 as opposed to 2008, then landings will be highly concentrated in Madeira Beach, with much lower levels of landings occurring in Key West, Ft. Myers Beach, and St. Petersburg and no landings in Apalachicola.

Based on the information in Figure 2.4.16, longline endorsement qualifiers are highly concentrated along Florida's west central coast, again particularly in Pinellas County (Largo, Clearwater, Madeira Beach, Palm Harbor, and Seminole), though also in Valrico and Tampa, and to a lesser extent in Manatee County (Cortez and Bradenton). Along with Largo, Panama City has the largest number of longline endorsement qualifiers, consistent with previously discussed information.

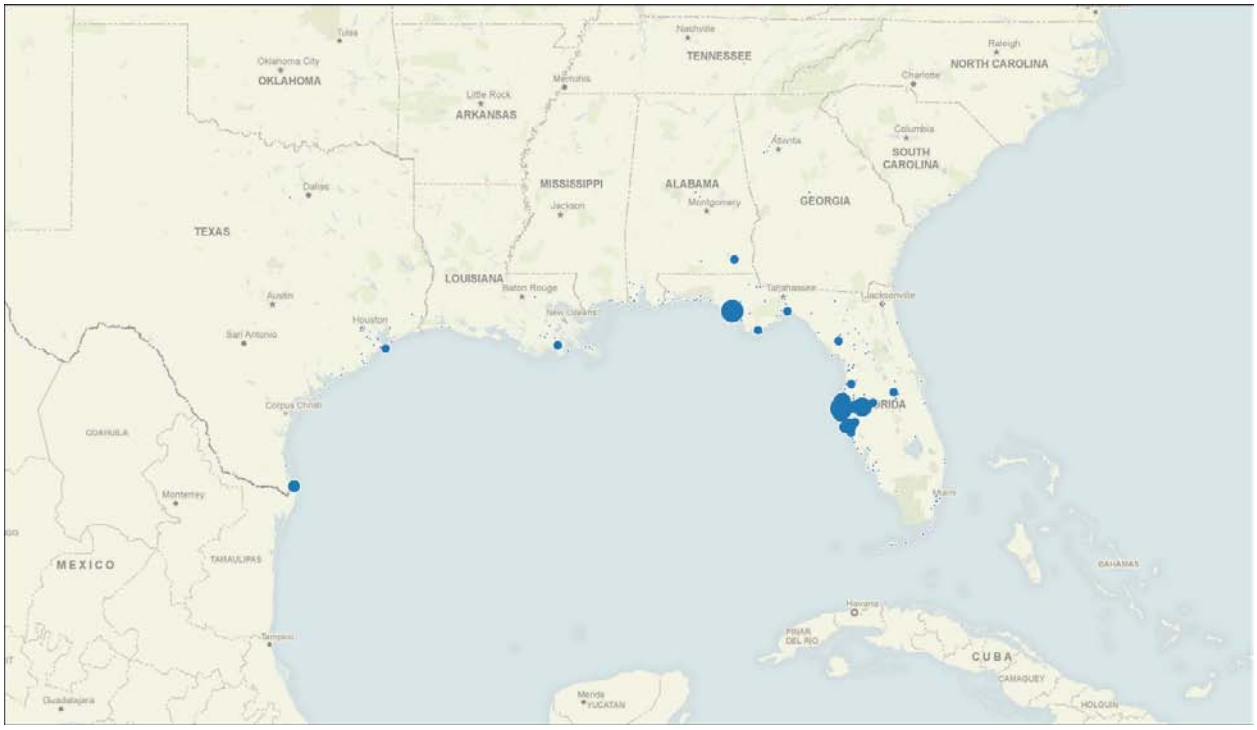

Figure 2.4.16 Distribution of Longline Endorsement Qualifiers. Note actual values are not provided order to ensure confidentiality.

After accounting for all of these key indicators, the information in Table 2.4.6 suggests that the individual communities of Panama City, Apalachicola, Madeira Beach, and St. Petersburg have the strongest relationship with the commercial gag fishery, though Clearwater, Panacea, Redington Shores, Steinhatchee, and Tarpon Springs also have relatively strong ties to the fishery. At the county level, Pinellas County has the strongest relationship to the fishery of any county in the Gulf region. Tampa, Destin, and Tallahassee also have somewhat strong relationships with the commercial gag fishery.

Similar to the information in Table 2.4.6, Table 2.4.7 illustrates the relationship between communities and the recreational sector of the gag fishery based on certain key indicators. The information in this table requires some explanation. First, the data in Table 2.4.7 reflects information regarding valid Gulf reef fish for-hire permits on March 24, 2010. Second, the data has been assigned to communities on the basis of both the vessel's homeport and the permit owner's place of residence. This dual assignment of permits and vessels was chosen because the economic impacts arising from the economic activity associated with these vessels are likely to occur in both locations and thus both are important. Communities with less than four permits/vessels did not receive a ranking for those two factors. Third, the magnitude of that economic activity associated with recreational fishing is likely to vary not only by the number of permits and vessels, but also by the passenger capacity associated with those vessels (i.e. economic activity is a directly and positively related to both factors). Fourth, communities were initially ranked across all Gulf communities according to the initial key indicators. Because the recreational gag fishery is almost entirely located along the west coast of Florida (see Tables 2.3.2.1.2 and 2.3.2.1.5), communities from other States were removed from consideration with respect to those most likely to have the strongest relationship with the fishery.

For each indicator, ranking points are equal to the inverse of the ranking relative to the total number of communities receiving a ranking for that indicator. Thus, for example, if a community ranks first out of 43 communities receiving a ranking for that indicator, then it receives 43 ranking points. Conversely, if it ranked 43rd out of 43 communities, that community receives one ranking point. If a community does not receive a ranking for an indicator, then it receives no (zero) ranking points. A community's overall rank is based on the aggregation of ranking points across all indicators. In instances where communities were "tied" with respect to a particular indicator, total passenger capacity by vessel homeport was used as the first tiebreaker and total passenger capacity by owner residence was used as the second tiebreaker. Thus, for example, if two communities had the same number of permits, the community with the higher total passenger capacity by vessel homeport was given the higher ranking.

Finally, because these permits apply to all reef fish and not only gag, information regarding the distribution of recreational gag landings for all sectors (i.e. private, shore, and for-hire) between 2006 and 2008 on average was used to weight or adjust the total points for each community. This adjustment is based on the assumption that the economic activity associated with recreational effort targeted at gag is directly related and proportional to recreational landings of gag. Thus, specifically, these landings were broken down by region: Panhandle (Escambia County-Gulf County), Big Bend (Franklin County-Pasco County), SW Florida (Pinellas County-Collier County), and the Keys (Monroe County). The distribution of recreational gag landings during this time for these four regions was as follows respectively: Panhandle (21.2%), Big Bend (51.2%), SW Florida (27%), and the Keys (.6%). Due to insufficient data, recreational landings cannot be broken down at a more precise geographical level (e.g. County or community) with a reasonably high level of statistical confidence.

According to the information in Figure 2.4.17, vessels with reef fish for-hire permits are most highly concentrated in the communities of Destin, Panama City, and Key West based on vessel homeport. Relatively high concentrations of vessels with for-hire permits are also seen in Naples and Pensacola. Figure 2.4.18 indicates a similar concentration of permits based on the permit owner's residence, though Key West ranks 2nd and Panama City ranks 3rd on this basis. Naples, Pensacola, Panama City Beach, and Sarasota also rank relatively high in this respect.

These same concentrations are seen in Figures 2.4.18 and 2.4.19 with respect to concentrations of total passenger capacity. Again, based on vessel homeport, the largest concentrations of total passenger capacity are in the communities of Destin, Panama City, and Key West, though relatively high concentrations are also found in Naples and Pensacola. And on the basis of the permit owner's residence, the largest concentrations of passenger capacity are found in Destin, Key West, and Panama City, but also in Port Richey and Ft. Myers Beach. Although these latter two communities do not have a relatively large number of owners with for-hire reef fish permits, these permitted vessels have relatively large passenger capacities, most likely indicating they are headboat operations.

After adjusting for the previously discussed factors related to the geographic distribution of the recreational gag fishery, Table 2.4.7 indicates that Apalachicola and Steinhatchee have the strongest relationships with the recreational gag fishery. Naples, Panacea, Sarasota, Carrabelle,

Clearwater, and St. Petersburg also have relatively strong relationships with the recreational gag fishery.

Table 2.4.7. Ranking of Communities Associated with the Recreational Gag Fishery Based on Key Indicators

STATE	CITY	Number of For-Hire Permits by Owner Residence	Number of For-Hire Permits by Owner Rank	Total Passenger Capacity by Owner Residence	Total Passenger Capacity by Owner Residence Rank	Number of For-Hire Permits by Vessel Homeport	Number of For-Hire Permits by Vessel Homeport Rank	Total Passenger Capacity by Vessel Homeport	Total Passenger Capacity by Vessel Homeport Rank	Reef Fish For-Hire Rank	WFL Region	Recreational Gag Rank
FL	APALACHICOLA	14	21	84	32	22	15	132	18	17	Big Bend	1
FL	STEINHATCHEE	13	24	78	35	20	17	120	20	20	Big Bend	2
FL	NAPLES	36	5	216	8	36	8	216	9	5	SW FL	3
FL	PANACEA	7	44	42	63	9	35	54	42	38	Big Bend	4
FL	SARASOTA	25	8	150	12	23	11	138	14	8	SW FL	5
FL	CARRABELLE	5	59	30	78	14	23	84	28	39	Big Bend	6
FL	CLEARWATER	17	11	102	18	23	12	138	15	10	SW FL	7
FL	ST PETERSBURG	17	13	102	20	23	13	138	16	13	SW FL	8
FL	DESTIN	72	1	432	1	115	1	690	1	1	Panhandle	9
FL	PANAMA CITY	54	3	324	3	93	2	558	2	2	Panhandle	10
FL	FT MYERS BEACH	8	36	280	5	17	19	102	23	16	SW FL	11
FL	MARCO ISLAND	15	19	90	29	18	18	108	21	19	SW FL	12
FL	PENSACOLA	32	6	192	9	34	9	204	10	7	Panhandle	13
FL	FORT MYERS	14	22	84	33	12	27	72	33	21	SW FL	14
FL	TARPON SPRINGS	10	30	60	41	17	21	102	25	22	SW FL	15
FL	MARATHON	17	12	102	19	17	20	102	24	14	Panhandle	16
FL	CEDAR KEY	4	72	24	93	10	30	60	36	54	Big Bend	17
FL	TALLAHASSEE	8	40	48	53	0		0		57	Big Bend	18
FL	TAMPA	12	28	72	39	9	32	54	39	25	SW FL	19
FL	PORT RICHEY	5	57	320	4	7	40	42	49	27	SW FL	20
FL	MADEIRA BEACH	9	32	54	46	9	33	54	40	28	SW FL	21
FL	ENGLEWOOD	12	26	72	37	7	41	42	50	29	SW FL	22
FL	CRYSTAL RIVER	5	60	30	79	5	50	30	60	61	Big Bend	23
FL	SPRING HILL	7	45	42	64	2		12		62	Big Bend	24
FL	PORT ST JOE	9	33	54	47	11	29	66	35	26	Panhandle	25
FL	PALM HARBOR	12	27	72	38	4	58	24	68	41	SW FL	26
FL	PANAMA CITY BEACH	27	7	162	11	0		0		31	Panhandle	27
FL	GULF BREEZE	13	23	78	34	5	46	30	56	32	Panhandle	28
FL	BRADENTON	7	42	42	61	6	45	36	54	42	SW FL	29
FL	FT WALTON BEACH	19	10	114	16	2		12		36	Panhandle	30
FL	MEXICO BEACH	7	43	42	62	9	34	54	41	37	Panhandle	31
STATE	CITY	Number of For-Hire Permits by	Number of For-Hire Permits by	Total Passenger Capacity by	Total Passenger Capacity by	Number of For-Hire Permits by	Number of For-Hire Permits by	Total Passenger Capacity by	Total Passenger Capacity by	Reef Fish For-Hire Rank	WFL Region	Recreational Gag Rank

		Owner Residence	Owner Rank	Owner Residence	Owner Residence Rank	Vessel Homeport	Vessel Homeport Rank	Vessel Homeport	Vessel Homeport Rank			
FL	INDIAN ROCKS BEACH	5	61	30	80	9	36	54	43	46	SW FL	32
FL	LARGO	8	37	48	50	3		18		51	SW FL	33
FL	SEMINOLE	8	39	48	52	1		6		55	SW FL	34
FL	PALMETTO	6	53	36	73	5	49	30	59	58	SW FL	35
FL	HOLIDAY	2		48	55	1		6		86	Big Bend	36
FL	HERNANDO BEACH	2		12		8	39	48	47	91	Big Bend	37
FL	CANTONMENT	5	58	90	31	1		20	75	52	Panhandle	38
FL	NICEVILLE	8	38	48	51	3		18		53	Panhandle	39
FL	CAPE CORAL	6	52	36	72	4	60	24	70	67	SW FL	40
FL	TREASURE ISLAND	4	80	24	101	8	38	48	46	72	SW FL	41
FL	KEY WEST	58	2	348	2	70	4	420	4	3	Keys	42
FL	SUMMERLAND KEY	7	46	42	65	1		6		63	Panhandle	43
FL	BROOKSVILLE	1		37	71	1		37	53	81	SW FL	44
FL	DUNEDIN	4	74	24	95	5	51	30	61	82	SW FL	45
FL	PENSACOLA BEACH	2		12		10	31	60	37	75	Panhandle	46
FL	ESTERO	1		47	56	0		0		89	SW FL	47
FL	JOHNS PASS	0		0		2		107	22	90	SW FL	48
FL	NOKOMIS	4	77	24	98	5	52	30	62	93	SW FL	49
FL	BOCA GRANDE	3	88	18		7	43	42	52	97	SW FL	50
FL	LYNN HAVEN	5	62	30	81	0		0		84	Panhandle	51
FL	SANTA ROSA BEACH	5	63	30	82	0		0		88	Panhandle	52
FL	BIG PINE KEY	2		12		1		97	26	96	Keys	53

