FINAL DRAFT

April 20, 2009

ENVIRONMENTAL ASSESSMENT AND REGULATORY IMPACT REVIEW FOR AN EMERGENCY RULE TO REDUCE SEA TURTLE BYCATCH BY THE EASTERN GULF OF MEXICO REEF FISH BOTTOM LONGLINE FISHERY

April 2009

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Table of Contents

Abbreviations Used in This Document

APA	Administrative Procedures Act
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
Council	Gulf of Mexico Fishery Management Council
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
DWG	Deepwater Grouper
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fishery Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
ELMR	Estuarine Living Marine Resources
ESA	Endangered Species Act
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impacts
GMFMC	Gulf of Mexico Fishery Management Council
HAPC	Habitat Area of Particular Concern
HMS	Highly Migratory Species
MMPA	Marine Mammal Protection Act
mp	million pounds
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOR	Net Operating Revenues
NOS	National Ocean Service
OMB	Office of Management and Budget
RFFA	Reasonably Foreseeable Future Actions
RIR	Regulatory Impact Review

RPA	Reasonable and Prudent Alternatives
RPM	Reasonable and Prudent Measures
Secretary	Secretary of Commerce
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office (NMFS)
SWG	Shallow Water Grouper
VEC	Valued Environmental Components

Environmental Assessment (EA) Cover Sheet

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Name of Action
Environmental Assessment and Regulatory Impact Review for an Emergency Rule to Reduce Sea Turtle Bycatch by the Eastern Gulf of Mexico Reef Fish Bottom Longline Fishery

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

Summary
Results from a recent Southeast Fishery Science Center observer analysis indicate the number of loggerhead sea turtle takes authorized in the 2005 biological opinion on the bottom longline component of the reef fish fishery in the Gulf of Mexico (Gulf) has been exceeded. The west Florida shelf is an important sea turtle foraging habitat. Individual sea turtles incidentally caught by the longline component of the fishery are sexually immature juveniles and mature adult loggerhead sea turtles that have high reproductive potential. Additionally, it has been argued that the observed decline in the annual counts of loggerhead sea turtle nests in peninsular Florida can best be explained by a decline in the number of adult female loggerhead sea turtles in the population. The biological opinion being developed by NOAA's National Marine Fisheries Service (NMFS) in light of this new information could result in a jeopardy opinion for loggerhead sea turtles unless action is taken to reduce the fishery's impact on this threatened species.

The Gulf of Mexico Fishery Management Council (Council) is considering long-term measures to reduce sea turtle bycatch in Amendment 31 to the Fishery Management Plan for the Reef Fish Resources of the Gulf; however, short-term action is needed to reduce this bycatch. Therefore, the Council requested NMFS take emergency action to achieve these short-term reductions. The intended effect of this emergency action is to provide protection for threatened loggerhead sea turtles in compliance with the Endangered Species Act and to reduce sea turtle bycatch and bycatch mortality by the longline fishery in compliance with National Standard 9 of the Magnuson-Stevens Fishery Conservation and Management Act. Alternatives evaluated in the environmental assessment include a no action alternative, an alternative to prohibit bottom longline fishing east of 85º30'W longitude for reef fish in waters less than 50 fathoms, and an alternative to prohibit bottom longline fishing east of 85º30'W longitude regardless of depth. The difference between the latter two alternatives would allow bottom longline fishing to occur in depths greater than 50 fathoms, where the deepwater grouper segment of the fishery

operates. Sea turtle interactions with bottom longlines are greatly reduced in water depths greater than 50 fathoms.

FINDING OF NO SIGNIFICANT IMPACTS

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, NOAA published a Policy Directive with guidelines for the preparation of a Finding of No Significant Impact (FONSI). In addition, the Council on Environmental Quality (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 NOAA, 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. Harvests of target species are primarily controlled by hard quotas, minimum size limits, bag limits, and trip limits, and it is unlikely that additional targeting of other species can be accomplished economically. Given that 70 percent of the harvest is composed of fish stocks that are managed under quotas, there will probably not be an expansion of effort that would increase the opportunity for additional fishing mortality on target species. In fact, the proposed action will lessen fishing pressure and fishing mortality on some reef fish stocks (primarily grouper) in the eastern Gulf of Mexico (Gulf). Gag is currently undergoing overfishing, and restricting longline efforts in the shallow water grouper fishery will reduce fishing pressure on this species as well as other species undergoing overfishing such as red snapper, greater amberjack, and gray triggerfish. The proposed action, designed to reduce sea turtle take by the reef fish fishery, is expected to benefit sea turtle populations.

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

Response: No. Incidental catch is usually made up of managed and non-managed species that are not known to be in jeopardy from fishing, e.g., grunts and porgies. As mentioned in Criterion 1, most of the harvest is composed of fish stocks managed under quotas (e.g., red snapper, shallow water grouper, and deepwater grouper) or by other means (minimum size limits, bag limits, and trip limits), thus any expansion of effort in this fishery jeopardizing the sustainability of non-target species is not expected. Also as mentioned in Criterion 1, the reductions in longline effort will reduce the overall take of other non-target bycatch species susceptible to capture by longlines in the eastern Gulf. As elaborated in Criterion 5, the proposed actions are not expected to adversely affect endangered and threatened species. The action is intended to have a biological benefit to sea turtles by reducing the incidental take and mortality of these species by reducing effort associated with commercial reef fish longlining operations.

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 Fisheries Conservation and Management Act (MSFCMA) and identified in FMPs?

Response: No. The proposed action is not reasonably expected to cause substantial damage to the ocean and coastal habitats or EFH. Reef fish fishing occurs in areas that have been identified as EFH for several managed species, and is conducted primarily with hook-and-line gear and longline gear. Longline gear is prohibited in vulnerable, nearshore habitats (inside of 50 fathoms west of Cape San Blas, Florida, and inside of 20 fathoms east of Cape San Blas, Florida). The proposed action, as described in Section 4.1 of the environmental assessment (EA), will limit the use of this gear in the eastern Gulf and is expected to provide a positive benefit to habitat in the area closed to longline gear. Vertical line gear is used within these areas, and could damage coral or other hard bottom habitat if it becomes entangled within these structures, but these effects are minimal. However, the proposed actions are consistent with the enforceable provisions of the Coastal Zone Management programs of affected states, and are expected to have minor effects on the way fishing gear is currently used by the reef fish fishery as a whole. There is a likelihood some vessels may switch from using bottom longline gear to vertical line gear. This would benefit the physical environment as vertical gear is less damaging to the physical environment than bottom longline gear. As a result, the proposed actions are not expected to cause substantial damage to ocean and coastal habitats or EFH.