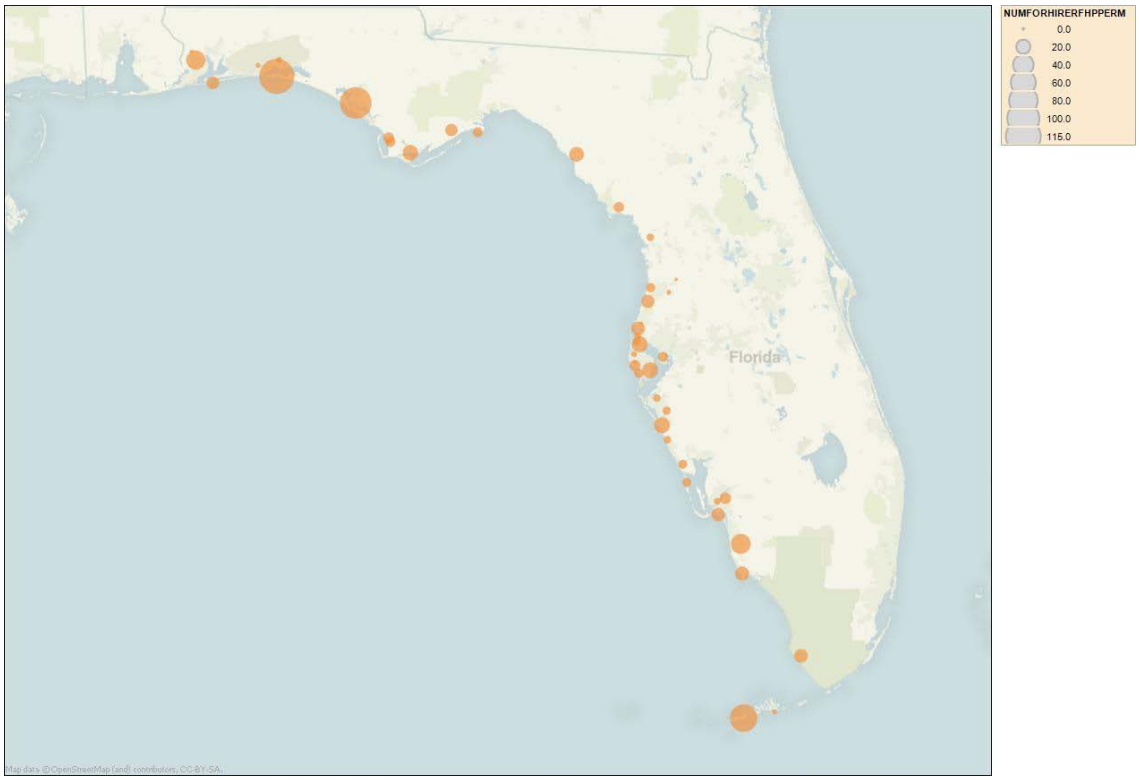

Figure 2.4.17 Gulf Reef Fish For-Hire Permits by Vessel Homeport

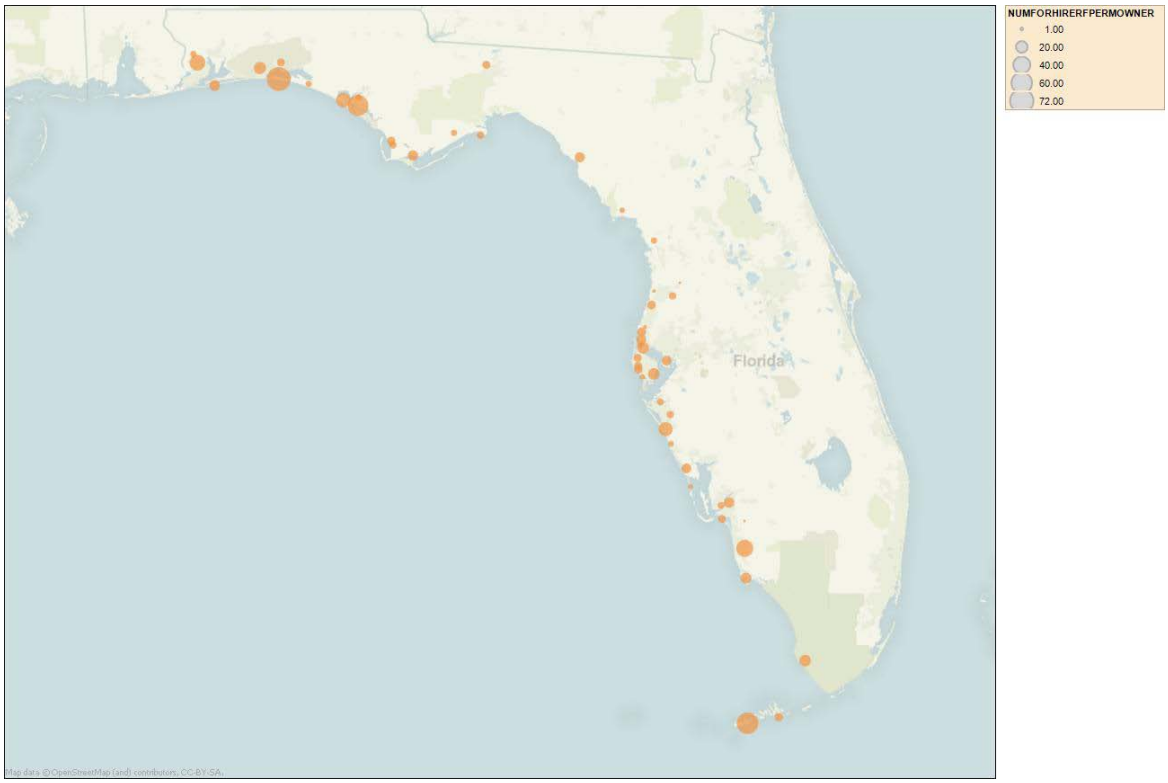

Figure 2.4.18 Gulf Reef Fish For-Hire Permits by Owner Residence

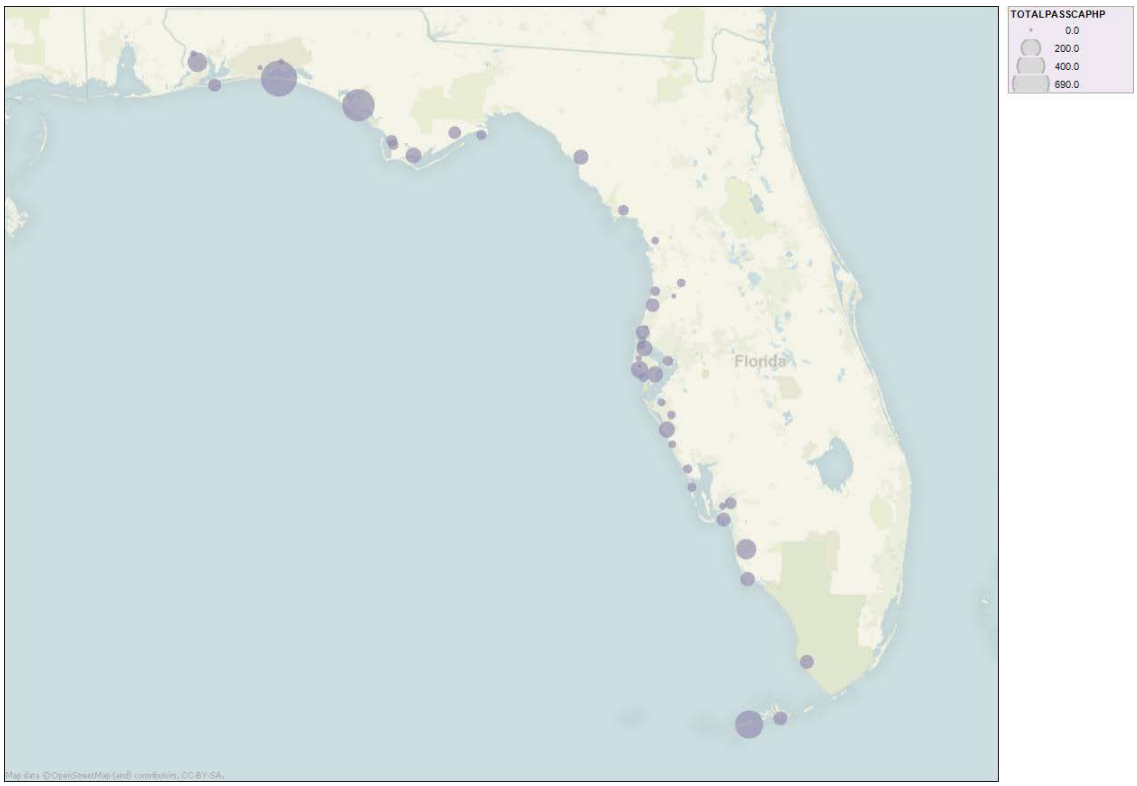

Figure 2.4.19 Total For-Hire Passenger Capacity by Vessel Homeport

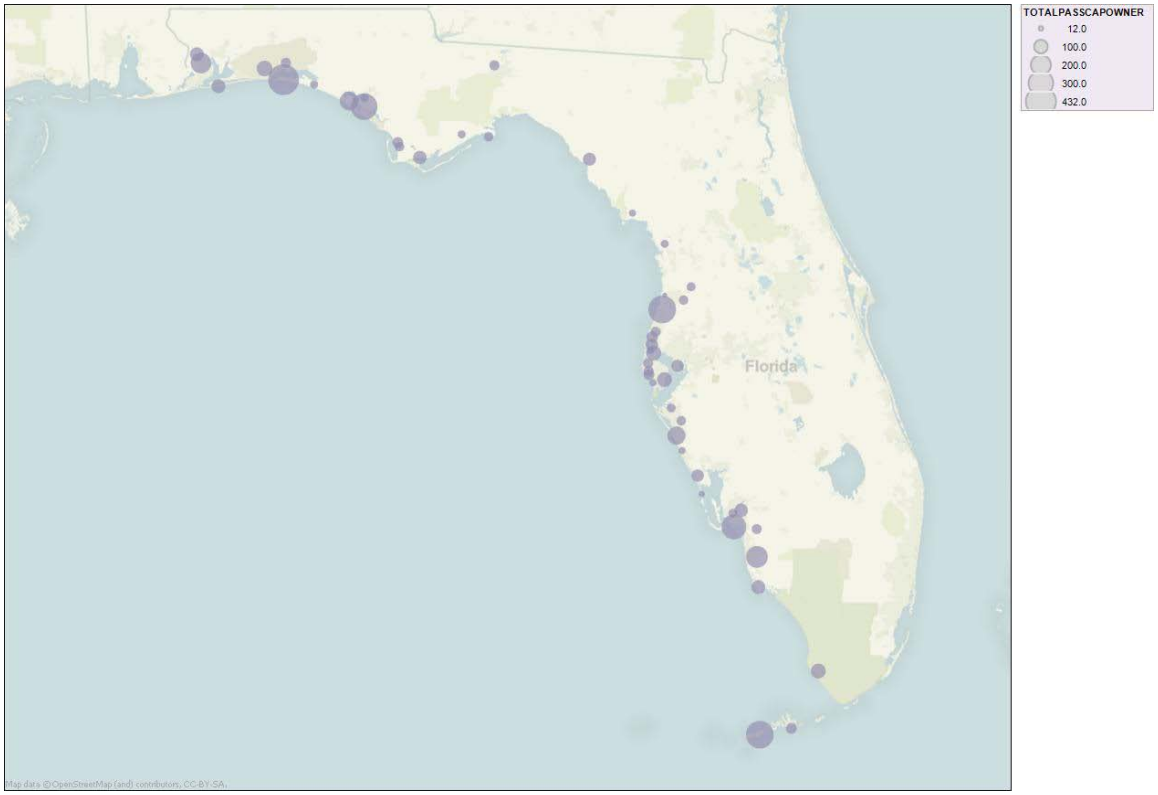

Figure 2.4.20 Total For-Hire Passenger Capacity by Owner Residence

Table 2.4.8 combines the information from Tables 2.4.6 and 2.4.7 in order to assess the strength of the relationship between communities and the gag fishery as a whole (i.e. commercial and recreational sectors). Each community's overall rank was determined simply by summing the commercial and recreational ranks. A lower combined "ranking score" received a higher overall rank. In cases where communities tied in their combined ranking scores, the community with the higher recreational rank was ranked higher overall given the relatively greater importance of the recreational sector with respect to landings in this fishery.

According to the information in Table 2.4.8, Apalachicola has the strongest relationship with the gag fishery of all communities in the Gulf. As such, it is highly likely that, other factors being equal, this community would be the most affected, in absolute terms, by management actions expected to reduce commercial and recreational landings or effort. Steinhatchee, Panacea, Panama City, Clearwater, and St. Petersburg also have relatively strong relationships with the gag fishery and thus would also be expected to experience adverse effects from such management actions. Destin, Ft. Myers Beach, Tarpon Springs, and Madeira Beach have somewhat strong relationships with the fishery and thus would likely be expected to experience some adverse effects from such management actions. The magnitude of these effects will vary according to the exact nature of those actions, particularly with respect to their relative effects on the recreational and commercial sectors.

Table 2.4.8. Ranking of Communities Associated with the Commercial and Recreational Gag Fisheries Based on Key Indicators

CITY	STATE	COMMERCIAL RANK	RECREATIONAL RANK	OVERALL RANK
FL	APALACHICOLA	2	1	1
FL	STEINHATCHEE	8	2	2
FL	PANACEA	6	4	3
FL	PANAMA CITY	1	10	4
FL	CLEARWATER	5	7	5
FL	ST PETERSBURG	4	8	6
FL	DESTIN	11	9	7
FL	FT MYERS BEACH	13	11	8
FL	TARPON SPRINGS	9	15	9
FL	MADEIRA BEACH	3	21	10
FL	NAPLES	24	3	11
FL	TAMPA	10	19	12
FL	TALLAHASSEE	12	18	13
FL	PENSACOLA	28	13	14
FL	CRYSTAL RIVER	20	23	15
FL	PALM HARBOR	17	26	16
FL	SARASOTA	40	5	17
FL	CARRABELLE	41	6	18
FL	SPRING HILL	23	24	19
FL	LARGO	14	33	20
FL	SEMINOLE	15	34	21
FL	FT WALTON BEACH	27	30	22
FL	BRADENTON	30	29	23
CITY	STATE	COMMERCIAL	RECREATIONAL	OVERALL RANK

		RANK	RANK	
FL	REDINGTON SHORES	7	*	24
FL	DUNEDIN	22	45	25
FL	VALRICO	16	*	26
FL	PANAMA CITY BEACH	45	27	27
FL	HOLIDAY	36	36	28
FL	LYNN HAVEN	21	51	29
FL	SAINT MARKS	18	*	30
FL	TREASURE ISLAND	32	41	31
FL	HUDSON	19	*	32
FL	PORT ST JOE	53	25	33
FL	HERNANDO BEACH	42	37	34
FL	CORTEZ	25	*	35
FL	FT MYERS	26	*	36
FL	GAINESVILLE	29	*	37
FL	CRAWFORDVILLE	31	*	38
FL	YOUNGSTOWN	33	*	39
FL	SOUTHPORT	34	*	40
FL	SOPCHOPPY	35	*	41
FL	MARCO ISLAND	*	12	42
FL	KEY WEST	49	42	43
FL	HAVANA	37	*	44
FL	FORT MYERS	*	14	45
FL	MEXICO BEACH	61	31	46
FL	YANKEETOWN	38	*	47
FL	NEW PORT RICHEY	39	*	48
FL	PALMETTO	59	35	49
FL	MARATHON	*	16	50
FL	CEDAR KEY	*	17	51
FL	ST PETE BEACH	43	*	52
FL	PORT RICHEY	*	20	53
FL	SAFETY HARBOR	44	*	54
FL	ENGLEWOOD	*	22	55
FL	ODESSA	46	*	56
FL	FORT WHITE	47	*	57
FL	LAKELAND	48	*	58
FL	RIVERVIEW	50	*	59
FL	HOMOSASSA SPRINGS	51	*	60
TX	PORT ISABEL	52	*	61
FL	GULF BREEZE	*	28	62
FL	SANTA ROSA BEACH	55	52	63

* No Ranking. Communities with no commercial or recreational ranking were assigned a rank one rank below that of the lowest ranked community for each sector respectively.

Finally, the available information suggests that a community's involvement with regard to fishing and/or the fishing infrastructure will change over time, most recently due to changes in

federal regulations. Although these circumstances are evident, the current profiles remain the most detailed information available for most communities. Using the current profiles for fishing communities in Florida, Table 2.4.9 provides a characterization of those communities with regard to their involvement in fishing.

A community's involvement in fishing is characterized as either: primarily involved, secondarily involved and tangentially involved. *Primarily-involved* are communities where the economies and primary foci of social interaction may be mixed to a greater or lesser degree, but there remains an observable collective focus on fishing and its industries. *Secondarily-involved* communities are often primarily involved in sales and service, agriculture, tourism, and/or manufacturing enterprises where commercial fishing and associated industry is important, but secondary to these other industries. *Tangentially-Involved* communities are cities and/or towns in which fishing plays a subsidiary role to other forms of economic and social activity (Impact Assessment, Inc. 2005).

The communities highlighted in Table 2.4.9 are those that have been identified as having relatively a relatively significant relationship to the gag fishery. Importantly, Apalachicola, Steinhatchee, Panacea, and Panama City are communities primarily involved with fishing, as are Ft. Myers Beach, Tarpon Springs, and Madeira Beach, while Clearwater and St. Petersburg are secondarily involved. Although Destin is not profiled in IAI's study, available information suggests this community is either primarily or at least secondarily involved with fishing. Thus, the communities with the strongest relationships to the gag fishery are also relatively dependent on fishing in general.

Table 2.4.9. Preliminary Characterization of Fishing-Oriented Towns and Cities along the Florida Gulf Coast (Impact Assessment, Inc. 2005).

Primarily-Involved	Secondarily-Involved	Tangentially-Involved
Apalachicola	Anna Maria Island	Alva
Boca Grande	Aripeka	Anclote
Carrabelle	Bagdad	Apollo Beach
Cedar Key	Bradenton	Archer
Chokoloskee	Bradenton Beach	Bell
Cortez	Clearwater	Belleair
Crystal River	Crawfordville	Brandon
Eastpoint	Dover	Brooksville
Everglades City	Dunedin	Cantonment
Fort Myers Beach	Englewood	Cape Coral
Homosassa	Fort Myers	Captiva Island
Hudson	Fort Walton Beach	Chiefland
Inglis/Yankeetown	Freeport	Copeland
Jena/Steinhatchee	Gibsonton	DeFuniak Springs
Keaton Beach	Goodland	El Jobean
Madeira Beach	Gulf Breeze	Estero
Panacea	Lakeland	Gulf Hammock
Panama City	Lecanto	Gulfport
Panama City Beach	Lynn Haven	Hernando
Pensacola	Marco Island	Holiday
Pine Island	Mary Esther	Holmes Beach
Port St. Joe	Mexico Beach	Indian Rocks Beach
Punta Gorda	Milton	Inverness
Sopchoppy	Navarre	Lamont
St. Marks	New Port Richey	Lanark Village
Suwannee	Ozona/Palm Harbor	Largo
Tarpon Springs	Pace	Longboat Key
-	Palmetto	Lutz
-	Placida	Nokomis/ Odessa
-	Port Charlotte	North Fort Myers
-	Port Richey	Old Town
-	Ruskin	Oldsmar
-	Santa Rosa Beach	Osprey
-	Sarasota	Redington Beach
-	Shalimar	Riverview
-	Southport	Royal Palm Hammock
-	Spring Hill	Sanibel Island
-	St. Petersburg	Seminole
-	Tampa	Terra Ceia
-	Youngstown	Tierra Verde
-	-	Treasure Island
-	-	Trenton
-	-	Valparaiso
-	-	Venice
-	-	White City

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 (EJ).

Persons employed in the gag fishery and associated businesses and communities along the Gulf coast of Florida would be expected to be affected by this proposed action. Information on the race and income status for groups at the different participation levels (vessel owners, crew, dealers, processors, employees, employees of associated support industries, etc.) is not available. County level data; however, have been assessed to ensure the most recent estimates. Because this proposed action would be expected to affect fishermen and associated industries in numerous communities along the west Florida coast, as discussed above, it is possible that other counties or communities have poverty or minority rates that exceed the EJ thresholds.

Information on the communities discussed above was examined to identify the potential for EJ concern. Specifically, the rates of minority populations and the percentage of the population that was below the poverty line were examined. The threshold for comparison that was used was 1.2 times the state average such that, if the value for the community or county was greater than or equal to 1.2 times the state average, then the community or county was considered an area of potential EJ concern. Census data for the year 2007 was used and the estimate of the minority (interpreted as non-white, including Hispanic) population was 38.7%, while 12.6% of the total population was estimated to be below the poverty line. These values translate in EJ thresholds of approximately 46.4% and 15.1%, respectively. Based on the demographic information provided above, no potential EJ concern is evident for Pinellas County as it falls below the thresholds with regard to poverty and percent of minorities.

Additional communities beyond those profiled above would be expected to be affected by the actions in this proposed rule. Because these communities have not been profiled, the absence of potential EJ concerns cannot be assumed. However, although some communities expected to be affected by this proposed rule may reside in counties that have minority or economic profiles that exceed the EJ thresholds and, therefore, constitute areas of concern, no EJ issues have been identified or are expected to arise. No negative environmental consequences are expected to accrue to this proposed rule. Although adverse social and economic consequences are expected to accrue to fishermen in the gag fleet and associated industries and communities due to the reduction of expenditures and revenues associated with an expected change in fishing behavior and harvest levels, the environmental consequences of this proposed rule are expected to be positive. This proposed rule is expected to result in a net short- term reduction in the mortality of gag by the commercial and recreational sectors of the fishery. Reduced mortality would be expected to increase the environmental benefits this species contributes to the marine environment and the general health and condition of this environment.

2.6 Administrative Environment

2.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 *et seq*.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the Exclusive Economic Zone, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the Exclusive Economic Zone.

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. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for fishery resources in federal waters of the Gulf. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the states of Florida and Texas, and the three-mile seaward boundary of the states of Alabama, Mississippi, and Louisiana. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline of 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles).

The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process through participation on advisory panels and through council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the NOAA's Office for Law Enforcement, the United States Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee have developed a five-year "GOM Cooperative Law Enforcement Strategic Plan - 2006-2011."

2.6.2 State Fishery Management

The purpose of state representation at the council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf States exercises legislative and regulatory authority over their states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004).

3.0 MANAGEMENT ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

3.1 Action 1: 2011 Gulf of Mexico Commercial Gag Quota.

Alternative 1: No action. As specified in Amendment 30B, the commercial gag quota for 2011 would be equal to the annual catch target of 1.49 million pounds gutted weight (MP GW).

Alternative 2: Set the 2011 commercial gag quota at 390,000 pounds GW. This quota is consistent with the fishing mortality rate associated with the optimum yield used by the Council in Amendment 30B to set the commercial annual catch target. The quota will be released:

Preferred Option a: in its entirety on January 1, 2011.
Option b: in halves with 50 percent being released January 1, 2011, and 50 percent released on July 1, 2011.

Preferred Alternative 3: Release 100,000 pounds GW of the 2011 commercial gag quota on January 1, 2011, to reduce gag regulatory discards in the shallow-water grouper fishery. Any remaining quota will be released in a subsequent rulemaking after the Council determines the appropriate optimum yield level required to set the commercial annual catch target. This determination will be made based on a reanalysis of the 2009 gag update assessment.

Alternative 4: Set the 2011 commercial gag quota to zero. Any increase of the 2011 commercial gag quota will be determined in Amendment 32.

Discussion and Rationale:

This action considers alternatives to decrease 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 TAC at the fishery-wide catch on a yearly basis from 2009 through 2011 at the yield for each year as defined by the constant F_{OY} projection (based on 75% of F_{MAX}) from the 2007 assessment and reevaluation. TAC in 2009 was be 3.38 MP GW, TAC in 2010 was 3.62 MP GW, and TAC for 2011 would be 3.82 MP GW. The commensurate commercial quotas (39% of TAC) would be 1.32, 1.41, and 1.49 MP GW, respectively. 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. When the Council selected this method for setting TAC, the stock was projected to improve. However, the ABC recommendations provided to the Council by its SSC reflects the revised status of gag as a result of the 2009 SEDAR assessment update. As noted in Sections 1.1 and 2.2.1, the Council has asked this update be reviewed given potential discrepancies with some discard information.

Alternative 1, no action, would maintain the gag quota at 1.49 MP GW as defined in Amendment 30B. Selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because this quota would be above the acceptable biological

catch (ABC) recommended by the Council's SSC of 1.17 MP GW for 2011. In addition, this would promote overfishing and slow recovery of the stock.

The commercial quota proposed in **Alternative 2** is based on projected F_{OY} yield streams (1.01 MP GW for 2011) and is consistent with the methods used by the Council in Amendment 30B for setting the annual catch target. This is the harvest level that corresponds with the Council's initial request for an interim rule from the Council's June 2010 meeting. To account for management uncertainty, the quota for this alternative is less than what the quota would be if based on the SSC's ABC recommendation ($F_{Rebuild}$ yield stream) of 1.17 MP GW . Based on the SSC's recommendation, selecting **Alternative 2** would have a less than 50 % chance of overfishing by the commercial sector and would provide a greater than 50% chance of rebuilding the stock if this yield stream is adhered to in future actions provided the update assessment stands. However, recent discrepancies with the estimation of dead discards as described in Section 2.2.1 could affect how the assessment projects the status of the stock. If these discrepancies would show a more pessimistic condition of the stock if the assessment were rerun, then selecting this alternative could result in harvest levels inconsistent with rebuilding the stock within the time frames outlined in the Magnuson-Stevens Act. Should these discrepancies result in a more optimistic condition of the stock, then the quota can be increased in subsequent actions (e.g., Amendment 32).

Preferred Option a would release the quota in its entirety at the beginning of the fishing year. IFQ participants would have the opportunity to fish their shares as they see fit as the year progresses. **Option b** would split the release of shares during the first and second halves of the year. This option would increase the likelihood that gag would be available to dealers for most of the year because fishermen could not land all their fish at once. Under **Option b**, it is important to note fishermen who do not fish all their initial allocation during the first half of the year would be allowed to carry over any remaining allocation into the second half of the year.

Preferred Alternative 3 addresses the uncertainty in the stock status given the new information on how commercial and recreational discards were treated in the assessment update. Some potential discrepancies prompted the Council to revisit how discard data was used in the assessment. They asked that the panel who reviewed the assessment update consider these issues. Should sensitivity runs show these discards considerably influence the stock assessment and result in a more pessimistic condition of the stock, then setting the harvest at 390,000 pounds as in **Alternative 2** might not reduce overfishing sufficiently to allow the stock to recover within the maximum time frame allowed under the Magnuson-Stevens Act. Setting the harvest at a lower level than **Alternative 2** reduces this risk while still allowing some harvest of gag. If the harvest were set to zero as in **Alternative 4**, then gag incidentally caught when fishermen targeted other reef fish would be discarded. Because commercial sector generally fishes in deeper waters than the recreational sector, a large proportion of these fish would likely die from barotrauma and handling, thus contributing to overall discard mortality. Based on relating release morality and depth with a logistic function, Ortiz (2006) estimated commercial discards to average a 67% release mortality.

Alternative 4 is the most conservative alternative and would set the quota equal to zero. Under this alternative, any addition to the quota would be initiated through Amendment 32 or some

other rulemaking vehicle later in the year. This closure of the commercial sector to gag would benefit the stock by ending overfishing as well as halt gag fishing during the primary gag spawning season. However, this alternative would not allow some gag to be landed by IFQ gag allocation holders that might be caught incidentally when fishing for other species. Instead, these fish would have to be released. Given the high discard mortality of gag by the commercial fishery, discarded fish would likely die.

It should be noted that Alternatives 2-4 would lead to a change in the shallow-water grouper (SWG) quota. This quota is calculated as the sum of the red grouper and gag quotas with a 410,000 pound allowance for other SWG species. Should the gag quota be reduced, the SWG quota would be reduced the same amount. The red grouper quota and other SWG species allowance would remain unchanged.

3.2. Action 2: Release of Gulf of Mexico Red Grouper Multi-use IFQ allocation for 2011

Alternative 1: No action. Do not modify percentages of red grouper IFQ allocation converted into multi-use allocation. At the beginning of the 2011 fishing year, 4% of red grouper allocation would be converted into multi-use allocation and could be used to harvest gag.

Alternative 2: At the beginning of the 2011 fishing year, 1.6% of red grouper allocation would be converted into multi-use allocation and could be used to harvest gag.

Preferred Alternative 3: Suspend the release of red grouper multi-use allocation for 2011 until replaced by measures in Amendment 32.

Discussion and Rationale:

The commercial grouper and tilefish fisheries are currently managed under an individual fishing quota (IFQ) system implemented in January 2010 through Amendment 29. Under the system which is described in detail in Sections 2.3.1.1 and 2.3.1.2, each qualifying fisherman was allocated IFQ shares based on historical participation in the grouper and tilefish fisheries. Each year, fishermen receive allocation based on the current quota and the amount of shares each holds. To allow for flexibility and account for varying gag to red grouper ratios across the Gulf, at the beginning of each fishing year a percentage of each fisherman's gag and red grouper allocations are designated as multi-use allocation, valid for harvesting either red or gag grouper. Reef Fish Amendment 29 established that 4% of red grouper allocation and 8% of gag allocation would be converted to multi-use. However, under the reduced red grouper and gag annual catch limits (ACLs) expected to be implemented in Amendment 32, the current multi-use allocations could result in commercial harvest of gag exceeding its sector ACL. To prevent this from happening, adjustments need to be made to the red grouper multi-use allocation.

Alternative 1 would maintain the multi-use allocation percentages originally set in Reef Fish Amendment 29, i.e., 8% of the gag allocation and 4% of red grouper allocation converted into

multi-use allocation valid for the harvest of gag or red grouper. **Alternative 1** (No Action) is expected to result in gag harvests that would exceed specified catch limits.

Alternative 2 would set red grouper multi-use allocation based on the buffer existing between the gag ACL and quota. The existence of a buffer between the ACL and the quota implies that the quota is set equal to the annual catch target. In the absence of a buffer, the commercial gag quota is equal to the ACL. In setting the percentage of red grouper allocation that could be converted into multi-use allocation, **Alternative 2** accounts for changes in the relative magnitude of the gag and red grouper ACLs and quotas considered in this environmental assessment. Based on a gag commercial ACL of 1.76 MP, a gag commercial quota of 1.49 MP and a red grouper commercial allocation of 4.32 MP, **Alternative 2** would convert 1.6% of the red grouper allocation into multi-use allocation. Under **Alternative 2**, 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. Given the reductions needed to end overfishing of gag, this alternative could allow the amount of gag landed to exceed the gag quotas of **Action 1**.

Preferred Alternative 3 would set the percentage of red grouper multi-use allocation equal to zero when the interim rule for gag is in effect. What this means is a fisherman would 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 red or gag grouper will be determined based on the buffer existing between the gag ACL and quota and on the magnitude of the red grouper ACL. In effect, after the gag stock is fully rebuilt, the percentage of red grouper multi-use allocation under **Preferred Alternative 3** is equivalent to the one considered under **Alternative 2**. **Preferred Alternative 3** is expected to provide additional protection to gag while the stock is rebuilding.

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. 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. Multi-use allocation alternatives provided in this section consider adjustments to existing red grouper and gag multi-use allocation percentages, and the creation of new multi-use allocations that could be used to harvest other shallow-water grouper species included in the IFQ program.

3.3 Action 3: 2011 Gulf of Mexico Recreational Harvest.

Alternative 1: No action. Do not change current gag harvest restrictions.

Alternative 2: Set the gag bag limit to zero on the date when 620,000 pounds GW of gag is projected to be landed by the recreational fishery in 2011. This harvest level is consistent with the fishing mortality rate associated with the optimum yield used by the Council in Amendment 30B to set the recreational annual catch target.

Preferred Alternative 3: Set the gag bag limit to zero and not allow a recreational harvest of gag. It is the intent of the Council that recreational management measures to harvest gag in 2011 will be defined in Amendment 32.

Discussion and Rationale:

This action considers alternatives to decrease the gag recreational harvest of gag to a level consistent with the goals and objectives of the Fishery Management Plan for the Reef Fish Fishery of the Gulf while achieving the mandates of the Magnuson-Stevens Act. In Amendment 30B, the Council set TAC at the fishery-wide catch on a yearly basis from 2009 through 2011 at the yield for each year as defined by the constant F_{OY} projection (based on 75% of F_{MAX}) from the 2007 assessment and reevaluation. TAC in 2009 was 3.38 MP GW, in 2010 was 3.62 MP GW, and TAC in 2011 would be 3.82 MP GW and the commensurate recreational catch targets (61% of TAC) would be 2.06, 2.14, and 2.20 MP GW, respectively. The Council selected this approach to setting TAC and the resultant catch targets because the harvest can increase or decrease based on the condition of the stock. When the Council selected this method for setting TAC, the stock was projected to improve. However, the SSC's ABC recommendation provided to the Council at its June 2010 meeting reflects the revised status of gag as a result of the 2009 SEDAR assessment update. As noted in Sections 1.1 and 2.2.1, the Council has asked this update be reviewed given potential discrepancies with some discard information. It is unknown if this reevaluation will reflect any change in the stock condition.

Alternative 1, no action, would maintain the recreational catch target at 2.20 MP GW as defined in Amendment 30B as well as the current gag recreational bag limit of two fish and the aggregate grouper bag limit to four fish . Selection of this alternative would be inconsistent with current National Standard 1 guidance (71 FR 3180) because this quota would be above the acceptable biological catch (ABC) recommended by the Council's SSC of 1.17 MP GW for 2011. In addition, this would promote overfishing and slow recovery of the stock.

Alternative 2 would allow for some harvest of gag if certain conditions regarding dead discards are met. The projected fishing season for 620,000 lbs of gag is 83 days. Given that the shallow-water grouper recreational closure extends from February 1 to March 31, this would allow fishing for the month of January and from April 1 to May 22. However, this fishing season is dependent on the same percent reduction in dead discards as gotten from the harvest. The needed reductions to achieve the yield at $F_{rebuild}$ would be 70%, and the needed reductions to achieve the yield at F_{OY} would be 74%. If these levels of reduction are not met, then harvesting this amount of fish could exceed the reductions needed for the stock to recover under the rebuilding plan being developed in Amendment 32. This would require deeper cuts in future harvests than those projected by the current update assessment (SEDAR 2009a). At this time, achieving these levels of reductions in dead discards is unlikely unless other actions are taken such as area closures which are being evaluated in Amendment 32. In addition, the extent of these reductions is based on the update assessment which is to be reviewed later in 2010. The outcome of this review may indicate the level of reductions needs to be higher or lower than the current estimates.

Although actions in this interim rule do not need to end overfishing, they do need to reduce overfishing. If selected, **Alternative 2** could limit the types of long-term measures developed by the Council in Amendment 32 that could be applied to the 2011 fishing year. This is because the 620,000 lbs catch target would likely be achieved before rulemaking from Amendment 32 is implemented. Therefore, the harvest for the rest of the 2011 fishing year could be zero. Any long-term measures developed in Amendment 32 would not apply until 2012.

The values provided in the preceding discussion for **Alternative 2** are based on the 2009 assessment update upon which the SSC recommendations are based. However, as described in Section 2.2.1, recent discrepancies with the estimation of dead discards could affect how the assessment projects the status of the stock. If these discrepancies would show a more pessimistic condition of the stock if the assessment were rerun, then selecting this alternative could result in harvest levels inconsistent with rebuilding the stock within the time frames outlined in the Magnuson-Stevens Act even if discards could be reduced by 70%. This is particularly important for the recreation sector which harvests a greater proportion of the total catch than the commercial sector. Conversely, should these discrepancies result in a more optimistic condition of the stock, the quota could be increased in subsequent actions (e.g., Amendment 32).

Preferred Alternative 3 would set the bag limit for gag at zero effectively closing the fishery. It was the intent of the Council when requesting this 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. This alternative is the most conservative and would benefit gag by lowering the fishing mortality on the stock while the council is developing the long-term measures as well as halt gag fishing during the primary gag spawning season. 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 gag.There would still be gag discards as anglers target other species on fishing trips. However, the release mortality rate of discards by the recreational fishery is lower than the commercial fishery. Based on relating release morality and depth with a logistic function, Ortiz (2006) estimated recreational discards to average a 32% release mortality.

Relative to Action 1 commercial quota measures, selection of **Preferred Alternative 3** would be consistent from a fair and equitable standpoint. Although the Council requested the recreational gag harvest be set at zero for the temporary rule, the Council clearly stated their intent was to allow a recreational harvest later in the year. The Council favored a summer fishing season for gag based on projections from the updated assessment and intends to develop this season in Amendment 32. By reducing the number of discards and any mortality associated with those discards, the length of a fishing season later in the year as the Council intends, would be maximized. For the commercial fishery, the encounter rate of regulatory discards is low because the fishery occurs primarily in offshore waters where adult gag reside. However, with a higher discard mortality rate, the likelihood of a gag surviving after capture is much less due to barotrauma occurring during capture. Therefore, the Council requested a minimal commercial quota to account for gag incidentally caught during normal reef fishing operations and allow those fish to be counted towards the quota rather than be discarded dead.

3.4 Environmental Consequences

3.4.1 Direct and Indirect Effects on Physical Environment

Sections 2.1, 2.2, and GMFMC (2004) describe the physical environment and habitat use by gag and other groupers. Groupers are carnivorous bottom dwellers, generally associated (as adults) with hard-bottomed substrates, and rocky reefs. Eggs and larvae for all species are pelagic. Depending on the species, juveniles either share the same habitat as adults, or are found in different habitats and undergo an ontogenetic shift as they mature. Juvenile gag are estuarine dependent and are found in seagrass beds (GMFMC 2004). Adult gag are associated with hard bottom substrates, including offshore reefs and wrecks, coral and live bottom, and depressions and ledges. Spawning adults form aggregations in depths of 50 to 120 m, with the densest aggregations occurring around the Big Bend area of Florida. Females undergo a migration from shallower waters to the deeper waters where spawning occurs, while males generally stay at the same depths where spawning occurs (Koenig 1999).

As noted in Section 2, oil from the Deepwater Horizon MC252 incident at its maximum extent has affected at least one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. However, thus far the oil has remained outside most of the west Florida Shelf where gag are particularly abundant (GMFMC 2004). As long as the majority of the oil remains on the surface and offshore, the impacts to demersal reef fish habitat may be minor; impacts would be limited to areas where pelagic eggs and larvae are found. However, if the oil reaches the bottom or nearshore/inshore areas, the impacts on habitat will increase. Oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. It is also possible that zooplankton that feed on algae could be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow. At this time, the information is incomplete and unavailable (see 40 CFR § 1502.22), and is still being collected regarding the overall impact to the nearshore and offshore physical environment.

It is unknown if any of the areas within the fishery closures were not affected by oil from the event, but the fishery closures would have protected habitat from the effects of fishing. The closures prohibited all forms of fishing including catch and release. Thus gears that do interact with the bottom would not be used during the extent of the closures. Effects of reef fish fishing gear on the physical environment are described below.

In the commercial fishery, vertical-line gear is used to harvest most commercial (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 fishery in 2009 to reduce sea turtle bycatch and the implementation of the longline endorsement in 2010, it is difficult to predict changes in gag landings that might have occurred from regulatory changes. Other gears such astraps, spears, and other gears accounted for the remainder of landings. Traps became illegal for harvest of reef fish after February 7, 2007.

Longlines

Longline gear is deployed over hard bottom habitats using weights to keep the gear in direct contact with the bottom. Its potential for adverse impact is dependent on the type of habitat it is set on, the presence or absence of currents, and the behavior of fish after being hooked. In addition, this gear upon retrieval can abrade, snag, and dislodge smaller rocks, corals, and sessile invertebrates (Bohnsack in Hamilton, 2000; Barnette 2001). Direct underwater observations of longline gear in the Pacific halibut fishery by High 1998 noted that the gear could sweep across the bottom. Some halibut were observed pulling portions of longlines 15 to 20 feet over the bottom. Although the gear was observed in contact with or snagged on a variety of objects including coral, sturdy flexible corals usually appeared unharmed while hard corals often had portions broken off. However, another study that directly observed deployed longline gear (Atlantic tilefish fishery) found no evidence that the gear shifted significantly, even when set in currents. This was attributed to anchors set at either end of the longline as well as sash weights along the line to prevent movement (Grimes et al. 1982). Based on the direct observations, it is logical to assume that bottom longline gear would have a minor impact on sandy or muddy habitat areas. However, due to the vertical relief that hardbottom and coral reef habitats provide, it would be expected that bottom longline gear may become entangled, resulting in potential negative impacts to habitat (Barnette 2001).

Vertical lines

Concentrations of many managed reef fish species are higher on hard bottom areas than on sand or mud bottoms, thus vertical line gear fishing generally occurs over hard bottom areas (GMFMC 2004). Vertical lines include multi-hook lines known as bandit gear, handlines, and rod-and-reels. Vertical-line gear is less likely to contact the bottom than longlines, but still has the potential to snag and entangle bottom structures and cause tear-offs or abrasions (Barnette 2001).

In using bandit gear, a weighted line is lowered to the bottom, and then the lead is raised slightly off the bottom (Siebenaler and Brady 1952). The gear is in direct contact with the bottom for only a short period of time. Barnette (2001) suggests that physical impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers).

Commercial or recreational fishing with rod-and-reel and handlines also puts gear on the bottom. The terminal part of the gear is either lifted off the bottom like fishing with bandit gear, or left contacting the bottom. Sometimes the fishing line can become entangled on coral and hard bottom outcroppings. The subsequent algal growth can foul and eventually kill the underlying coral (Barnette 2001). Researchers conducting studies in the restricted fishing area at Madison-Swanson marine reserve reported seeing lost fishing line on the bottom, much of which appeared to be fairly old and covered with growth (personal communication, Andrew David), a clear indication that bottom fishing has had an impact on the physical environment prior to fishing being prohibited in the area (GMFMC 2003). The National Fish and Wildlife Foundation, in

issuing grants to remove marine debris, established monofilament fishing line is a priority marine debris issue[9].

Anchor damage is also associated with vertical-line fishing vessels, particularly by the recreational fishery where fishermen may repeatedly visit well marked fishing locations. Bohnsack (in Hamilton 2000) points out that "favorite" fishing areas such as reefs are targeted and revisited multiple times, particularly with the advent of global positioning technology. The cumulative effects of repeated anchoring could damage the hard bottom areas where fishing for grouper occurs.

Fish traps

Fish traps were an important part of the reef fish fishery, but gag was not a common species in trap catches. Traps were often set on live substrate and couold cause damage to corals, gorgonians, sponges, and submerged aquatic vegetation. In addition, lost traps continue to move on the bottom with currents continuing to damage adjacent bottom habitat. However, the Council phased out this gear in February 2007 so it is no longer allowed to be used. Thus, this gear no longer impacts habitat in the Gulf.

Spear and Powerhead

Spearguns and slings are used in both commercial and recreational grouper fishing but are a relatively minor component of both. Barnette (2001) cited a study by Gomez (1987) that concluded that spearfishing on reef habitat may result in some coral breakage, but damage is probably negligible. In addition, there could be some impacts from divers touching coral with hands or from resuspension of sediment by fins (Barnette 2001). Such impacts should be negligible to non-existent for well-trained and experienced spearfishermen who stay in the water column and avoid contact with the bottom.