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. Recent fishery management actions such as the vessel monitoring system requirement and individual fishing quota programs have reduced the risks from fishing. The proposed action has the potential to move some longline vessels to deeper, more offshore waters; however, many vessels are expected to convert to hook-and-line gear and fish closer to shore.

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 any designated critical habitat of these species. As described in Section 4.2 of the EA, the action is intended to have a biological benefit to sea turtles by reducing the incidental take and mortality on these species by reducing effort by commercial reef fish longlining operations in areas commonly inhabited by sea turtles. In addition to the proposed action, recent regulations require vessels with commercial or for-hire reef fish permits to comply with sea turtle and smalltooth sawfish release protocols, possess a specific set of release gear, and adopt guidelines for the proper care for incidentally caught sawfish. These

regulations are designed to benefit sea turtle and smalltooth sawfish populations by reducing discard mortality.

Other listed species and designated critical habitat in the Gulf are not likely to be adversely affected, according to the most recent (2005) biological opinion for the reef fishery. The Gulf reef fish fishery is classified in the 2009 Marine Mammal Protection Act List of Fisheries as Category III fishery (73 FR 73032). 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 percent of the potential biological removal. The proposed action is not expected to alter existing fishing practices in the commercial sector of the fishery in such a way as to alter the fishery's interactions with marine mammals. Dolphins are the only species documented as interacting with this fishery. Bottlenose dolphins may feed on the bait, catch, 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. There may be some expected benefits from the proposed action to biodiversity and ecosystem function resulting from reduced catch and effort in the area closed to longlining. However, given the temporary nature of the proposed regulations, such benefits are not expected to be sufficiently substantial to influence biodiversity or ecosystem function within the affected area, in terms of altering benthic productivity, predator-prey relationships, or other ecological relationships.

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. Prohibiting longline effort inshore of the 50-fathom contour will have direct and indirect social and economic impacts to that segment of the reef fish fishery and to the shoreside operations that support this fishery. These impacts are described in Sections 4.3 and 4.4 of the EA. However, these impacts are not related to, nor have an impact on, the natural or physical environment.

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 fishing industry questions the validity of the science involved in the estimates of sea turtle takes by the commercial reef fish longline fishery. Nevertheless, even the lower confidence bounds of the current take estimates as presented in Section 1.1 of the EA far exceed the take authorized in the current biological opinion. Therefore, there is little scientific controversy in regard to the need for the proposed action.

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, EFH, or ecologically critical areas. Park land, prime farmlands, wetlands, wild and scenic rivers are inland and are not affected by this action in federal waters of the Gulf. Possible beneficial impacts to EFH are discussed in Question 3. Reef fish fishing occurs in or adjacent to ecologically sensitive areas, such as habitat areas of particular concern, marine sanctuaries, and marine reserves. While vertical gear used within these areas could adversely impact habitat if it became entangled within coral or other living bottom structures, the proposed actions are expected to have minor effects on the way fishing gear is currently used by the reef fish fishery as a whole. There is a likelihood some vessels may switch from using bottom longline gear to vertical line gear. This would benefit the physical environment as vertical gear is less damaging to the physical environment than bottom longline gear. In regard to ecologically critical areas in the eastern Gulf, the Tortugas Marine Sanctuary is closed to fishing, Madison Swanson and Steamboat Lumps ecologically critical areas are closed to bottom fishing, and the Middle Grounds, which borders the 20-fathom contour are comprised of complex bottom structures, not conducive to longline fishing. 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 temporarily prohibit longline fishing in waters shallower than 50 fathoms, east of Cape San Blas, Florida. This does not provide a unique risk; west of Cape San Blas, Florida, longlining has been prohibited in waters shallower than 50 fathoms for several years, and the effects of this action are documented. It is likely that many displaced longline vessels will convert to the more prevalent hook-and-line gear types or shift their fishing efforts to alternative species.

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

Response: No. The proposed action is not related to other actions with individually insignificant but cumulatively significant impacts. The proposed action is temporary; for a portion of the 2009 fishing year and may be extended only through the first half of the 2010 fishing year. The Gulf of Mexico Fishery Management Council (Council) is in the process of developing a long-term management strategy to address the issue; the suite of actions taken by the Council may differ in scope and intensity from the proposed temporary closure. The Council's final action, unknown at this time, will be analyzed for cumulative effects when developed, with an appropriate National Environmental Policy Act (NEPA) document.

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 nor is it expected to cause loss or destruction of significant scientific, cultural, or historical resources because they are not located in the affected area. The Tortugas Marine Sanctuary is already closed to fishing (see responses to Criteria #1 and #7 for more information).

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. The proposed action is not expected to change the fishery in a way that would affect non-indigenous species or to result in habitat or ecosystem alterations in such a way that would promote the spread of non-indigenous 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 considerations. The commercial grouper fishery is regulated through quotas, trip limits, and other fishing restrictions including gear boundaries such as those proposed in this action. The Council is in the process of developing a long-term management strategy to address the issue of interactions between the fishery and sea turtles, and may choose a different suite of actions to address this issue. The impacts of the actions chosen for the Council's more permanent plan, when developed, will be analyzed with an appropriate NEPA document. Temporarily prohibiting a specific gear type from the fishery does not preclude affected vessels from converting to other gear types or shifting to alternative species, similar to previous regulatory changes prohibiting the use of traps in the reef fish fishery. Additionally, restricting the longline fishery to outside of 50 fathoms is consistent with current regulations for waters west of Cape San Blas, Florida.

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 to ensure compliance with federal laws such as the MSFCMA and ESA, and is not reasonably expected to threaten a violation of other 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 will have a substantial effect on the target species or non-target species. In general, this action will reduce fishing pressure on gag, which is undergoing overfishing, reduce the incidental take and mortality of threatened and endangered sea turtles, and provide lower fishing pressure on a variety of reef fish and non-targeted stocks (see responses to Criteria #1, #2, and #5 for more information).

DETERMINATION:

In view of the information presented in this document and the analysis contained in the supporting EA prepared for the emergency rule for the Gulf of Mexico reef fish fishery, it is hereby determined that this emergency rule will not significantly impact the quality of the human environment as described above and in the supporting EA. 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.

_____ _____

Regional Administrator Date
Southeast Regional Office
National Marine Fisheries Service

1.0 INTRODUCTION

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) operates under mandates to minimize bycatch to the extent practicable and protect endangered and threatened species. National Standard 9 under the Magnuson Stevens Fisheries Conservation and Management Act (MSFCMA) requires that conservation and management measures to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. The bycatch reduction and monitoring requirements in the MSFCMA apply to a broad range of living marine species, including sea turtles[1].