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. **Alternative 2** and **Preferred Alternative 3** would reduce to quota to 390,000 pounds GW and 100,000 pounds, respectively. **Alternative 4** would not allow for a harvest of gag at least until Amendment 32 is implemented. 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. Because IFQ allocation under **Alternative 2** and **Preferred Alternative 3** would mostly be used to harvest incidentally caught gag, fishing effort and consequently the effects on the physical environment would not be much greater than under **Alternative 4**.

Action 2 examines different ways IFQ multi-use shares can be used in the fishery. The alternatives in themselves would not necessarily affect fishing effort, but would affect where that effort is directed. Under **Alternatives 1** and **2**, some IFQ allocation based on the red grouper

[9] National Fish and Wildlife Foundation 2006 Marine Debris Grants Program Recipients web page, http://www.nfwf.org/Content/ContentFolders/NationalFishandWildlifeFoundation/Programs/MarineDebrisPreventionandRemovalProgram/2006MarineDebrisProjectBriefs.pdf

quota could be redirected towards harvesting gag. **Alternative 1** would allow more redirection of effort than **Alternative 2**. Thus, some effort directed at red grouper, which is often found over low relief hard bottom, may be redirected towards gag, which is often associated with habitats having more vertical relief. **Preferred Alternative 3** would not allow a redirection of effort from red grouper to gag, thus the physical environment where gag are often found would be affected less by fishing gear and areas where red grouper are often found would have greater effects.

Action 3, **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 remain unchanged, this alternative should have no additional effects on the physical environment because fishing effort would likely be unaffected. **Alternatives 2** would reduce to quota to 390,000 pounds GW and **Preferred Alternative 3** would not allow any harvest of gag at least until Amendment 32 is implemented. These alternatives would be expected to have the 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.

3.4.2 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, and GMFMC (2004, 2009), and incorporated here by reference. Both eggs and larval stages are planktonic with larvae feeding on zooplankton and phytoplankton. Juvenile and adult grouper are typically demersal, and are usually associated with bottom topographies on the continental shelf which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. Life history information for this species is summarized in Section 2.2.

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. Removal of fish from the population through fishing reduces the overall population size. Maximum sustainable yield (MSY) is the largest average catch that can be taken at a sustained level of harvest from a stock under average environmental conditions. Associated with MSY is the fishing mortality and stock biomass associated with MSY (F_{MSY} and B_{MSY}, respectively) from which optimum yield, minimum stock size threshold, and maximum fishing mortality rate are generally derived. If fishing is allowed to exceed F_{MSY} for several years, then the stock size will decline to a level where the harvest can no longer be maximized. This overfishing can manifest itself in two ways. The first is growth overfishing where the fishing pressure on smaller fish is too high to allow the fishery to produce MSY. The second is recruitment overfishing where the fishing pressure is so high that the population is no longer able to replace itself. Recruitment overfishing for an extended period of time could lead to the collapse of the stock, or a condition where all fishing effort including bycatch from non-directed fisheries, would need to be severely curtailed or ended for the stock to rebuild. Taken to its extreme, recruitment overfishing could result in the economic and biological extinction of a stock.

Fishing pressure can affect various aspects of a species' life history. For example, the proportion of male gag in the population has decreased from historical levels of 17% (Hood and Schlieder 1992) to 2-10% in the 1990s (Coleman et al. 1996, June 8, 1998 memo from Fitzhugh, Collins and White), leading to concerns by the Council's Reef Fish Stock Assessment Panel that the reduction in proportion of males may have a potentially negative consequence on population reproductive potential (GMFMC 1998). In other reef fish species (e.g., vermilion snapper; Zhao et al. 1997, Hood and Johnson 1999), fishing appears to have shifted the size distribution to smaller sizes. Increased fishing pressure has also been associated with a depression in the size at maturity. Although neither of these trends are evident in red grouper, changes in fishing regulations appear to have an effect on red grouper growth. The mean average length at age for red grouper was found to be larger after regulations went into effect in 1990 (Lombardi-Carlson et al. 2006a).

Another important factor from fishing affecting the gag stock is release mortality as related to regulatory discards. Release mortality is positively correlated with depth as discussed in SEDAR 10 (1996). The assessment summarized reported gag release mortality rates ranging from 14.2% at depths of 15 m (Overton and Zabawski 2003) to 100% for depths greater than 50 m (Wilson and Burns 1996). In developing the assessment, a logistic curve relating release mortality to depth was developed. The function placed a release mortality of 6% on fish caught in shallow (surface) waters to 95% mortality on fish caught greater than 95 m (Ortiz 1996). The 50% release mortality rate was at 45.5 m. The effects of commercial discards were determined to lower than recreational discards (Table 3.4.2.1). This is in part because despite the fact the commercial fishery generally fishes in deeper waters where release mortality is higher; the likelihood of encountering an undersized fish is reduced. Analysis in the assessment showed there is a positive relationship between fish size and depth. For the recreational fishery, even though more effort is expended in shallower waters where release mortalities are lower, the number of fish caught was much higher resulting in a greater number of dead discards.

Table 3.4.2.1. Landings and dead discards (pounds GW) of gag for the commercial and recreational sectors of the reef fish fishery for the years 2000-2004 (from Table 1, Data Workshop Report, SEDAR 10 2006).

	Landings		Dead discards	
Year	Commercial	Recreational	Commercial	Recreational
2000	2,283,311	4,972,529	40,192	3,673,445
2001	3,128,510	4,031,469	113,436	4,902,049
2002	2,983,506	4,435,518	71,132	6,350,300
2003	2,626,122	3,773,139	107,262	8,686,558
2004	2,901,692	4,913,422	118,472	9,131,932

The numbers provided in Table 3.4.2.1 should be considered preliminary. As mentioned in Section 2.2, potential inconsistencies in commercial and recreational estimates of discards were discovered when developing management alternatives for gag. Preliminary estimates of commercial gag discards provided by the SEFSC (2010) indicated commercial discards were much higher when using reef fish observer data compared with methods used in the stock assessment (SEDAR 2009a). Additionally, size and age distributions computed for recreational

discards in the assessment indicated most discards were close to the minimum size limit in more recent years even though observer data indicated a broader size range for discarded fish. Therefore, the Gulf Council has asked another review of the gag assessment be conducted to address these discrepancies.

Changes in the abundance from fishing (e.g., changing fishing selectivities) are likely to have ecological effects. However, the relationships among species in marine ecosystems are complex and poorly understood. As a result, the nature and magnitude of ecological effects are difficult to predict with any accuracy. Recent advances in ecosystem modeling may provide some insight into the cascading effects of gag and red grouper management measures. Currently, the only model for the Gulf that could address these issues is an Ecopath model being developed by the Florida Fish and Wildlife Research Institute and NMFS (Behzad Mahmoudi, personal communication[10]). The development of this model is ongoing and it would be impractical to apply at this time. Without knowing how an increase or decrease in the abundance of red grouper or gag would affect other populations or that it would even be detectable, the ecological effects of the various alternatives cannot be distinguished at this time.

Even though current models that can examine the linkages between species are not yet adequate to look at the effects of management measures, it is important to note that some species such as red snapper, greater amberjack, gag, and gray triggerfish are being managed to improve their stock condition. Other species (e.g., vermilion snapper and deepwater grouper) are being managed to maintain a certain stock condition. Therefore, the effects of improving the gag stock to avoid overfishing could have an adverse effect on these stocks. These effects could come about through competition for food or space. For example, adult gag feed primarily on fish (>95%) with herrings, porgies, small jacks, drum, mullet, and grunts the dominant prey taxa (Naughton and Saloman, 1985; Bullock and Smith, 1991). Less of these prey may be available to other reef fish species if gag stocks are allowed to increase.

It is important to note that oil from the broken well head from the Deepwater Horizon MC252 may affect larger areas of the Gulf. Mortality on larvae caused by the oil could result in declines in recruitment in future year classes (USFWS 2004). As noted in Section 3.1, effects on the physical environment such as low oxygen and the inter-related effects that culminate and magnify through the food web could lead to impacts on the ability of larvae and post-larvae to survive, even if they never encounter oil. Presently, this oil is concentrated in the northeastern Gulf and away from most gag EFH (GMFMC 2004). However, if the oil does shift to the west Florida shelf, impacts from the oil would be expected to negatively impact the recovery of this stock from the 2005 mortality event assumed in the stock assessment model, as well as have short- and potentially long-term economic impacts on commercial and recreational fisheries in the Gulf. In addition, effects of oil exposure may not always be lethal, but can create sub-lethal effects on all life stages of fish (USFWS 2004). There is the potential that the stressors can be additive, and each stressor may increase the susceptibility to the harmful effects of the other. At this time, the information needed to assess the aforementioned effects is incomplete and unavailable (see 40 CFR § 1502.22).

[10] Personal communication. Dr. Behzad Mahmoudi, Florida Fish and Wildlife Research Institute, 100 Eighth Avenue SE, St. Petersburg, Florida 33701

Assuming not all areas of the northern Gulf were affected by the oil, the fishing closures (see Section 2.1 for a description) would have protected species in those areas from fishing. The closures which included up to 35.9% of the Gulf federal waters (June 21), prohibited all commercial and recreational fishing including catch and release. Although this closure may have provided protection from harvest for some species, gag likely did not receive such protection a most areas where gag are found were outside the closed area.

For **Action 1, Alternative 1** is the least conservative of the gag commercial quota alternatives and would result in the highest probability of overfishing occurring. This level of harvest is above the harvest allowed for under the SSC's recommended ABC level. **Alternative 4** is the most conservative TAC relative to **Alternatives 1, 2**, and **Preferred Alternative 3**, and would have the highest likelihood of preventing overfishing and maintaining the stock biomass above the minimum stock size threshold. However, by prohibiting gag harvest, some incidentally caught gag would suffer from release mortality. As mentioned above, at deeper depths, this discard mortality is very high and the likelihood of a fish surviving would be minimal. **Alternative 2** and **Preferred Alternative 3** would allow incidentally harvested fish to be retained if a fisherman had gag IFQ allocation and these fish would count against the gag quota. Direct effects for **Alternatives 2-4** relative to **Alternative 1** include an increase in the abundance of gag. Indirect effects could include an increase in regulatory discards due to increased incidental catch by fishermen targeting other species in the same habitat. The direct and indirect effects of **Alternative 2** and **Preferred Alternative 3** would be intermediate to **Alternatives 1** and **4**.

Action 2 examines different ways IFQ multi-use shares can be used in the fishery. The alternatives in themselves would not necessarily affect fishing effort, but would affect where that effort and harvest is directed. Under **Alternatives 1** and **2**, some IFQ allocation based on the red grouper quota could be redirected towards harvesting gag. **Alternative 1** would allow more gag harvest than **Alternative 2**. Thus, some effort that could be directed at red grouper may be redirected towards gag under these alternatives and could allow overfishing of gag. **Preferred Alternative 3** would not allow a redirection of effort from red grouper to gag, thus providing more protection to the gag stock and reduce the likelihood of overfishing.

Under **Action 3**, **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 overfishing because this harvest level is above the SSC's recommended ABC. **Alternative 2** would reduce to quota to 620,000 pounds GW and **Preferred Alternative 3** would not allow for a harvest of gag at least until Amendment 32 is implemented. These two alternatives 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 fishing effort. To harvest the quota allowed under **Alternative 2**, a 70-74% reduction in the number of recreational sector dead discards would need to be achieved to have an 82 day season. 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. Unless the encounter rate of undersized fish or the release mortality is decreased, this reduction is not likely to be achieved. Depending on what the reevaluation of how dead discards are handled by the stock assessment, allowing a 620,000 pound harvest by the

recreational sector could be found to not sufficiently reduce overfishing and not allow the stock to recover. Under **Preferred Alternative 3**, directed effort towards gag would disappear and overall fishing effort for gag would diminish. This alternative would provide the greatest protection to the stock. However, any effort not directed towards gag could be redirected towards other species such as red grouper and greater amberjack.

3.4.4 Direct and Indirect Effects on the Economic Environment

Action 1: 2011 Gulf of Mexico Commercial Gag Quota.

Direct and Indirect Effects on the Economic Environment

The potential economic effects on the commercial sector of the alternatives considered in this action are evaluated by measuring expected changes in annual gross revenues from commercial gag harvests. Total changes in gross ex-vessel revenues are obtained by subtracting legally required cost recovery fees from the ex-vessel values of the expected gag harvest. Under the grouper and tilefish individual fishing quota program, fishermen are required to pay 3% of the ex-vessel value of grouper and tilefish harvested to defray management costs. Total ex-vessel values were calculated by multiplying commercial annual catch limits by an average ex-vessel price. The estimated average Gulf-wide ex-vessel price was $3.52 per pound of gag (gutted weight) in 2008, as derived from the National Marine Fisheries Statistics website data[11] and adjusted using a conversion factor of 1.06 to convert whole weights into gutted weights (SEDAR 10 2006). Table 3.4.3.1 provides commercial quotas or allocations released, ex-vessel values, gross revenues, and expected changes in gross revenues for each of the alternatives considered. Ex-vessel values and changes in values and revenues provided assume that the totality of the gag commercial quota is harvested during the fishing year. If fishermen do not harvest the totality of the commercial quota or allocation released, prorated economic effects based on the harvested portion of the quota would better reflect the effects of the management alternatives considered.

Table 3.4.3.1: Ex vessel values and changes in gross revenues under alternative gag commercial allocation releases

	Commercial Allocation million lbs (gutted weight)	Ex Vessel Values	Changes in Ex Vessel Value	Changes in Gross Revenues
Alternative 1	1.49	$5,244,800		
Alternative 2	0.39	$1,372,800	-$3,872,000	-$3,755,840
Preferred Alternative 3	0.1	$352,000	-$4,892,800	-$4,746,016
Alternative 4	0	$0	-$5,244,800	-$5,087,456

[11] http://www.st.nmfs.noaa.gov/st1/commercial/index.html

Alternative 1 would maintain the current commercial gag annual catch limit and, as a result, would not be expected to result in any change in total ex-vessel value received from gag harvests. Under **Alternative 1**, the annual ex-vessel value of gag harvested under the individual fishing quota program is estimated at $5.25 million (2008 dollars).

Alternative 2 would decrease the commercial gag quota to 0.39 million pounds. The ex-vessel value of gag harvests under **Alternative 2** is estimated at approximately $1.37 million. Relative to **Alternative 1**, losses in ex-vessel value and in gross revenues expected from the implementation of **Alternative 2** are estimated at approximately $3.87 million and $3.76 million, respectively. Under **Option a**, IFQ share holders would receive the entirety of their gag allocation at the beginning of the fishing year. **Option a** is not expected to affect fishermen's ability to plan their gag harvest within the fishing year and thus, would not result in additional economic effects. **Option b**, which would release 50% of the commercial gag quota on January 1, 2011 and release the remaining 50% on July 1, 2011, is expected to result in additional adverse economic effects due to restrictions on trip planning that would result from shortening the planning horizon to six months and halving the amount of gag allocation available. For the same reasons, the sequential share distribution under **Option b** would also limit opportunities for share transfers and could increase the amount of discards.

Under **Preferred Alternative 3**, 100,000 lbs of gag IFQ allocation will be released to IFQ shareholders on January, 1, 2011. If warranted, additional gag allocation will be released once the Council sets an annual catch target based on a reanalysis of the gag update assessment. Adverse economic effects expected from **Preferred Alternative 3** would be greatest if additional gag allocation is not released within 2011. Relative to **Alternative 1**, maximum losses in ex-vessel value and in gross revenues expected from the implementation of **Preferred Alternative 3** are estimated at approximately $4.89 million and $4.75 million, respectively. Losses incurred by IFQ shareholders would be mitigated by additional distributions of gag allocation within the 2011 calendar year. Although the uncertainty surrounding the reevaluation of the update assessment precludes from providing estimates for additional revenues that could be collected following supplementary distributions of gag allocation, it follows that the larger the supplementary gag allocation, the lower overall losses in ex-vessel values and revenues resulting from **Preferred Alternative 3** are anticipated to be.

Alternative 4 would set the commercial gag quota to zero until the implementation of Reef Fish Amendment 32, which includes management alternatives to set commercial gag quota. Although the implementation of Amendment 32 is expected by the middle of 2011, approximately, it is plausible that the regulatory action will be effective in 2012. Maximum adverse economic effects anticipated from **Alternative 4** would assume that Amendment 32 will be effective January 1, 2012. Under this assumption, relative to the status quo alternative, losses in ex-vessel value and in gross revenues expected from the implementation of **Alternative 4** are estimated at approximately $5.25 million and $5.09 million respectively. Should Amendment 32 be implemented earlier, the magnitude of the commercial quota selected by the Council would determine the extent of annual losses in ex vessel values and gross revenues incurred by the commercial fishermen, provided that they have sufficient time to harvest their allocation within the fishing year. For example, the implementation of a 390,000 lbs commercial quota in 2011 would be expected to result in losses comparable to the estimates provided for **Alternative 2** if

fishermen can harvest their entire IFQ allocation. However, **Alternative 4** may also result in additional adverse economic effects due the uncertainty associated with the unknown implementation date of Amendment 32, which would decrease the flexibility in trip scheduling and in planning for other business transactions such as share transfers and annual allocation leasing.

Relative to the status quo alternative, **Alternative 2**, which would release 390,000 lbs of allocation, would minimize adverse economic effects suffered by IFQ shareholders. However, consistent with a precautionary approach, the Council's selection of **Preferred Alternative 3** would decrease the likelihood of releasing an amount of commercial allocation subsequently found to be greater than the commercial quota recommended following the planned reexamination of the update assessment. Although **Alternative 4** would minimize such likelihood, it was not selected as a preferred by the Council due to the unnecessary gag discards expected to result from the temporary prohibition from harvesting gag that it would implement. Given the multi-species nature of the grouper fishery, commercial fishermen are expected to catch some gag while prosecuting red grouper or other shallow water grouper. By releasing 100,000 lbs of gag allocation, the Council elected to allow fishermen to keep gag caught instead of unnecessarily discarding them.

Although changes in gross revenue estimates are sufficient to provide an ordinal ranking of the alternatives, the economic analysis provided in this section does not account for several factors. The analysis is confined to a single fishing year since this interim rule is expected to be replaced by another regulatory action, i.e., an amendment to the reef fish FMP. In addition, the analysis presented does not include economic effects that could result from potential behavioral changes by individual fishing quota participants. For example, the effects of decreases in commercial annual catch limit on the number and length of fishing trips and on crew size are not included. Fishermen may or may not elect to adjust the number of fishing trips in response to an annual catch limit adjustment. In addition, although gag individual fishing quota participants prosecute gag as a part of a multi-species reef fish fishery, the analysis does not account for possible changes in targeting behavior, which could result in harvests with different species composition. These effects could impact gross revenues as well as the operating costs of individual fishing quota participants. Potential behavioral changes were omitted due to data limitations. Economic effects expected from these behavioral changes could conceivably be approximated if data on changes in trip structure, harvest composition, and operating costs resulting from a change in annual catch limit were available. However, such information is currently unavailable due to the very recent implementation of the grouper and tilefish individual fishing quota program.