The Endangered Species Act (ESA) requires the federal government to protect and conserve species and populations that are endangered, or threatened with extinction, and to conserve the ecosystems on which these species depend. Section 7 of the ESA requires all federal agencies to use their authorities to carry out their programs for the conservation of endangered and threatened species and to consult with the Secretary of Commerce (Secretary) and the Secretary of Interior to ensure any agency action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of their critical habitat. NMFS develops biological opinions (opinions) pursuant to a formal consultation under section 7 of the ESA to assess the impact of proposed activities on listed species under NMFS jurisdiction, which includes most listed marine species. If the resulting opinion finds that the proposed activity is likely to result in jeopardy[2] to a listed species or destruction or adverse modification of any designated critical habitat, the opinion will outline reasonable and prudent alternatives (RPAs) to the action, if any, that would avoid such impacts. For example, federally-managed fisheries that result in bycatch of sea turtles to the extent that the continued existence of the listed species are likely to be jeopardized would be required to implement the relevant RPAs as applicable to protect sea turtles from fishing gear. If the proposed action (or implementation of RPAs) is not likely to result in jeopardy, the opinion includes a statement concerning incidental take[3] specifying the amount or extent of incidental taking that may result from the proposed action, as well as nondiscretionary reasonable and prudent measures (RPMs necessary to minimize the takes' impacts) and terms and conditions to implement the RPMs. The term ''take'' means to harass, harm, pursue, hunt,

1 The MSFCMA expands on this requirement by stating that fishery management plans are required to "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority (A) minimize bycatch and (B) minimize the mortality of bycatch which cannot be avoided" (16 U.S.C. § 1853(11)). Bycatch, as defined by the MSFCMA (16 U.S.C. § 1802 (2)), means fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards, but excludes fish released alive under a recreational catch and release fishery management program. The term "fish" is defined in the MSFCMA to mean "finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and seabirds."

2 The term "jeopardy" refers to a determination that a Federal action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced.

3 The term ''incidental take'' means the take of listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant.

shoot, wound, kill, trap, capture, or collect, or to attempt to engage a species in any such conduct. Conservation recommendations are also made.

On February 15, 2005, the Southeast Regional Office (SERO) completed the most recent opinion on the continued authorization of the Gulf of Mexico (Gulf) reef fish fishery managed under the Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf of Mexico as part of the ESA section 7 consultation process. The 2005 reef fish fishery opinion identified five species of whales (fin, humpback, sei, northern right, and sperm), six species of sea turtles (loggerhead, leatherback, olive ridley, Kemp's ridley, green, and hawksbill), and two species of fish (smalltooth sawfish and Gulf sturgeon) which occur in the Gulf that are threatened or endangered. The opinion concluded authorization of the Gulf reef fish fishery managed under this FMP is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) and smalltooth sawfish. An incidental take statement (ITS) was issued specifying the amount and extent of anticipated take on a three-year basis, along with RPMs and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes (Table 1.1). The other listed species and designated critical habitat in the Gulf were determined not likely to be adversely affected because they are not likely to occur where the fishery is conducted.

Table 1.1. Anticipated three-year incidental take in the Gulf of Mexico Reef Fish Fishery.

Species	Amount of Take	Bottom Longline	Commercial Vertical Line	Recreational Vertical Line	Total
Green	Total Take	26	9	16	51
	Lethal Take	13	3	5	21
Hawksbill	Total Take	0	13	31	44
	Lethal Take	0	4	9	13
Kemp's ridley	Total Take	2	0	1	3
	Lethal Take	1	0	0	1
Leatherback	Total Take	1	9	10	20
	Lethal Take	1	4	4	9
Loggerhead	Total Take	85	65	53	203
	Lethal Take	42	20	16	78
Smalltooth sawfish	Total Take	2	2	4	8
	Lethal Take	0	0	0	0

The Gulf of Mexico Fishery Management Council (Council) and NMFS took action in Amendment 18A to the Reef Fish FMP (effective September 8, 2006) to comply with the opinion's RPM that any sea turtle or smalltooth sawfish taken in the reef fish fishery be handled in such a way as to minimize stress to the animal and increase its survival rate. Regulations were implemented requiring sea turtle release gear be onboard reef fish-permitted vessels when fishing to facilitate the safe release of any sea turtles or smalltooth sawfish caught. In addition, vessels with commercial and for-hire reef fish vessel permits were required to possess specific documents providing instructions on the safe release of an incidentally caught sea turtle or smalltooth sawfish with hook-and-line gear. RPMs also required better data collection from the fishery on sea turtle and smalltooth sawfish takes, including implementation of a reef fish observer program.

For the 2005 opinion, NMFS reviewed available data sources for estimating bycatch estimates including observer data from 1994 and 1995, logbook data (self-reported effort and self-reported sea turtle bycatch records), a cooperative observer data project, and anecdotal reports. Although the historical Southeast Fishery Science Center (SEFSC) observer data did not reveal any bycatch, the other newer logbook information did. As a result, the 2005 estimates were based on the logbook bycatch and effort data.

The SEFSC started observing sets targeting reef fish in the second half of 2006, and continues to sample the fishery to date. Data are collected via two different SEFSC observer programs. One program is the RFOP administered through the SEFSC's Galveston Laboratory. The other program is the Shark Bottom Longline Observer Program (SBLOP) has been in existence since 1994 and is now administered by the SEFSC's Panama City Laboratory. The SBLOP was created to obtain better data on catch, bycatch, and discards in the shark bottom longline fishery; however, depending on the time of year and length of the large coastal shark season, vessels participating in this fishery will also target reef fish. In the second half of 2006 the SBLOP started to observe and record sets targeting reef fish. Each program was independently designed and implemented sampling regimes for different, but overlapping portions of the Gulf commercial reef fish fishery. Both the SBLOM and RFOP used random sampling in an attempt to achieve a representative sample of the fishery.

In 2008, the RFOP administered a voluntary reef fish electronic monitoring (RFEM) project which observed seven trips of six vessels (Pria et al. 2008). The RFEM was not part of the normal operation of a mandatory observer program; instead it was based on solicitation of volunteers. Five of the six vessels came from a single port (the other a nearby port) and all observations occurred between mid-March and early May.

In September 2008, NMFS released a report that examined sea turtle takes by the bottom longline reef fish fishery from July 2006 through 2007 (NMFS 2008a). Sea turtle takes were only observed in the eastern Gulf bottom longline fishery. Overall, 18 sea turtle captures were observed in the RFOP and SBOP, 16 of which were loggerhead sea turtles (Figure 1.1). Extrapolating the 2006-2007 sea turtle takes to the entire eastern Gulf using the Fishery Logbook System coastal logbook data, the number of takes by this segment of the fishery was estimated to be 974 (95% CI 444.1-2137) for the 18-month time period (NMFS 2008b).

In April 2009, the SEFSC released an update to the NMFS (2008a) report which included revised 2006-2008 take estimates based on revised effort and observer data from the RFOP, SBLOP, and RFEM. Three sea turtle takes (two loggerhead sea turtles, one unidentified hardshell sea turtle) were recorded in 2008 during RFEM trips; no sea turtle takes were recorded in the RFOP or the SBLOP. Two bycatch estimates were included in SEFSC (2009): one that did not consider the RFEM a representative sample of the entire fleet and one that did. The first bycatch estimate extrapolated the 2006-2008 RFOM and SBLOP sea turtle takes to the entire eastern Gulf and estimated the number of takes by this segment of the fishery to be 861 hardshell sea turtles (95 CI 463-2,019) for the 30-month time period (NMFS 2009b). If the RFEM was treated as representative sample and included with the RFOP and SBLOP data to extrapolate to the total fishery effort, the overall estimated take for all hardshell sea turtles during the period from July 2006 though 2008 (30- month period) is 967.1 (95% CI 463.1-2,019.9).

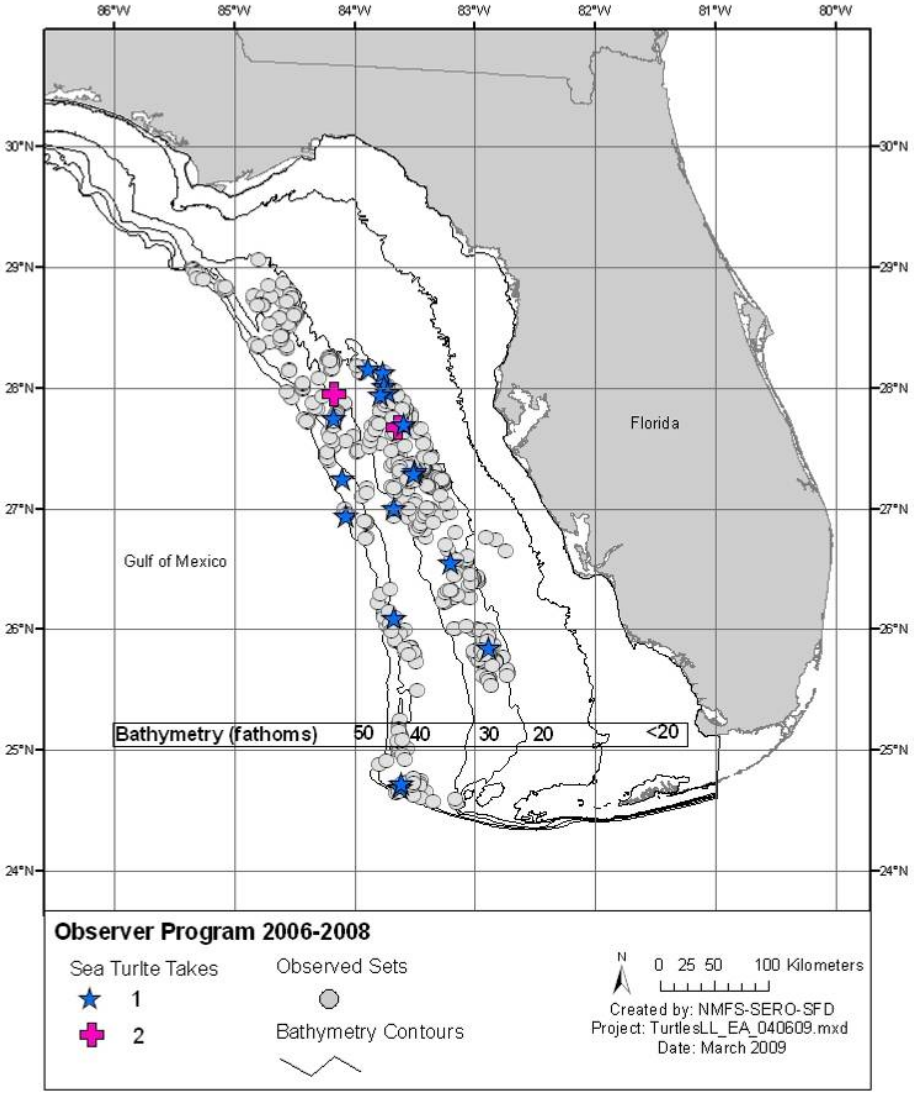
To compensate for the very low amount of observer coverage in the 2008 RFOP and SBLOP, the take estimates that also included the RFEM data were chosen in this document as a representative in the fishery. Without the inclusion of this data, NMFS-SEFSC (2009) had indicated the lack of observed takes in 2008 would be based on a very low sample size and reduced coverage of the fishery, which could negatively bias these estimates. For example, compared to 2007, the RFOP had observer coverage reduced by 50 percent and the SBLOP was reduced by 20 percent. By assuming the RFEM was a representative sample, the percent of the fishery observed in 2008 Season 1 for the eastern Gulf would rise to 1.38 percent of trips. Based on the final disposition of the observed sea turtle captures, estimations for the extrapolated sea turtle takes were calculated assuming a constant death rate over time. The estimated conditions for the sea turtles were 460 released alive, 276 released dead, and 230 released with an unknown condition (NMFS 2008).

The 2005 Biological Opinion authorized 113 hardshell sea turtle takes by the longline component of the reef fish fishery cumulative over a three-year period to account for the variability in the sea turtle takes between years. The three-year take estimate based on observer data from the RFOP, BLOP and RFEM is 1,160 hardshell sea turtle takes. The number of takes still greatly exceeds the ITS authorized in the 2005 BiOp.