Economic Activity Associated with Estimated Economic Effects

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 full time equivalent (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. Estimates of the potential changes in economic value were provided in Section 3.4.3. Table 3.4.3.2 provides estimates of potential changes in economic activity associated with the estimated changes in commercial ex-vessel values for **Alternative 2, Preferred Alternative 3,** and **Alternative 4** relative to **Alternative 1**.

Table 3.4.3.2 Potential decreases in economic activity and employment associated with the estimated losses in ex-vessel values relative to Alternative 1. All dollar values are in 2008 dollars.

Industry Sector	Alternative 2	Preferred Alternative 3	Alternative 4
Ex-vessel values	$3,872,000	$4,892,800	$5,244,800
Harvesters			
Employment impacts (FTE jobs)	95	120	129
Income Impacts	$3,193,035	$4,034,835	$4,325,111
Output Impacts	$8,298,998	$10,486,915	$11,241,370
Primary dealers/processors			
Employment impacts (FTE jobs)	58	73	79
Income Impacts	$2,684,837	$3,392,657	$3,636,734
Output Impacts	$8,354,273	$10,556,763	$11,316,243
Secondary wholesalers/distributors			
Employment impacts (FTE jobs)	49	62	66
Income Impacts	$2,627,432	$3,320,119	$3,558,976
Output Impacts	$6,160,537	$7,784,679	$8,344,728
Grocers			
Employment impacts (FTE jobs)	29	37	40
Income Impacts	$1,093,322	$1,381,562	$1,480,955
Output Impacts	$2,378,456	$3,005,504	$3,221,727
Restaurants			
Employment impacts (FTE jobs)	498	630	675
Income Impacts	$12,128,858	$15,326,465	$16,429,089
Output Impacts	$25,788,415	$32,587,180	$34,931,581
Total			
Employment impacts (FTE jobs)	730	922	988
Income Impacts	$21,727,483	$27,455,638	$29,430,864
Output Impacts	$50,980,680	$64,421,041	$69,055,648

The calculation of the change in economic activity utilizes common variables used in the calculation of the expected change in economic value, specifically the expected change in ex-

vessel values in the commercial sector. Because both assessments (change in economic value and change in economic activity) use these common variables, the ranking of alternatives based on the magnitude of these effects is unaffected by the metric examined; the greater the estimated change in economic value, the greater the estimated change in economic activity.

Based on an estimated decrease in ex-vessel values of approximately $3.872 million (2008 dollars) in 2010, **Alternative 2** would be expected to result in the loss of 730 FTE jobs, approximately $21.727 million in income impacts, and approximately $50.981 million in output (sales) impacts relative to **Alternative 1**. Consistent with the lower total allowable catch in **Preferred Alternative 3** and **Alternative 4** relative to **Alternative 2**, **Preferred Alternative 3** and **Alternative 4** would be expected to result in greater reductions in employment and losses in overall economic activity**. Preferred Alternative 3** is expected to result in the loss of 922 FTE jobs, approximately $27.456 million in income impacts, and approximately $64.421 million in output impacts relative to **Alternative 1**.

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.

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 rational expectation that reduction in the supply of a single species, even a popular species like red snapper, 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: Release of Gulf of Mexico Red Grouper Multi-use IFQ allocation for 2011

The status quo alternative (**Alternative 1**) would continue to convert 4% of the red grouper allocation into multi-use allocation valid to harvest red grouper or gag. **Alternative 1** provides additional flexibility to IFQ participants by allowing them to adjust to geographical and temporal variations in the red to gag grouper ratio and thus, contributes to the 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 will exceed the gag ACL. In addition to the detrimental effects on the gag stock, this scenario will result in adverse economic effects stemming from the corrective measures that would be implemented to address the over-harvesting of gag,

Alternative 2, which would convert a smaller percentage of red grouper allocation into multi-use allocation, i.e., 1.6%, would **limit** IFQ participants' ability to adjust to fluctuations in red grouper to gag ratios but would curtail the risk of over harvesting gag. Therefore **Alternative 2** is not expected to result in future adverse economic effects. However, given the poor condition of gag stock, the additional pressure on the stock could be detrimental to the gag rebuilding plan.

Preferred Alternative 3 would suspend the release of red grouper multiuse allocation for 2011 until replaced by measures in Amendment 32. **Preferred Alternative 3** 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 **Alternatives 1** and **2**, **Preferred Alternative 3** is the most beneficial to the rebuilding of the gag stock which is currently overfished and is undergoing overfishing; thus yielding positive economic effects in the long run.

Action 3: 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** and **Preferred Alternative 3** 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 scenarios are summarized in Table 3.4.3.3. The interim rule would manage the fishery from January 1 through May 31, 2011. The interim rule with a 6-month extension would manage the fishery through November 30, 2011.

Table 3.4.3.3. 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)	Jan 1-May 31	Jan 1-Nov 30
2	Jan 1-May 31	Jan 1-Nov 30
3	Jan 1-May 31	Jan 1-Nov 30
Dates fishery closed		
Alternative	Interim rule without extension	Interim rule with 6 month extension
1 (No Action)	Feb 1-Mar 31	Feb 1-Mar 31
2	Feb 1-Mar 31, May 23-31	Feb 1-Mar 31, May 23-Nov 30
3	Jan 1-May 31	Jan 1-Nov 30

Alternative 1, no action, would maintain the recreational catch target at 2.20 MP as defined in Amendment 30B and the recreational bag limit of two gag within the aggregate bag limit of four grouper. **Alternative 2** would allow for some harvest of gag if certain conditions regarding dead discards are met. The projected fishing season for 620,000 lbs of gag is 83 days. Given the SWG recreational closure from February 1 to March 31, this would allow a fishery for the month of January and from April 1 to May 22. However, this fishing season is dependent on the same percent reduction in dead discards as achieved from the harvest. If no reduction in dead discards is attained, then the fishery could not open, and thus the bag limit would be set at zero, because the number of dead discards would be greater than 620,000 lbs. Therefore, under this scenario, the result would be the same as under **Preferred Alternative 3**. **Preferred Alternative 3** would set the recreational bag limit for gag at zero, effectively closing the fishery. 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.

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]

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 are assumed to be equal to the average of estimated landings from the corresponding period from 2006 to 2008 (Table 3.4.3.4). Under **Alternative 1**, no action, the recreational fishery for gag (and other shallow water grouper) in the Gulf of Mexico (Gulf) would be closed during February and March of 2010 and open the rest of the year.

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

Landings of gag are expected to be 781,404 lbs from January 1 through May 31, and 1,134,340 lbs from June 1 through November 30.

Under **Alternative 2**, it has been determined that January, April, and the first 22 days of May could remain open to gag fishing in 2011 in order to meet the 620,000 pound target. Under the interim rule, the recreational fishery for gag would be closed from May 23-May 31, implying an average reduction of 161,404 lbs relative to **Alternative 1**. If the interim rule is extended for an additional 6 months, then the recreational fishery would be closed from May 23-November 30, implying an average reduction of 1,295,744 lbs relative to **Alternative 1**.

An average of 2,786,289 lbs of gag was discarded dead annually from 2006 to 2008. If these removals are considered in the establishment of Council's management objectives, then the recreational fishery for gag would have to be closed for all of 2011 to meet the target (total removals must be equal to or less than 1.34 MP gw = 620,000 lbs of landings + 722,000 lbs of dead discards). Under the interim rule, the recreational fishery for gag would be closed from January 1-May 31, implying an average reduction of 781,404 lbs relative to **Alternative 1**. If the interim rule is extended for an additional 6 months, then the recreational fishery would be closed from January 1-November 30, implying an average reduction of 1,915,744 lbs relative to **Alternative 1**.

Table 3.4.3.4. 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

There are no estimates of the value of gag to anglers; however, three potential measures of CS per grouper are reported in Table 3.4.3.5. 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 **Error! Reference source**

not found..4.3.5 assume that 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.

Table 3.4.3.5. 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 change in CS associated with **Alternative 2** and **Preferred Alternative 3** relative to **Alternative 1** is shown in the last two rows of Table 3.4.3.6.. 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.

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. Table3.4.3.7 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 3.4.3.7 shows the total number of charter anglers intercepted by the MRFSS in the Gulf during each two-month wave

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

from 2006 to 2008. The second and third rows in Table 3.4.3.7 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 3.4.3.6. Change in CS to the Recreational Fishery Associated with Alternative 2 and Preferred Alternative 3 Relative to Alternative 1

Measure	Alternative 1	Alternative 2	Preferred Alternative 3
	--Interim Rule without extension--		
lbs	781,404	620,000	0
fish	105,310	83,558	0
Reduction in CS relative to Alternative 1		$1,848,963	$8,951,389
	--Interim Rule with extension--		
lbs	1,915,744	620,000	0
fish	258,186	83,558	0
Reduction in CS relative to Alternative 1		$14,843,424	$21,945,850

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** and **Preferred Alternative 3** relative to **Alternative 1** is shown in Table 3.4.3.8. The second and third columns of the Table show how the estimated number of anglers per wave targeting gag on charter trips from Table 3.4.3.7is 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 seven show the reduction in angler trips targeting gag from column 3 associated with each alternative.[14] The corresponding reduction in NOR is

[14] As stated in the column headings, the reductions in gag target trips are assumed to be relative to a case where the season is open all year. This is not strictly true because the estimated number of anglers targeting gag on charter trips in column 3 of **Error! Reference source not found.** and the last row of Table 3.4.3.7are 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 and 2008 so some reduction in trips relative to "open all year" is already in the estimates in column 3

shown in the last three columns. The last two rows of the table shows the estimated total reduction in trips and NOR anticipated with **Alternative 2** and **Preferred Alternative 3** relative to **Alternative 1**.

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of **Error! Reference source not found.** and 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.

Table 3.4.3.7. 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 3.4.3.8. 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	Alt3	Alt1	Alt2	Alt3
January	0.65164	1,416	$209,609	0	0	1,416	$0	$0	$209,609
February	0.34836	757	$112,056	757	757	757	$112,056	$112,056	$112,056
March	0.40461	1,375	$203,467	1,375	1,375	1,375	$203,467	$203,467	$203,467
April	0.59539	2,023	$299,410	0	0	2,023	$0	$0	$299,410
May	0.5082	1,625	$240,568	0	433	1,625	$0	$64,151	$240,568
June	0.4918	1,573	$232,807	0	1,573	1,573	$0	$232,807	$232,807
July	0.5	267	$39,505	0	267	267	$0	$39,505	$39,505
August	0.5	267	$39,505	0	267	267	$0	$39,505	$39,505
September	0.4918	204	$30,169	0	204	204	$0	$30,169	$30,169
October	0.5082	211	$31,174	0	211	211	$0	$31,174	$31,174
November	0.4918	1,458	$215,857	0	1,458	1,458	$0	$215,857	$215,857
Total		11,177	$1,654,126	2,132	6,545	11,177	$315,523	$968,691	$1,654,126
Reduction relative to Alt 1: without extension of interim rule					**433**	**5,065**		**$64,151**	**$749,587**
Reduction relative to Alt 1: with extension of interim rule					**4,413**	**9,045**		**$653,168**	**$1,338,603**

Notes: Assuming constant NOR per angler on a charter trip of $148 in 2008 dollars. February and March are closed to gag fishing under **Alternative 1**. For **Alternative 2**, January, April, and the first 22 days of May are open. All months are closed to gag fishing under **Preferred Alternative 3**.

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 3.4.3.7 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** and **Preferred Alternative 3** relative to **Alternative 1** is shown in Table 3.4.3.9. The estimated number of headboat anglers targeting gag in the Gulf is shown in column four and the associated NOR is shown in column five. Columns six through eight show the reduction in angler trips targeting gag from column four associated with each alternative.[15] The corresponding reduction in NOR is shown in the last three columns. The last two rows of the table shows the estimated total reduction in trips and NOR anticipated with **Alternative 2** and **Preferred Alternative 3** relative to **Alternative 1**.

The overall estimated change in economic value to the Gulf recreational fishery associated with **Alternative 2** and **Preferred Alternative 3** relative to **Alternative 1** is shown in Table 3.4.3.10. A summary of the effects is as follows. Relative to **Alternative** 1, no action, reductions in CS are estimated to be $1.85 million, $8.95 million, $14.84 million, and $21.95 million for **Alternative 2** without an extension, **Preferred Alternative 3** without an extension, **Alternative 2** with an extension, and **Preferred Alternative 3** with an extension, respectively. Relative to **Alternative** 1, no action, reductions in NOR are estimated to be $67,191, $792,578, $694,112, and $1,419,492 for **Alternative 2** without an extension, **Preferred Alternative 3** without an extension, **Alternative 2** with an extension, and **Preferred Alternative 3** with an extension, respectively. Thus, relative to **Alternative** 1, no action, reductions in net economic benefits are estimated to be $1.92 million, $9.74 million, $15.5 million, and $23.4 million for **Alternative 2** without an extension, **Preferred Alternative 3** without an extension, **Alternative 2** with an extension, and **Preferred Alternative 3** with an extension, respectively. Importantly, if all removals, including dead discards, are considered under **Alternative 2**, then the estimated reductions in CS, NOR, and net economic benefits are equivalent to those under **Preferred Alternative 3**.

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

[15] See footnote 3 .

Table3.4.3.9. Estimated Total Net Operating Revenue (NOR) on Headboat Trips Targeting Gag in the Gulf

Month	Headboat Angler Days	% Target Gag	Gag Target Trips	NOR on Gag Target Trips	Total Reduction in Trips (relative to open all year)			Total Reduction in Net Operating Revenue (relative to open all year)		
					Alt1	Alt2	Alt3	Alt1	Alt2	Alt3
January	8,649	3.0%	258	$12,665	0	0	258	$0	$0	$12,665
February	11,089	3.0%	331	$16,238	331	331	331	$16,238	$16,238	$16,238
March	17,049	2.1%	355	$17,408	355	355	355	$17,408	$17,408	$17,408
April	18,513	2.1%	386	$18,903	0	0	386	$0	$0	$18,903
May	18,241	1.3%	233	$11,423	0	62	233	$0	$3,046	$11,423
June	24,399	1.3%	312	$15,280	0	312	312	$0	$15,280	$15,280
July	26,026	0.3%	73	$3,589	0	73	73	$0	$3,589	$3,589
August	15,709	0.3%	44	$2,166	0	44	44	$0	$2,166	$2,166
September	8,061	0.5%	37	$1,805	0	37	37	$0	$1,805	$1,805
October	10,105	0.5%	46	$2,263	0	46	46	$0	$2,263	$2,263
November	6,942	3.8%	261	$12,795	0	261	261	$0	$12,795	$12,795
Total	172,955		2,337	$114,535	687	1,522	2,337	$33,646	$74,590	$114,535
Reduction relative to Alt 1: without extension of interim rule						**62**	**877**		**$3,046**	**$42,991**
Reduction relative to Alt 1: with extension of interim rule						**836**	**1,651**		**$40,944**	**$80,889**

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 3.4.3.7. Assuming constant NOR per angler on a headboat trip of $49 in 2008 dollars. February and March are closed to gag fishing under **Alternative 1**. For **Alternative 2**, only January, April, and the first 22 days of May are open. All months are closed to gag fishing under **Preferred Alternative 3**.

Table3.4.3.10. Total Change in Economic Value to the Recreational Fishery Associated with Alternative 2 and Preferred Alternative 3 Relative to Alternative 1

Measure	Alt2	Alt3
	--Interim Rule without extension--	
CS: Anglers	$1,848,963	$8,951,389
PS: Charter vessels	$64,151	$749,587
PS: Headboats	$3,046	$42,991
Total	$1,916,161	$9,743,967
	--Interim Rule with extension--	
CS: Anglers	$14,843,424	$21,945,850
PS: Charter vessels	$653,168	$1,338,603
PS: Headboats	$40,944	$80,889
Total	$15,537,536	$23,365,342
Note: Estimates are in 2008 dollars.		

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 2010). 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 3.4.3.11 through 3.4.3.14 present estimates of changes in angler trips and economic impacts by state and mode under the **Alternative 2** and **Preferred Alternative 3** 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.

Table 3.4.3.11. 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	395	0	0	395
Output Impact	$0	$26,769	$0	$0	$26,769
Value Added Impact	$0	$15,552	$0	$0	$15,552
Jobs	0	0	0	0	0
	Private/Rental Mode				
Target Trips	72	9,585	0	0	9,657
Output Impact	$4,189	$435,172	$0	$0	$439,361
Value Added Impact	$2,293	$258,770	$0	$0	$261,063
Jobs	0	4	0	0	4
	Charter Mode				
Target Trips	7	390	0	0	397
Output Impact	$3,645	$122,463	$0	$0	$126,107
Value Added Impact	$2,006	$72,608	$0	$0	$74,614
Jobs	0	1	0	0	1
	All Modes				
Target Trips	79	10,370	0	0	10,449
Output Impact	$7,834	$584,403	$0	$0	$592,237
Value Added Impact	$4,300	$346,929	$0	$0	$351,229
Jobs	0	6	0	0	6

Table 3.4.3.12. Reductions in Trips and Economic Impacts of Preferred Alternative 3 (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	8,185	0	0	8,185
Output Impact	$0	$554,690	$0	$0	$554,690
Value Added Impact	$0	$322,257	$0	$0	$322,257
Jobs	0	6	0	0	6
	Private/Rental Mode				
Target Trips	412	106,293	0	0	106,705
Output Impact	$23,971	$4,825,847	$0	$0	$4,849,818
Value Added Impact	$13,123	$2,869,630	$0	$0	$2,882,753
Jobs	0	48	0	0	48
	Charter Mode				
Target Trips	89	4,859	0	0	4,948
Output Impact	$46,338	$1,525,758	$0	$0	$1,572,096
Value Added Impact	$25,507	$904,618	$0	$0	$930,125
Jobs	1	16	0	0	16
	All Modes				
Target Trips	501	119,337	0	0	119,838
Output Impact	$70,309	$6,906,295	$0	$0	$6,976,604
Value Added Impact	$38,631	$4,096,504	$0	$0	$4,135,135
Jobs	1	70	0	0	71

Table 3.4.3.13. 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	27,886	0	0	27,886
Output Impact	$0	$1,889,808	$0	$0	$1,889,808
Value Added Impact	$0	$1,097,916	$0	$0	$1,097,916
Jobs	0	20	0	0	20
	Private/Rental Mode				
Target Trips	1,064	176,078	0	0	177,142
Output Impact	$61,905	$7,994,181	$0	$0	$8,056,086
Value Added Impact	$33,892	$4,753,640	$0	$0	$4,787,531
Jobs	1	80	0	0	80
	Charter Mode				
Target Trips	30	3,888	0	0	3,918
Output Impact	$15,620	$1,220,858	$0	$0	$1,236,477
Value Added Impact	$8,598	$723,843	$0	$0	$732,441
Jobs	0	13	0	0	13
	All Modes				
Target Trips	1,094	207,852	0	0	208,946
Output Impact	$77,525	$11,104,847	$0	$0	$11,182,371
Value Added Impact	$42,490	$6,575,399	$0	$0	$6,617,889
Jobs	1	112	0	0	113

Table 3.4.3.14. Reductions in Trips and Economic Impacts of Preferred Alternative 3 (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	35,675	0	0	35,675
Output Impact	$0	$2,417,661	$0	$0	$2,417,661
Value Added Impact	$0	$1,404,582	$0	$0	$1,404,582
Jobs	0	26	0	0	26
	Private/Rental Mode				
Target Trips	1,405	272,786	0	0	274,191
Output Impact	$81,745	$12,384,856	$0	$0	$12,466,600
Value Added Impact	$44,753	$7,364,500	$0	$0	$7,409,253
Jobs	1	124	0	0	125
	Charter Mode				
Target Trips	112	8,357	0	0	8,469
Output Impact	$58,313	$2,624,154	$0	$0	$2,682,467
Value Added Impact	$32,099	$1,555,853	$0	$0	$1,587,952
Jobs	1	27	0	0	28
	All Modes				
Target Trips	1,517	316,818	0	0	318,335
Output Impact	$140,058	$17,426,670	$0	$0	$17,566,728
Value Added Impact	$76,853	$10,324,935	$0	$0	$10,401,787
Jobs	2	176	0	0	178

A summary of the economic impacts is as follows. In all instances, no economic impacts are expected to occur in Louisiana or Mississippi, minimal economic impacts are expected in Alabama, and practically all (more than 99%) of the economic impacts are expected to occur in west Florida. Further, in all instances, nearly three-quarters (74%) of the economic impacts are expected to accrue to the private/rental mode, more than 21% to the charter mode, and nearly 5% to the shore mode. Specifically, relative to **Alternative 1**, no action, the estimated total reductions in output, value added, and employment are $592,237, $351,229, and 6 jobs for **Alternative 2** without an extension; $6.98 million, $4.14 million and 71 jobs for **Preferred Alternative 3** without an extension; $11.18 million, $6.18 million, and 113 jobs for **Alternative 2** with an extension; and $17.57 million, $10.4 million, and 178 jobs for **Preferred Alternative 3** with an extension, respectively. Again, if all removals, including dead discards, are considered

under **Alternative 2**, then the estimated reductions in output, value added, and employment are equivalent to those under **Preferred Alternative 3**.