Collectively comparing the longline observer data with the information summarized in the 2005 opinion (i.e., SEFSC 1994-1995 observer data, logbook bycatch and effort data, and other anecdotal information), it is unknown if recent estimated sea turtle takes are higher because: (1) Sea turtle catch rates in the bottom longline sector are higher on average now than they were when the fishery was previously observed, (2) all reef fish observer coverage levels to date have been too low for any accuracy or precision in take levels, or (3) sea turtle catch rates have been and continue to be highly variable from year to year. Some fishermen have indicated that sea turtle bycatch is a relatively new problem in this fishery and is associated with the introduction of longer gangions, but there are no data to substantiate that longer gangions have a higher sea turtle catch rate. However, it is interesting to note that a 2006 MARFIN observer project documented similar capture rates as NMFS (2008) documents with 2006-2007 observer data, despite having observed 50 percent less observed sets (NMFS 2008)[4]. This is surprising, considering the large confidence intervals associated with these take estimates. Sea turtle takes in other longline fisheries are highly variable from year to year (e.g., annual sea turtle bycatch in the Highly Migratory Species (HMS) pelagic longline fishery). Thus, it is likely that bycatch in the reef fish fishery is also highly variable from year to year.

4 Three loggerheads were caught in 156 observed sets (0.02 turtles/set)

Figure 1.1. Map of the eastern Gulf of Mexico showing locations of longline sets with observers onboard in water depths less than 55 fathoms.



Logbooks may provide qualitative estimates of bycatch where bycatch is required to be reported; however, the accuracy of these data is of concern. Bycatch data reported in logbooks can be useful in estimating bycatch, but only if fishermen are willing and able to report bycatch accurately in the logbooks. If fishermen perceive that accurate reporting of bycatch will result in restricted fishing effort, they have incentive to underreport bycatch.

The accuracy of self-reporting data can be inferred from comparisons of discard information derived from logbooks and observers (either on the same trips or operating in similar areas). After the 2005 opinion was completed, only two sea turtles were self-reported as caught on reef fish bottom longlines. Given the number of observed sea turtle captures relative to the number of self-reported sea turtle captures during the same timeframe, it is likely the decrease in reported captures since completion of the 2005 opinion reflect a decrease in reporting compliance.

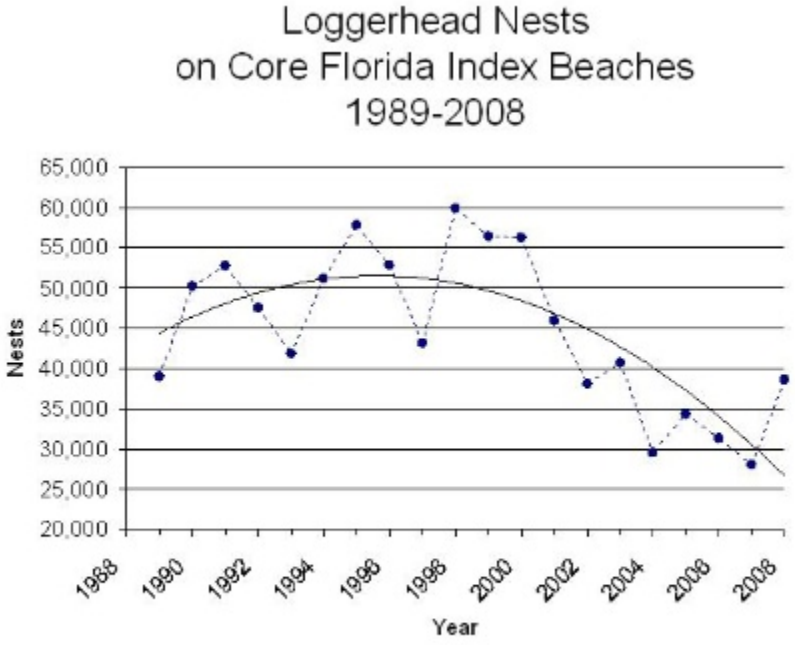
The MSFCMA and ESA both require NMFS to use the best available scientific information. In addition, ESA Case Law dictates that when faced with data uncertainty, decisions should give the benefit of the doubt to the species (i.e., favor protection of the species). A NMFS national working group on bycatch reviewed regional issues related to fisheries and bycatch and discussed advantages and disadvantages of various methods for estimating bycatch, including fishery-independent surveys, self-reporting through logbooks, port sampling, recreational sampling, at-sea observation including observers, digital video cameras, digital observers, remote monitoring, and stranding networks. Although all methods may contribute to useful bycatch estimation programs, the national working group concluded at-sea observation (observers or electronic monitoring) provides the best mechanism to obtain reliable and accurate bycatch estimates for many fisheries (NMFS 2004). Logbooks were noted as more useful in providing estimates of total effort by area and season, which then can be combined with observer data to estimate total bycatch. However, it was recognized that extrapolated bycatch estimates still may be inaccurate if there is less than complete-compliance with the logbook requirement or if reporting significantly misrepresents actual fishing effort (NMFS 2004). Therefore, the observer-based bycatch estimates for the reef fish bottom longline fishery are believed to represent the best available information at this time on which to base sea turtle bycatch levels in this fishery.

Loggerhead sea turtle takes observed in the bottom longline component of the reef fish fishery included both later-stage sexually immature sea turtles (larger, older juveniles) and mature sea turtles. These sea turtle life history stages are very important for population recovery because of their high reproductive value[5]. Satellite telemetry studies of adult female loggerhead sea turtles indicate the importance of the west Florida shelf as benthic foraging habitat. Based on genetic and telemetry data, as well as flipper tag return data, the loggerhead sea turtles foraging on the west Florida shelf and caught in this fishery are from several recovery units, as well as from the nesting population in the Yucatan Peninsula, Mexico. A number of stock assessments (TEWG 1998, TEWG 2000, NMFS 2001, Heppell et al. 2003) have examined the status of loggerhead sea turtles in the waters of the U.S., but have been unable to develop any reliable estimates of population size. For the past 20 years, Florida's Fish and Wildlife Conservation Commission (FWC) has coordinated a detailed sea turtle nesting-trend monitoring program, the Index Nesting Beach Survey (INBS). INBS counts represent approximately 69 percent of known loggerhead sea turtle nesting in Florida[6]. Florida accounts for approximately 90 percent of loggerhead nesting activity within the southeastern U.S. nesting population which is considered the world's second largest population. Loggerhead sea turtle nests counted annually at core index nesting beaches in Florida from 1989 through 2008 indicate a declining trend in loggerhead sea turtle nesting (Figure 1.2) (FWRI 2008). Witherington et al. (2009) have argued the observed decline in the annual counts of loggerhead sea turtle nests on Index and Statewide beaches in peninsular Florida can best be explained by a decline in the number of adult female loggerhead sea turtles in the population.

5 Reproductive value is the expected reproduction of an individual from their current age onward, given that they have survived to their current age.

6 For further information on the core index of beaches surveyed for nesting loggerhead sea turtles in the state of Florida go to: http://research.myfwc.com and search the sea turtle monitoring program.