3.2.4 Direct and Indirect Effects on the Social Environment

Action 1 in this interim rule considers alternatives that would maintain or reduce the commercial quota for gag in 2011. Thus, potential direct adverse social effects on communities would occur as a result of the potential reduction in the commercial sector's quota. In general, these adverse 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.

Alternative 1 (status quo) 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 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 (preliminary) were 1.49 and .82 MP respectively. Thus, the commercial sector only harvested 55% of its presently scheduled 2011 quota in 2009. It is still unclear how the commercial sector will perform under the new grouper/tilefish IFQ program. However, it does appear that a reduction in abundance, the longline gear restrictions initially implemented in 2009, or a combination thereof led to a relatively significant reduction in landings. Though modified, these restrictions became permanent in 2010. 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. Further, as of August 30, 2010, only approximately 25% of the commercial gag quota had been harvested. As discussed in section 2.3.1.2, 13.3% of the 2010 quota was held by shareholders who have not recently been active in the fishery, which may also partially explain the lower level of landings in 2010 to date. In addition, many other shareholders' landings in 2009 were not at or near their initial 2010 allocations. Thus, these shareholders may have "excess" allocation that may not be harvested under the status quo. Though other factors than those considered and discussed previously may also partly explain the reduced level of landings in 2010, and it is unclear whether those factors will continue to play a role in 2011, this fact provides additional evidence that it is somewhat unlikely the commercial sector would harvest its quota under **Alternative 1** in 2011. Exactly how much of the quota would be harvested under **Alternative 1** cannot be determined with current information.

Alternative 2 would decrease the commercial gag quota to .39 MP. Thus, the commercial sector's quota would be reduced by 1.1 MP or approximately 74% 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 74%). If the commercial sector would have otherwise harvested its entire quota in 2011, then a proportional reduction in gross revenue (estimated at $3.76 million) would be expected to occur for shareholders and their

respective vessels. However, this reduction should be considered a maximum because, as previously noted, there is reason to believe that the entire quota would not be harvested in the aggregate. Nonetheless, this reduced quota is considerably less than the 2008 landings and even the much lower landings in 2009. Landings in the first eight months of 2010 are about the same as the quota under **Alternative 2**.

However, the issue 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 **Alternative 2** but not its allocation under **Alternative 1**. If a shareholder's intended 2011 landings would be restricted by its allocation under **Alternative 2** but not its allocation under **Alternative 1**, then **Alternative 2** 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. These 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.

From a community level perspective, whether these adverse effects will take place, as well as the absolute magnitude and relative importance of such, is a function of many other factors, including but not limited to those accounted for and discussed in section 2.4 regarding the strength of each community's relationship to the commercial gag fishery as well as its general dependence on fishing. However, an additional factor is the geographic distribution of gag shareholders and associated vessels across communities, and the dealers to which they intend to sell their gag landings, with respect to those for which their reduced allocations under **Alternative 2** would be restrictive but their allocations under the status quo (**Alternative 1**) would not be restrictive on their 2011 harvests. That is, given other existing conditions, their intended 2011 landings would be at or below their allocations under **Alternative 1** but above their allocations under **Alternative** 2.

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. For communities strongly associated with shareholders and vessels for which their reduced allocations under **Alternative 2** would constrain their landings below their intended 2011 harvests, but would not be constrained the status quo, the direct and indirect adverse social effects under **Alternative 2** would be greater. Further, the more restrictive their reduced allocations under **Alternative 2**, the greater the adverse social effects will be. 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**).

The critical point is that, given the 74% reduction in shareholder's allocations, the probability an individual shareholder's quota allocation will be restrictive on its 2011 landings, and the likely magnitude of that restriction, will be much greater and therefore the probability of lower landings and revenue in the harvesting sector is also much greater under **Alternative 2** than under the status quo **(Alternative 1)**. Therefore, the probability that direct and indirect adverse social effects will take place and the magnitude of such for gag shareholders, their harvesting operations, and associated businesses and communities is considerably greater under **Alternative 2** than under the status quo **(Alternative 1)**. In turn, it is expected that social well-being will be much less under **Alternative 2** than under the status quo **(Alternative 1)**.

Because the vast majority of shareholders are likely to be restricted by their reduced allocations under **Alternative 2**, and most likely significantly so, the community rankings in Table 2.4.5 should generally reflect the distribution of any direct and indirect social effects that would occur under **Alternative 2**. Thus, it would be expected that the greatest adverse effects would occur in the communities of Panama City, Apalachicola, Madeira Beach, and St. Petersburg, with somewhat lesser adverse effects likely to be experienced in Panacea, Clearwater, Redington Shores, Steinhatchee, and Tarpon Springs.

Preferred Alternative 3 would decrease the commercial gag quota to 0.1 mp. Thus the commercial sector's quota would be reduced by 1.39 MP or slightly more than 93%. Although the quota reduction would not reduce the shares held by red grouper shareholders, it would reduce each shareholder's allocation proportionally (i.e. by approximately 93%). If the commercial sector would have otherwise harvested its entire quota in 2011, then a proportional reduction in gross revenue, estimated at $4.75 million, would be expected to occur for shareholders and their respective vessels. Again, this reduction should be considered a maximum because there is reason to believe that the entire quota would not be harvested in the aggregate. However, this reduced quota is significantly less than the 2008 landings, the much lower level of landings in 2009 landings, and even the landings through only the first eight months of 2010.

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.

As explained above, from a community level perspective, whether these adverse effects will take place, as well as the absolute magnitude and relative importance of such, is a function of many other factors, including the geographic distribution of shareholders and associated vessels across communities, and the dealers to which they intend to sell their red grouper landings, with respect

to those for which their reduced allocations under **Preferred Alternative 3** would be restrictive but their allocations under the status quo (**Alternative 1**) would not be restrictive on their 2011 harvests. That is, given other existing conditions, their intended 2011 landings would be at or below their allocations under **Alternative 1** but above their allocations under **Preferred Alternative 3**.

Given the significant 93% reduction in allocations under **Preferred Alternative 3**, it is highly likely that the vast majority of shareholders' allocations would be restricted below their intended harvests in 2011. For communities strongly associated with shareholders and vessels for which their reduced allocations under **Preferred Alternative 3** would constrain their landings below their intended 2011 harvests, but would not be constrained the status quo, the direct and indirect adverse social effects under **Preferred Alternative 3** would be greater. Further, the more restrictive their reduced allocations under **Preferred Alternative 3**, the greater the adverse social effects will be. As under **Alternative 2**, shareholders could purchase additional allocation if their reduced allocations under **Preferred Alternative 3** are restrictive. However, purchases of quota allocation would constitute an additional expense for shareholders and their vessels under **Preferred Alternative 3**, which would still reduce their profits, income, and welfare below what would be experienced under the status quo (**Alternative 1**).

The critical point is that, given the 93% reduction in shareholders' allocations, the probability an individual shareholder's quota allocation will be restrictive on its 2011 landings, and the likely magnitude of that restriction, will be much greater and therefore the probability of lower landings and revenue in the harvesting sector is much greater under **Preferred Alternative 3** than under the status quo **(Alternative 1)**. Further, because the reduction in shareholders' allocations will be greater under **Preferred Alternative 3** than under **Alternative** 2, the probability an individual shareholder's quota allocation will be restrictive on its 2011 landings, and the likely magnitude of that restriction, will be greater and therefore the probability of lower landings and revenue in the harvesting sector is greater under **Preferred Alternative 3** than under **Alternative** 2. Therefore, the probability that direct and indirect adverse social effects will take place and the magnitude of such for gag shareholders, their harvesting operations, and associated businesses and communities is greater under **Preferred Alternative 3** than under **Alternative 2** and much greater than under the status quo **(Alternative 1)**. In turn, it is expected that social well-being will be less under **Preferred Alternative 3** than under **Alternative 2** and much less than under the status quo **(Alternative 1)**.

Because the vast majority of shareholders are likely to be restricted by their reduced allocations under **Preferred Alternative** 3, and most likely significantly so, then the community rankings in Table 2.4.5 should generally reflect the distribution of any direct and indirect social effects that would occur under **Preferred Alternative 3**. Thus, as with **Alternative 2**, it would be expected that the greatest adverse effects would occur in the communities of Panama City, Apalachicola, Madeira Beach, and St. Petersburg, with somewhat lesser adverse effects likely to be experienced in Panacea, Clearwater, Redington Shores, Steinhatchee, and Tarpon Springs. Most importantly, the magnitude of the adverse social effects on these communities is expected to be slightly greater under **Preferred Alternative 3** than under **Alternative 2**.

Alternative 4 would decrease the commercial gag quota to zero. Thus the commercial sector's quota would be reduced by 1.49 MP or 100%. Although the quota reduction would not reduce the shares held by gag shareholders, it would reduce each shareholder's allocation to zero. If the commercial sector would have otherwise harvested its entire quota in 2011, then a proportional reduction in gross revenue, estimated at $5.09 million, would be expected to occur for shareholders and their respective vessels. Again, this reduction should be considered a maximum because there is reason to believe that the entire quota would not be harvested in the aggregate. However, this reduced quota is significantly less than the 2008 landings, the much lower level of landings in 2009, and even the landings through the first eight months of 2010.

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 **Alternative 4** but not its allocation under **Alternative 1**. If a shareholder's intended 2011 landings would be restricted by its allocation under **Alternative 4** but not its allocation under **Alternative 1**, then **Alternative 4** 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.

As explained above, from a community level perspective, whether these adverse effects will take place, as well as the absolute magnitude and relative importance of such, is a function of many other factors, including the geographic distribution of shareholders and associated vessels across communities, and the dealers to which they intend to sell their gag landings, with respect to those for which their reduced allocations under **Alternative 4** would be restrictive but their allocations under the status quo (**Alternative 1**) would not be restrictive on their 2011 harvests. That is, given other existing conditions, their intended 2011 landings would be at or below their allocations under **Alternative 1** but above their allocations under **Alternative 4**.

Given that all shareholders' allocations would be reduced to zero, it is highly likely that all shareholders' allocations would be restricted below their intended harvests in 2011 under **Alternative 4**. Only if a shareholder did not intend to harvest gag in 2011 would this not be true. For communities strongly associated with shareholders and vessels for which their reduced allocations under **Alternative 4** would constrain their landings below their intended 2011 harvests, but would not be constrained the status quo, the direct and indirect adverse social effects under **Alternative 4** would be greater. Further, the more restrictive their reduced allocations under **Alternative 4**, the greater the adverse social effects will be. As under **Alternative 2** and **Preferred Alternative 3**, shareholders could purchase additional allocation if their reduced allocations under **Alternative 4** are restrictive. However, purchases of quota allocation would constitute an additional expense for shareholders and their vessels under **Alternative 4**, which would still reduce their profits, income, and welfare below what would be experienced under the status quo (**Alternative 1**).

The critical point is that, given the reduction in shareholders' allocations to zero, the probability an individual shareholder's quota allocation will be restrictive on its 2011 landings, and the

likely magnitude of that restriction, will be much greater and therefore the probability of lower landings and revenue in the harvesting sector is also much greater under **Alternative 4** than under the status quo **(Alternative 1)**. Further, because the reduction in shareholders' allocations will be greater under **Alternative 4** than under **Alternative** 2 or **Preferred Alternative 3**, the probability an individual shareholder's quota allocation will be restrictive on its 2011 landings, and the likely magnitude of that restriction, will be greater and therefore the probability of lower landings and revenue in the harvesting sector is greater under **Alternative 4** than under **Alternative** 2 or **Preferred Alternative 3**. Therefore, the probability that direct and indirect adverse social effects will take place and the magnitude of such for gag shareholders, their harvesting operations, and associated businesses and communities is greater under **Alternative 4** than under **Alternative 2** or **Preferred Alternative 3** and much greater than under the status quo **(Alternative 1)**. In turn, it is expected that social well-being will be less under **Alternative 4** than under **Alternative 2** or **Preferred Alternative 3** and much less than under the status quo **(Alternative 1)**.

Because all shareholders are likely to be restricted by their reduced allocations under **Alternative 4**, and most likely significantly so, then the community rankings in Table 2.4.5 should generally reflect the distribution of any direct and indirect social effects that would occur under **Alternative 4**. Thus, as with **Alternative 2** and **Preferred Alternative 3**, it would be expected that the greatest adverse effects would occur in the communities of Panama City, Apalachicola, Madeira Beach, and St. Petersburg, with somewhat lesser adverse effects likely to be experienced in Panacea, Clearwater, Redington Shores, Steinhatchee, and Tarpon Springs. Most importantly, the magnitude of the adverse social effects on these communities is expected to be somewhat greater under **Alternative 4** than under **Alternative 2** or **Preferred Alternative 3**.

Action 2 in this interim rule considers alternatives regarding whether to continue allowing the conversion of red grouper allocation to multi-use allocation valid toward the harvest of red grouper or gag. The status quo alternative (**Alternative 1**) would continue to convert 4% of the red grouper allocation into multi-use allocation. **Alternative 1** 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. Further, gag typically commands a higher market price per pound than red grouper, ranging from $.50-$1.00/lb, which could in turn yield higher total fishing revenue on a per trip and per vessel basis. Thus, there is a short-term social benefit from the ability to convert red grouper allocation to multi-use allocation. However, due to the potentially large decrease in the gag commercial quota under **Action 1**, 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 would result in adverse social effects stemming from the corrective management measures that would be implemented to address the over-harvesting of gag.

Alternative 2, which would convert a smaller percentage of red grouper allocation into multi-use allocation, i.e., 1.6%, would limit IFQ participants' ability to adjust to fluctuations in red grouper to gag catch ratios. Thus, allocation holders would retain some ability to take advantage of the higher market price for gag relative to re grouper. However, **Alternative 2** would reduce the risk

of overharvesting gag and therefore is not expected to result in future adverse social effects as a result of future corrective management measures. But given the poor condition of gag resource, the additional pressure on the stock could be detrimental to the gag rebuilding plan.

Preferred Alternative 3 would suspend the release of red grouper multiuse allocation for 2011 until replaced by measures in Amendment 32. **Preferred Alternative 3** would limit the pressure on the gag stock by preventing any harvest in excess of the specified gag quota. **Preferred Alternative 3** would restrict the flexibility that IFQ participants would possess under **Alternative 1** and **Alternative 2**, and also potentially reduce short-term fishing revenues given that gag commands a higher market price than red grouper. As such, it would impose relatively minor adverse social effects in the short-run. Given their relatively small magnitude, it is unlikely that these effects would be perceptible at the community level. Further, **Preferred Alternative 3** 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 3 considers alternatives with respect to the recreational harvest of gag. **Alternative 1,** no action, would maintain the recreational catch target at 2.20 MP as defined in Amendment 30B. **Alternative 2** would allow for some harvest of gag if certain conditions regarding dead discards are met. A harvest level of 620,000 pounds of gag would be consistent with the fishing mortality rate associated with the optimum yield used in Amendment 30B to set the recreational catch target. The projected fishing season for 620,000 pounds of gag is 83 days. Given the SWG recreational closure from February 1 to March 31, this would allow a fishery for the month of January and from April 1 to May 22. However, this fishing season is dependent on the same percent reduction in dead discards as achieved from the harvest. If no reduction in dead discards is attained, then the number of dead discards would be greater than 620,000 pounds, the fishery could not open, and thus the bag limit would be set at zero. Therefore, under this scenario, the result would be the same as under **Preferred Alternative 3**. **Preferred Alternative 3** would set the bag limit for gag at zero, effectively closing the fishery until other recreational measures could be potentially 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.

Because the bag limit for gag would remain unchanged, the number of trips targeting gag would also not change and thus no adverse social impacts are expected under **Alternative 1**. Compared to **Alternative 1**, **Alternative 2** without an extension would have only slightly greater adverse social impacts. In this case, the bag limit would be zero for only a total of nine days, and thus only trips targeting gag during that nine day time period (May 23-May 31) would be eliminated. As a result of their elimination, expenditures associated with those trips would not be made which would in turn reduce the flow of income to businesses in the communities from which those trips would have originated. But because the number of target trips is relatively small, and the vast majority of those trips are in the private sector, which generate much lower expenditures compared to for-hire trips, it is unlikely these impacts will be perceptible at the community level. For example, the loss of only 6 jobs and less than $600K in output across all communities associated with the recreational gag fishery is not likely to be significant in any single

community and thus the social and economic relationships in those communities are not likely to be disrupted in any meaningful way.

However, the adverse social impacts resulting from **Preferred Alternative 3** without an extension will be considerably greater. More specifically, the number of trips targeting gag that would be eliminated as a result of setting the bag limit at zero from January 1 through May 31, even after accounting for the current 2 month closure, would be more than 10 times greater than under **Alternative 2**. As such, the loss of expenditures from those eliminated trips to associated businesses and communities is also significantly greater. In this case, the loss of 71 jobs and nearly $7 million in output across all communities is likely to generate significant adverse social impacts in at least some communities, most likely Apalachicola and Steinhatchee, which have the strongest relationships with the recreational gag fishery. These types of losses are likely sufficient to temporarily disrupt social and economic relationships in at least some communities.

The magnitude of these adverse social impacts is even greater under **Alternative 2** if it is extended. The same conclusion applies to **Preferred Alternative 3** if it is extended. In each instance, an extension would cause a zero bag limit to also be in place from June 1 through November 30. Thus all trips targeting gag during this six-month time period would be eliminated, as would the expenditures associated with those trips. The loss of these expenditures would result in an additional loss of approximately $10.6 million in output and 107 jobs over and above the losses incurred under **Alternative** 2 and **Preferred Alternative 3** without an extension. Thus, for example, the relatively minor adverse social impacts experienced under **Alternative 2** without an extension become very significant if the interim rule is extended. As noted above, the adverse social impacts under **Preferred Alternative 3** are likely to be fairly significant, particularly in Apalachicola and Steinhatchee, even without an extension. However, with an extension, the total loss in output and employment is nearly $17.6 million and 178 jobs across all affected communities. Therefore, it is highly likely that the social and economic relationships in some communities will be significantly disrupted for at least as long as the interim rule is in effect. These disruptions are likely to be most noticeable in Apalachicola and Steinhatchee, but also of consequence in Naples, Panacea, Sarasota, Carrabelle, Clearwater, and St. Petersburg.

The adverse social impacts of the preferred alternatives for **Action 1, Action 2**, and **Action 3** should be considered cumulatively. Although the social impacts are likely to be minimal for **Action 2,** they are expected to be relatively significant for **Action 1** and **Action 3**. The total loss in output from the preferred alternatives for these two actions is estimated to be $58 million and the loss in employment is estimated to be approximately 800 jobs at a maximum, assuming the interim rule is not extended. If the interim rule is extended, these losses would increase to more than $68 million and 908 jobs respectively. Although the loss in the recreational sector's landings would be greater than in the commercial sector, given the 61% to 39% allocation between the recreational and commercial sectors in the gag fishery, the adverse impacts resulting from the loss in commercial landings is approximately three times greater than the impacts resulting from the loss in recreational trips targeting gag. This result has important implications with respect to the geographic distribution of the social impacts resulting from the combined effects of the preferred alternatives for **Action 1** and **Action 3**.

Specifically, because the adverse impacts from the preferred alternative for **Action 1** are expected to be considerably greater than those under the preferred alternative for **Action 3**, the communities with stronger relationships to the commercial sector of the gag fishery are likely to experience relatively greater adverse social and economic disruptions compared to those with stronger relationships to the recreational sector. Communities with strong relationships to both sectors are the most likely to face such adverse impacts. When the absolute magnitude of these adverse impacts is taken into consideration along with the strength of each community's relationship to each sector, it is concluded that Apalachicola and Panama City are the communities most likely to experience the most significant adverse social impacts as a result of the preferred alternatives under **Action 1** and **Action 3** in combination. Disruptions to their social and economic networks are likely to occur as long as the interim rule is in effect, and these disruptions are likely to be enhanced given that both communities are primarily involved in fishing. The communities of St. Petersburg, Panacea, Clearwater, Steinhatchee, and Madeira Beach are also likely to experience some adverse social impacts as a result of **Action 1** and **Action 3**. Some adverse social impacts are also possible in Destin, Tarpon Springs, Tampa, and Ft. Myers Beach.

3.4.5 Direct and Indirect Effects on Administrative Environment

None of the alternatives in **Actions 1-3** should result in any direct or indirect effects to the administrative environment, because the type of regulations needed to manage the 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 an individual fishing quota (IFQ) and vessel monitoring (VMS) programs for the commercial grouper fishery. For the IFQ program,the 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 2, Preferred Alternative 2** 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.

3.4.6 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 Amendments 30A, 30B, and 31, 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 Snapper Regulatory Amendment (GMFMC 2010b). 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 the effects of the oil are still ongoing even though the well head has been capped. If the oil impacts important habitat for these species or interrupt critical life history stages, the effects could reduce these specie's population sizes.

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 grouper 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: Gulf of Mexico Commercial Gag Quota for 2011

A detailed analysis of the economic effects expected to result from this action is provided in Section 3.4.3 and is incorporated herein by reference. In addition to a no action alternative (**Alternative 1**), **Action 1** considers decreases in gag commercial quota for 2011. **Alternative 2** would decrease the commercial gag quota to 390,000 lbs GW. To reduce discards, **Preferred Alternative 3** would release 100,000 lbs GW of the commercial gag quota on January 1, 2011. Remaining quota, if any, will be distributed to IFQ shareholders later in the year following the Council's determination of the appropriate optimum yield level required to set the commercial annual catch target. **Alternative 4** would set the commercial gag quota to zero; distributions of commercial gag quota will be determined in Reef Fish Amendment 32. For the commercial sector, smaller gag quota for 2011 are expected to result in greater losses in economic benefits in the short term. Therefore, relative to the status quo, the greatest losses in economic benefits are anticipated to be associated with **Alternative 4.** Maximum adverse economic effects anticipated from **Alternative 4** would assume that Amendment 32 will be effective on or after January 1, 2012. Under this assumption, relative to **Alternative 1**, losses in ex-vessel value and in gross revenues expected from the implementation of **Alternative 4** are estimated at approximately $5.25 million and $5.09 million respectively. Relative to **Alternative 1**, losses in ex-vessel value and in gross revenues expected from the implementation of **Alternative 2** are estimated at approximately $3.87 million and $3.76 million, respectively. Adverse economic effects expected from **Preferred Alternative 3** would be greatest if additional gag allocation is not released within 2011. Relative to **Alternative 1**, maximum losses in ex-vessel value and in gross

revenues expected from the implementation of **Preferred Alternative 3** are estimated at approximately $4.89 million and $4.75 million, respectively.

4.4.2 Action 2: Gulf of Mexico Red Grouper Multi-use IFQ allocation for 2011

A detailed analysis of the economic effects expected to result from this action is provided in Section 3.4.3 and is incorporated herein by reference. In addition to a no action alternative (**Alternative 1**), **Action 2** considers a temporary reduction or suspension of the release of multi-use red grouper allocation. **Alternative 2** would convert 1.6% of red grouper allocation into multi-use allocation. Although it is not expected to result in future adverse economic effects, the additional pressure on the gag stock that would result from **Alternative 2** could be detrimental to the gag rebuilding plan. **Preferred Alternative 3** would suspend the release of red grouper multiuse allocation for 2011 until replaced by measures in Amendment 32. Under **Preferred Alternative 3,** any harvest in excess of the specified gag commercial quota would be prevented. **Preferred Alternative 3** is expected to yield positive economic benefits resulting from the beneficial effects of reducing pressure on the gag stock.

4.4.3 Action 3: 2011 Gulf of Mexico Recreational Harvest.

A detailed analysis of the economic effects expected to result from this action is provided in Section 3.4.3 and is incorporated herein by reference. In addition to a no action alternative (**Alternative 1**), **Action 3** considers adjustments to the gag recreational season. **Alternative 2** would set the gag bag limit to zero on the date when 620,000 pounds GW of gag is projected to be landed by the recreational fishery in 2011. **Preferred Alternative 3** would temporarily prohibit the recreational harvest of gag until recreational management measures to harvest gag in 2011 are defined in Reef Fish Amendment 32. Relative to the status quo, reductions in net economic benefits are estimated to be $1.92 million and $9.74 million, for **Alternative 2** and **Preferred Alternative 3** without an extension of the interim rule considered in this document. Greater reductions in economic benefits are expected to result if the interim rule considered is extended. Under this assumption, reductions in net economic benefits are estimated at $15.5 million and $23.4 million under **Alternative 2** and **Preferred Alternative 3**, respectively.

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 disallow 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 the recreational fishery 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 reduce the recreational bag limit for gag to zero.

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 have 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 commercial gag quota, their average allocation of gag in 2011 would be reduced by approximately 813 pounds to 61 pounds. Using the 2008

average price of $3.52 per pound, this loss in allocation could potentially represent a loss of nearly $2,900 in gross revenue per entity. For the eight entities with gag shares that also possess longline endorsements, their average allocation of gag would be reduced by 2,919 pounds from approximately 3,139 pounds to 220 pounds. Thus, their potential loss in gross revenue, estimated to be nearly $10,280, could be much higher. However, in general, this potential loss in gross revenue could only lead to a loss in profits if these entities not only become active in commercial fishing, but 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 if these entities intend to harvest at levels above their reduced allocation. Alternatively, these losses in gross 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 this potential loss in gross revenue to these 215 entities cannot be evaluated given the lack of information on potential gross 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. On average, these vessels received an initial allocation of 540 pounds of gag in 2010. Under the proposed action to reduce the commercial gag quota, their average allocation of gag in 2011 would be reduced by approximately 502 pounds to 38 pounds. Using the 2008 average price of $3.52 per pound, this loss in allocation could potentially represent a loss of nearly $1,800 in gross revenue per entity. However, this potential loss in gross revenue could only lead to a loss in profits if these entities intend to become active in the gag fishery in 2011 and at a level above their reduced allocation. That is, a reduction in allocation can only lead to a reduction in landings if these entities intend to harvest at levels above their reduced allocation. Thus, for example, if it were assumed that these vessels intended to harvest gag in 2011 at a level equivalent to their 2010 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 profits. Alternatively, these losses in gross 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 that participated in the commercial gag fishery in 2008 or 2009, they earned approximately $71,000 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, these vessels' gag allocations would be reduced by approximately 1,973 pounds from 2,121 pounds to 148 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 a 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 $6,950, or approximately 10%, in annual gross revenue on average. A loss in gross revenue of this magnitude would likely lead to a reduction in profits.

However, 52 of these vessels also received a bottom longline endorsement in 2010. These particular vessels' average annual revenue was approximately $156,000 in 2008 and 2009, of which revenue from gag landings accounted for approximately 8%. These vessels are highly dependent on revenue from red grouper rather than gag landings. Under the proposed action to reduce the commercial gag quota, their allocation of gag in 2011 would decrease by approximately 5,307 pounds from 5,707 pounds to 400 pounds. This loss in landings is estimated to be valued at approximately $18,700 in gross revenue, or 12% of these vessels' average annual gross revenue. Such a loss in gross revenue would likely reduce their profits.

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 early in 2011. Revenue from gag landings is greater than revenue from an equivalent amount of red grouper landings because gag commands a relatively higher market price. Thus, total commercial fishing revenue therefore profits per vessel and 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 gag fishery. On average, NOR for charter trips targeting gag are estimated to be approximately $1.88 million per year while NOR for headboat trips targeting gag are estimated to be $22,000 per year. Thus, NOR for all trips targeting gag are estimated to be approximately $1.9 million per year. The average annual NOR from trips targeting gag is estimated to be $2,407 per charter vessel and $512 per headboat.

Under the proposed action to set the recreational bag limit at zero, the losses in NOR for charter vessels and headboats are estimated to be approximately $750,000 and $7,200, respectively, if the interim rule is not extended. Thus, the losses in NOR are estimated to be $961 and $149 per charter vessel and headboat, respectively. These losses in NOR represent a loss in profits of approximately 40% and 29% 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 $1.34 million and $13,300, respectively. Thus, the losses in NOR are estimated to be $1,716 and $308 per charter vessel and headboat, respectively. These losses in NOR represent a loss in profits of approximately 71% and 60% per charter vessel and headboat, respectively.

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

Three alternatives, including the status quo, were considered for the action to reduce the gag commercial quota from 1.49 MP to 100K pounds in 2011. The first alternative, the status quo, would have maintained the gag commercial quota at 1.49 MP in 2011. 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 this quota would be above the acceptable biological catch recommended by the Council's SSC of 1.17 MP 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 390,000 pounds, with one option to release the entire quota on January 1, 2011 and a second option to release 50% of the quota on January 1, 2001 and the remaining 50% on July 1, 2011. This quota is based on projected F_{OY} yield streams (1.01 MP for 2011) and is consistent with the methods used by the Council in Amendment 30B for setting the annual catch target. This harvest level corresponds with the Council's initial request for an interim rule at its June 2010 meeting. The commercial quota from this alternative is less than what the quota would be if based on the SSC's ABC recommendation ($F_{Rebuild}$ yield stream) of 1.17 MP. Based on the SSC's recommendation, selecting this alternative would have a less than 50% chance of overfishing by the commercial sector and would provide a greater than 50% chance of rebuilding the stock if this yield stream is adhered to in future actions. However, recent discrepancies with the estimation of dead discards could affect how the assessment projects the status of the stock. If these discrepancies show a more pessimistic condition of the stock when the assessment is rerun, then selecting this alternative could result in harvest levels inconsistent with rebuilding the stock within the time frames outlined in the Magnuson-Stevens Act. Should these discrepancies result in a more optimistic condition of the stock, then the commercial quota could be increased in subsequent actions.

The third alternative is the most conservative and would set the gag commercial quota equal to zero. Under this alternative, any addition to the quota would be initiated through Amendment 32 or some other rulemaking vehicle. Closure of the commercial sector to gag would benefit the stock by ending overfishing as well as halt gag fishing during the primary gag spawning season. However, this alternative would not allow gag allocation holders to land some gag that might be caught incidentally when fishing for other species. Instead, these fish would have to be released. Because the commercial sector generally operates in relatively deep waters, a large proportion of these fish would likely die from barotrauma and handling. Ortiz (2006) estimated release mortality to be 67% on average for commercial discards. This high rate of discard mortality would contribute to overall mortality, thereby slowing recovery of the stock and thus is contrary to the Council's objectives.

Two alternatives, including the status quo, were 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. The first 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.

The second alternative would allow a smaller percentage (1.6%) of red grouper allocation to be converted into multi-use allocation based on the buffer existing between the commercial annual catch limit and quota for gag. This alternative is consistent with a gag commercial ACL of 1.76 MP and a 1.49 MP commercial quota for gag. Because the commercial quota is being set at only 100,000 pounds, the percentage of red grouper allocation allowed to be converted to multi-use allocation is too high under this alternative in the sense it 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.

Two alternatives, including the status quo, were considered for the action to set the recreational bag limit at zero. The first alternative, the status quo, would maintain the recreational catch target at 2.20 MP as defined in Amendment 30B and thus the current recreational bag limit of two gag within the aggregate grouper bag limit of four fish. Selection of this alternative would be inconsistent with current National Standard 1 guidance because this level of harvest would be above the acceptable biological catch recommended by the Council's SSC of 1.17 MP for 2011. In addition, this alternative would promote overfishing and slow recovery of the stock.

The second alternative would set the gag bag limit to zero on the date when 620,000 pounds of gag is projected to be landed by the recreational fishery in 2011. This harvest level is consistent with the fishing mortality rate associated with the optimum yield used by the Council in Amendment 30B to set the recreational annual catch target. Under certain assumptions regarding the disposition of discards, this alternative is expected to result in a fishing season of 83 days. Given the closure of the SWG recreational fishery from February 1 to March 31, fishing would be allowed for the month of January and from April 1 to May 22. However, this fishing season is dependent on achieving the same percentage reduction in dead discards as obtained from the harvest. If these levels of reduction are not met, then harvesting this amount of fish could exceed the reductions needed for the stock to recover under the rebuilding plan being developed in Amendment 32 which, in turn, could require deeper cuts in future harvests than those projected by the current assessment update.

Although actions in this interim rule do not need to end overfishing, they do need to reduce overfishing. This alternative could limit the types of long-term measures developed by the Council in Amendment 32 that could be applied to the 2011 fishing year because the 620,000 lb catch target would likely be achieved before rulemaking from Amendment 32 is implemented. Therefore, the harvest for the rest of the fishing year could be zero and any long-term measures developed in Amendment 32 would not apply until 2012.

Further, recent discrepancies with the estimation of dead discards could affect how the assessment projects the status of the stock. If these discrepancies show a more pessimistic condition of the stock when the assessment is rerun, then selecting this alternative could result in harvest levels inconsistent with rebuilding the stock within the time frames outlined in the

Magnuson-Stevens Act. This is particularly important for the recreational sector which harvests a greater proportion of the total catch than the commercial sector. Conversely, should these discrepancies result in a more optimistic condition of the stock, the recreational catch target and bag limit could be increased in subsequent actions.

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. 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 summarized below.

Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, National Marine Fisheries Service is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect.

Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 (CZMA), as amended, requires federal activities that affect any land or water use or natural resource of a state's coastal zone be conducted in a manner consistent, to the maximum extent practicable, with approved state coastal management programs. The requirements for such a consistency determination are set forth in NOAA regulations at 15 C.F.R. part 930, subpart C. According to these regulations and CZMA Section 307(c)(1), when taking an action that affects any land or water use or natural resource of a state's coastal zone, National Marine Fisheries Service is required to provide a consistency determination to the relevant state agency at least 90 days before taking final action.

Upon submission to the Secretary, National Marine Fisheries Service will determine if this plan amendment is consistent with the Coastal Zone Management programs of the states of Alabama, Florida, Louisiana, Mississippi, and Texas to the maximum extent possible. Their determination will then be submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management programs for these states.

Data Quality Act

The Data Quality Act (DQA) (Public Law 106-443) effective October 1, 2002, requires the government to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical,

cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the Act directs the Office of Management and Budget (OMB) to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: (1) ensure information quality and develop a pre-dissemination review process; (2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and (3) report periodically to OMB on the number and nature of complaints received.

Scientific information and data are key components of FMPs and amendments and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the Act, FMPs and amendments must be based on the best information available. They should also properly reference all supporting materials and data, and be reviewed by technically competent individuals. With respect to original data generated for FMPs and amendments, it is important to ensure that the data are collected according to documented procedures or in a manner that reflects standard practices accepted by the relevant scientific and technical communities. Data will also undergo quality control prior to being used by the agency and a pre-dissemination review.

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. Section 1531 et seq.) requires federal agencies use their authorities to conserve endangered and threatened species. The ESA requires National Marine Fisheries Service, when proposing a fishery action that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions may affect but are "not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, including a Biological Opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or adversely modify designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives. National Marine Fisheries Service, as part of the Secretarial review process, will make a determination regarding the potential impacts of the proposed actions.

Marine Mammal Protection Act

The Marine Mammal Protection Act established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. Under the Marine Mammal Protection Act, the Secretary of Commerce (authority delegated to National Marine Fisheries Service) is responsible for the conservation and management of cetaceans and

pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea and marine otters, polar bears, manatees, and dugongs.

Part of the responsibility that National Marine Fisheries Service has under the Marine Mammal Protection Act involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the Marine Mammal Protection Act, to govern the taking of marine mammals incidental to commercial fishing operations. This environmental assessment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fishing efforts, and studies of pinniped-fishery interactions.

Under section 118 of the Marine Mammal Protection Act, National Marine Fisheries Service must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the Marine Mammal Protection Act, such as registration, observer coverage, and take reduction plan requirements. The reef fish fishery is classified as a Category III fishery indicating it has minimal impacts on marine mammals (see Section 2.2.2 of this environmental assessment).

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure the public is not overburdened with information requests, the federal government's information collection procedures are efficient, and federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires National Marine Fisheries Service to obtain approval from the OMB before requesting most types of fishery information from the public.

Executive Orders

E.O. 12630: Takings
The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights that became effective March 18, 1988, requires each federal agency prepare a Takings Implication Assessment for any of its administrative, regulatory, and legislative policies and actions that affect, or may affect, the use of any real or personal property. Clearance of a regulatory action must include a takings statement and, if appropriate, a Takings Implication Assessment. The NOAA Office of General Counsel will determine whether a Taking Implication Assessment is necessary for this environmental assessment.