Figure 1.2. Reprinted from FWRI (2008).



The Final Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle, Second Revision identifies five recovery units for the Northwest Atlantic population of loggerhead sea turtles. Loggerheads sea turtles captured in the Gulf reef fish fishery are likely disproportionately from the Peninsular Florida and northern Gulf draft recovery units. Both recovery units are declining. The Peninsular Florida recovery unit has exhibited a 26 percent decrease in nests (1989-2008) and a steeper decline of 41 percent since 1998. The northern Gulf recovery unit has exhibited a significant declining trend in nests of approximately 4.7 percent annually (1997-2007) (NMFS and USFWS 2008).

On September 3, 2008, SERO's Sustainable Fisheries Division requested the SERO Protected Resources Division reinitiate ESA section 7 consultation on the reef fish fishery. The Council has begun work developing measures in Amendment 31 to the Reef Fish FMP, with an associated environmental impact statement (EIS) with the purpose of reducing the number of sea turtle takes by the reef fish bottom longline fishery. In addition, the Council requested an emergency rule (this action) at their January 2009 meeting to reduce sea turtle takes in the short term as they develop Amendment 31 to the Reef Fish FMP.

1.2 Purpose and Need for Action

The Council and NMFS are considering long-term measures to reduce bycatch of sea turtles in the bottom longline component of the eastern Gulf reef fish fishery in Amendment 31. The results of a recent SEFSC observer analysis indicate the number of loggerhead sea turtle takes authorized in the 2005 biological opinion on the bottom longline reef fish fishery in the Gulf has been exceeded (NMFS 2008). The west Florida shelf is an important sea turtle foraging habitat. Individuals incidentally caught by the fishery are sexually immature juveniles and mature adult

loggerhead sea turtles that have high reproductive potential. Witherington et al. (2009) have argued the observed decline in the annual counts of loggerhead sea turtle nests on Index and Statewide beaches in peninsular Florida can best be explained by a decline in the number of adult female loggerhead sea turtles in the population. The biological opinion being developed by NMFS in light of this new information could result in a jeopardy opinion for loggerhead sea turtles unless action is taken to reduce the fisheries impact on this threatened species.

While the Council is considering long-term measures to reduce sea turtle bycatch, short-term action is needed to significantly reduce bycatch until the long-term measures can be implemented. Therefore, the Council requested NMFS take emergency action to achieve these short-term reductions. Given the need to implement short-term measures quickly, this action is limited in its ability to consider a wide range of more complex options. To satisfy the need for immediate reductions, NMFS and the Council chose a line approximating the 50-fathom depth contour as the nearshore boundary for the use of bottom longline gear in the eastern Gulf. A prohibition on the use of bottom longline gear in relatively shallow water would substantially reduce fishing effort in the area where most hardshell sea turtles occur, and would be consistent with the existing gear boundary in the western Gulf of Mexico. This reduction in the potential for interactions between bottom longline gear and sea turtles would be achieved without unduly restricting fishing activity in deeper water. The development of long-term measures to reduce sea turtle bycatch may consider a gear boundary in depths less than 50 fathoms; however, without additional measures, the currently anticipated reduction in hardshell sea turtle takes associated with a shallower boundary would not likely be sufficient to satisfy the legal mandates relative to protecting sea turtles.

This action is needed to provide protection for threatened loggerhead sea turtles in compliance with the ESA and to reduce sea turtle bycatch and bycatch mortality in compliance with National Standard 9 of the MSFCMA. The ESA requires the federal government to protect and conserve species and populations that are endangered, or threatened with extinction, and to conserve the ecosystems on which these species depend. Section 7(a)(1) of the ESA requires all federal agencies to use their authorities to carry out their programs for the conservation of endangered and threatened species. Section 7(a)(2) of the ESA requires all federal agencies to insure any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or to result in the destruction or adverse modification of habitat of such species. National Standard 9 under the MSFCMA, requires that conservation and management measures to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. The MSFCMA expands on this requirement by stating that fishery management plans are required to "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority (A) minimize bycatch and (B) minimize the mortality of bycatch which cannot be avoided" (16 U.S.C. § 1853(11)).

2.0 MANAGEMENT ALTERNATIVES

Section 1502.14 of the Council on Environmental Quality (CEQ) regulations requires agencies to explore and objectively evaluate all reasonable alternatives for an action, including the no action alternative. The analysis of alternatives shall describe the environment to be affected by the action and the environmental consequences of each of the alternatives (Part 1502.14, CEQ). Alternatives shall be presented in comparative form to provide a clear basis for why decision makers selected the preferred alternative(s).

In accordance with the Council's request for emergency action, one action with three alternatives is being considered in this EA and are listed below. Descriptions of the environmental consequences associated with each alternative can be found in Section 4.0. Section 3.0 describes the physical, biological, economic, social, and administrative environments affected by this action. Sections 4.3 and 5.0 provide a detailed discussion of the economic impacts of this action.

Action 1: Restrict bottom longline fishing for reef fish in the eastern Gulf of Mexico.

Alternative 1 – No Action. Allow bottom longline fishing for reef fish east of 85°30'W (near Cape San Blas, Florida) year-round in waters greater than 20 fathoms.