E.O. 12866: Regulatory Planning and Review

Executive Order 12866: Regulatory Planning and Review, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, National Marine Fisheries Service prepares a RIR for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society of proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations would have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it a) has an annual effect on the economy of $100 million or more or adversely affects 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 and communities; b) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; c) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or d) raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. National Marine Fisheries Service has preliminarily determined that this action will not meet the economic significance threshold of any criteria.

E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. Federal agency responsibilities under this Executive Order include conducting their programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefit of, or subjecting persons to discrimination under, such, programs policies, and activities, because of their race, color, or national origin. Furthermore, each federal agency responsibility set forth under this Executive Order shall apply equally to Native American programs. Environmental justice considerations are discussed in detail in Section 2.5.

E.O. 12962: Recreational Fisheries

This Executive Order requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it establishes a seven-member National Recreational Fisheries Coordination

Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires National Marine Fisheries Service and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

E.O. 13089: Coral Reef Protection

The Executive Order on Coral Reef Protection requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems, and, to the extent permitted by law, ensure actions that they authorize, fund, or carry out do not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).

Regulations are already in place to limit or reduce habitat impacts within the Flower Garden Banks National Marine Sanctuary. Additionally, National Marine Fisheries Service approved and implemented Generic Amendment 3 for Essential Fish Habitat, which established additional HAPCs and gear restrictions to protect corals throughout the Gulf (see Section 2.1 of this environmental assessment). There are no implications to coral reefs by the actions proposed in this environmental assessment.

E.O. 13132: Federalism

The Executive Order on Federalism requires agencies in formulating and implementing policies, to be guided by the fundamental Federalism principles. The Order serves to guarantee the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendments given the overlapping authorities of National Marine Fisheries Service, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes and local entities (international too).

No Federalism issues have been identified relative to the action proposed in this environmental assessment. Therefore, consultation with state officials under Executive Order 12612 is not necessary.

E.O. 13158: Marine Protected Areas

This Executive Order requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. There are several MPAs, HAPCs, and gear-restricted areas in the eastern and northwestern Gulf (see Section 2.1 of this regulator amendment). The action in the environmental assessment would not affect any areas reserved by federal, state, territorial, tribal or local jurisdictions.

Essential Fish Habitat

The amended Magnuson-Stevens Act included a new habitat conservation provision known as Essential Fish Habitat that requires each existing and any new FMPs to describe and identify Essential Fish Habitat for each federally managed species, minimize to the extent practicable impacts from fishing activities on Essential Fish Habitat that are more than minimal and not temporary in nature, and identify other actions to encourage the conservation and enhancement of that Essential Fish Habitat. To address these requirements the Council has, under separate action, approved an EIS (GMFMC 2004) to address the new Essential Fish Habitat requirements contained within the Magnuson-Stevens Act. Section 305(b)(2) requires federal agencies to obtain a consultation for any action that may adversely affect Essential Fish Habitat. An Essential Fish Habitat consultation will be conducted for this action.

7.0 LIST OF PREPARERS

Name	Expertise	Responsibility	Agency
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NOAA Southeast Fishery Science Center
NOAA SERO Protected Resources Division
NOAA SER General Counsel

9.0 LITERATURE CITED

Ault, J. S., S. G. Smith, G. A. Diaz, and E. Franklin. 2003. Florida hogfish fishery stock assessment. University of Miami, Rosenstiel School of Marine Science, Contract No. 7701 617573 for Florida Marine Research Institute, St. Petersburg, FL. 45 p.

Barnette, M. C. 2001. A review of the fishing gear utilized within the Southeast Region and their potential impacts on essential fish habitat. NOAA Tech. Memo. NMFS-SEFSC-449. National Marine Fisheries Service, 263 13th Avenue, South St. Petersburg, Florida 33701. 62 pp.

Bullock, L.H., and G.B. Smith. 1991. Seabasses (Pisces: Serranidae). Fla. Mar. Res. Inst. (Part II) Vol. VIII, 243 p.

Carter, D. W. and Liese, C. 2010. "The economic value of keep and regulatory discards of saltwater sportfish in the southeastern United States." Paper in review.

Cass-Calay, S. L. and M. Bahnick. 2002. Status of the yellowedge grouper fishery in the Gulf. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution SFD 02/03 – 172. 67 p.

Coleman, F.C., C.C. Koenig, and L.A. Collins. 1996. Reproductive styles of shallow-water groupers (Pisces: Serranidae) in the eastern Gulf of Mexico and the consequences of fishing on spawning aggregations. Environmental Biology of Fishes 47: 129-141.

Eklund, A. M. 1994. (editor) Status of the stocks of Nassau grouper, *Epinephelus striatus*, and jewfish, E. itajara- Final Report. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contrib. No. MIA-94/95-15. 170 pp.

Fitzhugh, G.R., H.M. Lyon, L.A. Collins, W.T. Walling, L. Lombardi-Carlson. 2006. Update of gag reproductive parameters: Eastern Gulf of Mexico. NMFS Panama City Lab Contribution 05-06. 25p SEDAR10-DW3.

Gentner, B. 2009. Allocation Analysis of the Gulf of Mexico Gag and Red Grouper Fisheries. Prepared for Coastal Conservation Association. Gentner Consulting Group, Silver Spring, MD.

GMFMC. 2010a. Final Regulatory Amendment to the Reef Fish Fishery Management Plan to set total allowable catch for red grouper and establish marking requirements for buoy gear. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. 78 pp with appendix.

GMFMC. 2010b. Final Regulatory Amendment to the Reef Fish Fishery Management Plan to set total allowable catch for red snapper. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. 78 pp with appendix.

GMFMC. 2009. Final Amendment 31 to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. 261 pp with appendices.

GMFMC. 2008a. Final Amendment 30B to the Reef Fish Fishery Management Plan. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. 427 pp with appendices.

GMFMC. 2008b. Reef Fish Amendment 30A: Greater Amberjack – revise rebuilding plan, accountability measures; Gray Triggerfish – establish rebuilding plan, end overfishing, accountability measures, regional management, management thresholds and benchmarks. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607. 328 p.

GMFMC. 2007. Amendment 27 to the Reef Fish FMP and Amendment 14 to the Shrimp FMP to end overfishing and rebuild the red snapper stock. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607. 490 pp with appendices

GMFMC. 2005a. Generic Amendment 3 for addressing EFH requirements, HAPCs , and adverse effects of fishing in the following FMPs of the Gulf of Mexico: Shrimp, Red Drum, Reef Fish, Stone Crab, Coral and Coral Reefs in the GOM and Spiny Lobster and the Coastal Migratory Pelagic resources of the GOM and South Atlantic. Gulf of Mexico Fishery Management Council, Tampa, Florida.

GMFMC. 2005b. Amendment to the FMPs for: Reef Fish (Amendment 25) and Coastal Migratory Pelagics (Amendment 17) for extending the charter vessel/headboat permit moratorium. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607. 80 pp. with appendices.

GMFMC. 2005c. Final Regulatory Amendment to the Reef Fish Fishery Management Plan to Set Recreational Management Measures for Grouper Starting in 2006. Gulf of Mexico Fishery Management Council, Tampa, Florida. 124 p.

GMFMC. 2004. Environmental Impact Statement for the Generic Essential Fish Habitat Amendment to the following fishery management plans of the Gulf of Mexico (Gulf): Shrimp Fishery of the Gulf of Mexico, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Stone Crab Fishery of the Gulf of Mexico, Coral and Coral Reef Fishery of the Gulf of Mexico, Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic, Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607. 118 pp.

GMFMC. 2003. Amendment 21 to the reef fish fishery management plan. Gulf of Mexico Fishery Management Council, Tampa, Florida. 143 p. + append.

GMFMC 1998. August 1998 report of the Reef Fish Stock Assessment Panel. Gulf of Mexico Fishery Management Council, Tampa, Florida. 19 p.

GMFMC. 1981. Fishery management plan for the reef fish fishery of the Gulf of Mexico and environmental impact statement. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607.

GMFMC and SAFMC. 1982. Environmental impact statement and fishery management plan for Coral and Coral Reef resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, Florida 33607.

Gomez, E.D., A.C. Alcala, and H.T. Yap. 1987. Other fishing methods destructive to coral. Pp. 65-75 *in* Human Impacts on Coral Reefs: Facts and Recommendations. Antenne Museum, French Polynesia.

Gore, R. H. 1992. The Gulf of Mexico: a treasury of resources in the American Mediterranean. Pineapple Press, Inc., Sarasota, Florida. 384 pp.

Grimes, C.B., K.W. Able, and S.C. Turner. 1982. Direct observation from a submersible vessel of commercial longlines for tilefish. Transactions of the American Fisheries Society 111:94-98.

Habb, T., R. Hicks, K. Schnier, J. C. Whitehead. 2009. Angler Heterogeneity and the Species-Specific Demand for Recreational Fishing in the Southeast United States. National Marine Fisheries Service Marine Fisheries Initiative Grant Report #NA06NMF4330055.

Heinisch, B.V., and W.A. Fable, Jr. 1999. Movement of gag, *Mycteroperca microlepis*, in and from St. Andrew Bay, Florida. Bull. Mar. Sci. 64: 501-508.

Hellerstein D. and R. Mendelsohn. 1993. "A Theoretical Foundation for Count Data Models." American Journal of Agricultural Economics 75(3): 604-611

Hood, P. B., and A. K. Johnson. 1999. Age, growth, mortality, and reproduction of vermillion snapper, *Rhomboplites aurorubens*, from the eastern Gulf of Mexico. Fish. Bull. 97:828–841.

Hood, P. B., and R. A. Schlieder. 1992. Age, growth, and reproduction of gag, *Mycteroperca microlepis* (Pices: Serranidae), in the eastern Gulf of Mexico. Bulletin of Marine Science 51(3):337-352.

Impact Assessment, Inc. 2005. Identifying Communities Associated with the Fishing Industry Along the Florida Gulf Coast. Impact Assessment, Inc. La Jolla, CA. Volumes 1-3
646 pp.

Jacobs, S., M. Jepson, C. Pomeroy, D. Mulkey, C. Adams, and S. Smith. 2002. Identifying fishing dependent communities: development and confirmation of a protocol. NMFS/NOAA SERO. St. Petersburg, FL.

Johanssen, P. 1987. The economic theory and measurement of environmental benefits. New York: Cambridge University Press.

Hamilton, A. N., Jr. 2000. Gear impacts on essential fish habitat in the Southeastern Region. NOAA, NMFS, SEFSC, 3209 Frederick Street, Pascagoula, Mississippi 39567. 45 pp.

Koenig, C.C. 1999. The effects of shelf-edge fishing on the demographics of the gag, *Mycteroperca microlepis*, population of the southeastern United States. A report presented at the July 1999 meeting of the Gulf of Mexico Fishery Management Council. 22 p.

Koenig, C.C., and F.C. Coleman. 1998. Absolute abundance and survival of juvenile gags in sea grass beds of the northeastern Gulf of Mexico. Trans. Am. Fish. Soc. 127: 44-55.

Legault, C. M., and A. M. Eklund. 1998. Generation times for Nassau grouper and jewfish with comments on M/K ratios (revised). NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-97/98-10A. 5 pp.

Legault C. M., Restrepo V. R. 1999. A flexible forward age-structured assessment program. ICCAT Collective Volume of Scientific Papers 49:246–253.

Lombardi-Carlson. L.A., G.R. Fitzhugh, B.A. Fable, M. Ortiz, C. Gardner. 2006b. Age, length and growth of gag from the NE Gulf of Mexico 1979-2005. NMFS Panama City Lab Contribution 06-03.57 p. SEDAR10-DW2.

Lyczkowski-Shultz, J., and D. S. Hanisko. 2007. A time series of observations on red snapper larvae from SEAMAP surveys, 1982-2003: Seasonal occurrence, distribution, abundance, and size. Pages 2-13 *in* W. F. Patterson, III, J. H. Cowan, Jr., G. R. Fitzhugh, and D. L. Nieland, Eds. Red snapper ecology and fisheries in the U.S. Gulf of Mexioco. AFS, Symp. 60, Bethesda, MD.

Lucas, L. 2001. Fishery Management and Local Communities: the case of Madeira Beach, Florida. Marine Fisheries Review 63(4):32-42.

Morey, E.R. 1994. "What is CS Per Day of Use, When is it a Constant Independent of the Number of Days of Use, and What Does it Tell Us about CS?" Journal of Environmental Economics and Management 26: 257-270.

Muller, R. G., M. D. Murphy, J. de Silva, and L. R. Barbieri. 2003. Final Report Submitted to the National Marine Fisheries Service, the Gulf of Mexico Fishery Management Council, and the South Atlantic Fishery Management Council as part of the Southeast Data, Assessment, and Review (SEDAR) III. Florida Fish and Wildlife Conservation Commission, FWC-FMRI Report: IHR 2003-10. Florida Fish and Wildlife Research Institute, 100 Eighth Avenue, Southeast, St. Petersburg, Florida 33701. 217 pp. + 2 appendices.

Naughton, S. P. and C. H. Saloman. 1985. Food of gag (*Mycteroperca microlepis*) from North Carolina and three areas of Florida. NOAA Tech. Memo NMFS-SEFC-160:36p.

NMFS. 2010. Population projections of Gulf of Mexico red and gag grouper with preliminary 2009 landings estimates. NOAA's National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, Florida. 5 pp.

NMFS. 2010b. Foreign Trade Database. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD.

NMFS. 2010c. Commercial Fisheries Database. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD.

NMFS. 2009a. Endangered Species Act – Section 7 consultation on the continued authorization of reef fish fishing under the Gulf of Mexico Reef Fish Fishery Management Plan including Amendment 31, and a Rulemaking to Reduce Sea Turtle Bycatch in the Eastern Gulf Bottom Longline Component of the Fishery. Biological Opinion, October 13. 180p. plus appendices.

NMFS. 2009b. Fisheries Economics of the United States 2006. U.S. Dept. Commerce, NOAA Technical Memorandum F/SPO-97, 158 p. Available at: http://www.st.nmfs.noaa.gov/st5/publication/index.html.

NOAA. Spatial Patterns of Socioeconomic Data 1970 to 2000 http://marineeconomics.noaa.gov/spatial/welcome.html#cd

North Carolina Sea Grant. 2007. Waterfront Access Study Committee Final Report. UNC-SG-07-03.

Ortiz, M. Preliminary Status of Gag Grouper In The Gulf of Mexico. Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, FL. SEDAR-10SEDAR 10 –AW- 02 92 p.

Porch, C. E., A. M. Eklund and G. P. Scott. 2003. An assessment of rebuilding times for goliath grouper. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD 2003-0018. 25 pp.

Porch, C. E. and S. L. Cass-Calay. 2001. Status of the vermilion snapper fishery in the Gulf of Mexico. Assessment 5.0. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-01/02-129. 42 pp. + Figures.

SAFMC. 2010. Amendment 17A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Act Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council. 375 pp

Schirripa, M.J. and C.P. Goodyear. 1994. Status of the gag stocks of the Gulf of Mexico: Assessment 1.0. NMFS SEFSC Miami Lab MIA-94/94-61. 155 pp.

Schirripa, M. J., and C. M. Legault. 1999. Status of the red snapper fishery in the Gulf of Mexico: Updated through 1998. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-99/00-75. 86 pp +appendices

Schirripa, M. J., and C. M. Legault. 1997. Status of the gag stocks of the Gulf of Mexico: Assessment 2.0. SEFC, NMFS, 75 Virginia Beach Drive, Miami, FL 33149.

SEA (Strategic Environmental Assessment Division, NOS). 1998. Product overview: Products and services for the identification of essential fish habitat in the Gulf of Mexico. NOS, Silver Spring, Maryland; NOAA Fisheries, Galveston, Texas; and GMFMC, Tampa, Florida (available at http//biogeo.nos.noaa.gov/ projects/efh/gom-efh/)

SEDAR. 2009a. Stock assessment of gag in the Gulf of Mexico – SEDAR update assessment. Report of assessment workshop, Miami, FL, March 30-April 2, 2009. 171 p.

SEDAR. 2009b. Stock assessment of red grouper in the Gulf of Mexico – SEDAR update assessment. Report of assessment workshop, Miami, FL, March 30-April 2, 2009. 143 p.

SEDAR 7 Update. 2009. Stock Assessment of Red Snapper in the Gulf of Mexico - SEDAR Update Assessment. Report of the Update Assessment Workshop, SEFSC, Miami, Florida. 111 pp.

SEDAR 12. 2007. SEDAR12-Complete Stock Assessment Report 1: Gulf of Mexico Red Grouper. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina.

SEDAR 9. 2006a. SEDAR 9 Gulf of Mexico vermilion snapper assessment report 3. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina. 231 pp.

SEDAR 9. 2006b. SEDAR 9 Gulf of Mexico gray triggerfish assessment report. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina.

SEDAR 9. 2006c. SEDAR 9 Gulf of Mexico greater amberjack assessment report. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina.

SEDAR 10. 2006. SEDAR 10 Gulf of Mexico Gag Grouper Stock Assessment Report. (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina. 250 p.

SEDAR 7. 2005. Stock assessment report of SEDAR 7 Gulf of Mexico Red Snapper. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina. 480 pp.

SEDAR 6. 2004a. The hogfish in Florida: Assessment review and advisory report. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina. 12 pp.

SEDAR 6. 2004b. The goliath grouper in southern Florida: Assessment review and advisory report. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina. 15 pp.

SEDAR 3. 2003. SEDAR Peer Review of yellowtail snapper assessment, with comments on goliath grouper. SEDAR (http://www.sefsc.noaa.gov/sedar/), Charleston, South Carolina.12 pp+ appendices.

SEFSC. 2007. Final model for Gulf of Mexico gag grouper as recommended by the SEDAR Grouper Review Panel: revised results and projections. NOAA Fisheries Service, SEFSC, Miami, Florida. 34 pp.

Siebenaler, J.B. and W. Brady. 1952. A high speed manual commercial fishing reel. Florida Board of Conservation Tech. Series No. 4. 11 p.

Stan Mayfield Working Waterfronts Florida Forever Program. 2009. Accessed February 26, 2009. http://www.floridacommunitiestrust.org/mayfieldwaterfronts/

Strelcheck, A.J., G.R. Fitzhugh, F.C. Coleman, C.C. Koenig. 2003. Otolith-fish size relationship in juvenile gag (*Mycteroperca microlepis*) of the eastern Gulf of Mexico; A comparison of growth rates between laboratory and field populations. Fish. Res. 60 (2-3): 255-265.

Turner, S. C., C. E. Porch, D. Heinemann, G. P. Scott, and M. Ortiz. 2001. Status of the gag stocks of the Gulf of Mexico: assessment 3.0. August 2001. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-01/02-134. 32 pp., 25 pp. tables, 85 pp. figures.

Turner, S. C., N. J. Cummings, and C .P. Porch. 2000. Stock assessment of Gulf of Mexico greater amberjack using data through 1998. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. SFD-99/00-100. 27 pp.

U.S. Census Bureau. 2009. http://www.census.gov/index.html

Valle, M., C. Legault, and M. Ortiz. 2001. A stock assessment for gray triggerfish, *Balistes capriscus*, in the Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-01/02-124. 50pp + appendices.

Zhao, B., J. C. McGovern, and P. J. Harris. 1997. Age. growth, and temporal change in size-at-age of the vermilion snapper from the South Atlantic Bight. Trans. Am. Fish. Soc. 126:181-193.