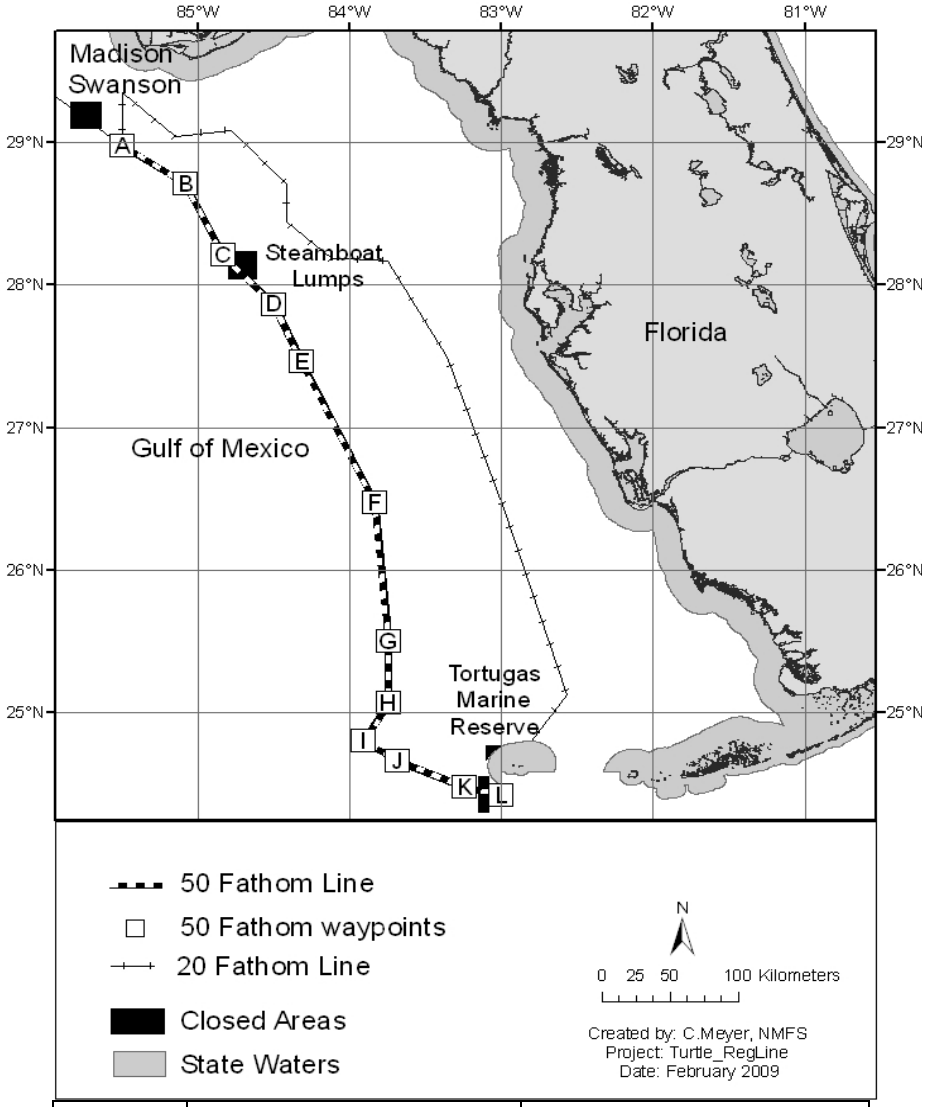
Preferred Alternative 2 – Prohibit bottom longline fishing for reef fish east of 85°30'W (near Cape San Blas, Florida) in waters less than 50 fathoms starting immediately upon implementation of the emergency rule (Figure 2.1):

Preferred Option a – unless the deepwater grouper and tilefish fisheries are closed, in which case the use of bottom longline gear would be prohibited in all waters east of 85°30'W .

Option b – and allow the use of bottom longline gear for reef fish in waters 50 fathoms or deeper throughout the year.

Alternative 3 - Prohibit all bottom longline fishing for reef fish east of 85°30'W (near Cape San Blas, Florida) starting immediately upon implementation of the emergency rule.

Figure 2.1. Map of the 50-fathom regulation line for the commercial bottom longline reef fish fishery (Preferred Alternative 2).



	Longitude West	Latitude North
Point ID	**Degree Decimal Minute**	**Degree Decimal Minute**
A	85°30.0'	28°58.5'
B	85°05.0'	28°42.5'
C	84°50.0'	28°12.5'
D	84°30.0'	27°52.0'
E	84°19.0'	27°28.0'
F	83°50.0'	26°28.5'
G	83°44.5'	25°30.0'
H	83°44.5'	25°04.0'
I	83°54.4'	24°48.0'
J	83°41.0'	24°39.5'
K	83°14.5'	24°28.5'
L	83°00.0'	24°25.0'

3.0 AFFECTED ENVIRONMENT

A brief description of the affected environment is included herein for this EA. More detailed descriptions of the affected environment can be found in the draft EIS to the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a) and Secretarial Amendment 1 to the Reef Fish FMP (NMFS 2004a), and are incorporated herein by reference.

3.1 Physical Environment

The grouper fishery occurs throughout the Gulf, but is primarily concentrated on the west Florida continental shelf. Most landings of red grouper, caught primarily by the longline fishery, and other shallow water grouper (SWG) (includes gag, rock hind, red hind, red, black, yellowfin, yellowmouth grouper and scamp) occur off of Florida over hard-bottom habitat. This habitat is described in detail in GMFMC (2004). Deepwater grouper (DWG) (includes yellowedge, snowy, misty, Warsaw grouper, and speckled hind) occur near the shelf-edge over sand, mud and shell bottom in the eastern Gulf and are harvested over rocky ridges or flat bottom, near banks or 'lumps' in the western Gulf (Cass-Calay and Bahnick 2002).

The Gulf is bounded by Cuba, Mexico, and the United States, and has a total area of 564,000 km^2. Continental shelves occupy about 35 percent of the total Gulf. The west Florida shelf, which would be affected by this action, provides a large area of hard bottom habitat described in detail in GMFMC (2004a). It is comprised of low relief hard bottoms that are relict reefs or erosional structures. Some high relief can be found along the shelf edge in waters 130 to 300 m deep. Hard bottom provides extensive areas where reef biota such as corals can become established and have become important reef fish fishing areas.

3.2 Biological Environment

3.2.1 Biology and Life History – Reef Fish

NOAA's National Ocean Service (NOS) collaborated with NMFS and the Council to develop distributional information for 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 ppt). 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 only as observed or not observed for adult, juvenile, and spawning stages.

In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. Information on habitat types and life history stages can be found in detail in GMFMC (2004a) and in a summarized format in GMFMC (2008). 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 associated with sand and soft-bottom substrates. Juvenile red snapper are commonly associated with mud bottom habitat 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 utilizing 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).

3.2.2 Biology and Life History – Sea Turtles

Sea turtles, air-breathing reptiles with streamlined bodies and large flippers, are well adapted to life in the marine environment. They inhabit tropical and subtropical ocean waters throughout the world. Of the seven species of sea turtles, five are typically found in U.S. waters: Green, hawksbill, Kemp's ridley, leatherback, and loggerhead.

Although sea turtles live most of their lives in the ocean, adult females must return to beaches on land to lay their eggs. They often migrate long distances between foraging grounds and nesting beaches. Figure 3.1 depicts the generalized life history of the North Atlantic loggerhead sea turtle, the species most frequently caught on reef fish bottom longlines. Loggerhead sea turtles occupy three different ecosystems during their lives--the terrestrial zone[7], the oceanic zone[8] and the neritic zone[9]. Within the oceanic and neritic ecosystems sea turtles are described as: (1) Pelagic, if they occupy the water column, but not the sea floor, in either the neritic zone or oceanic zone, (2) epipelagic if they occupy the upper 200 meters in the oceanic zone, or (3) benthic or demersal, if they are on the sea floor in either the neritic zone or oceanic. Sea turtle life history is generally described by five life stages: hatchling, post-hatchling, oceanic juvenile, neritic juvenile, and adult (reproductive stage). NMFS and USFWS (2008), Tables 3.1 and 3.2, include typical values of life history parameters and reported size distributions, stage durations, annual survival probabilities, and growth rates for loggerhead sea turtles nesting in the United States.

7 the nesting beach where both oviposition (egg laying) and embryonic development and hatching occur
8 The oceanic zone includes the vast open ocean environment (from the surface to the sea floor) where water depths are greater than 200 meters.
9 The neritic zone generally includes the continental shelf, but in areas where the continental shelf is very narrow or nonexistent, the neritic zone conventionally extends to areas where water depths are less than 200 meters

Figure 3.1. Generalized life history of North Atlantic loggerhead sea turtles (Bolten 2003 in NMFS 2008).

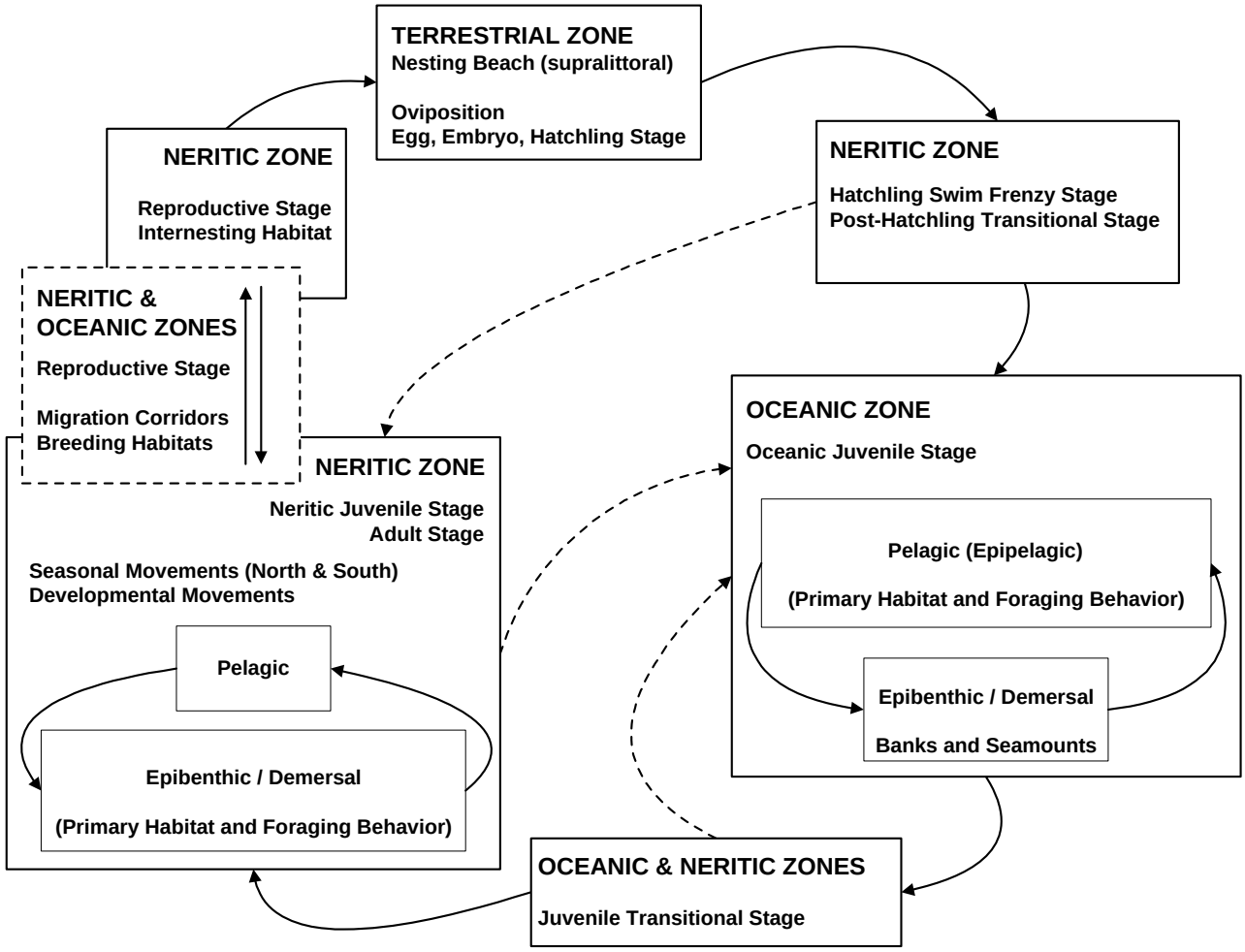


Table 3.1. Typical values of life history parameters for loggerhead sea turtles nesting in the U.S. Excerpted from the Recover Plan for the Northwest Atlantic Population of the Loggerhead Sea turtle, Second Edition (NMFS and USFWS 2008)

Life History Parameter	Data
Clutch size	100-126 eggs[1]
Egg incubation duration (varies depending on time of year and latitude)	42-75 days[2,3]
Pivotal temperature (incubation temperature that produces an equal number of males and females)	29.0˚C[5]
Nest productivity (emerged hatchlings/total eggs) x 100 (varies depending on site specific factors)	45-70%[2,6]
Clutch frequency (number of nests/female/season)	3-5.5 nests[7]
Internesting interval (number of days between successive nests within a season)	12-15 days[8]
Juvenile (<87 cm CCL) sex ratio	65-70% female[4]
Remigration interval (number of years between successive nesting migrations)	2.5-3.7 years[9]
Nesting season	late April-early September
Hatching season	late June-early November
Age at sexual maturity	32-35 years[10]
Life span	>57 years[11]

1 Dodd 1988.
2 Dodd and Mackinnon (1999, 2000, 2001, 2002, 2003, 2004).
3 Blair Witherington, FFWCC, personal communication, 2006 (information based on nests monitored throughout Florida beaches in 2005, n=865).
4 NMFS (2001b); Allen Foley, FFWCC, personal communication, 2005.
5 Mrosovsky (1988).
6 Blair Witherington, FFWCC, personal communication, 2006 (information based on nests monitored throughout Florida beaches in 2005, n=1,680).
7 Murphy and Hopkins (1984); Frazer and Richardson (1985); Ehrhart, unpublished data; Hawkes et al. 2005; Scott 2006; Tony Tucker, Mote Marine Laboratory, personal communication, 2008.
8 Caldwell (1962), Dodd (1988).
9 Richardson *et al*. (1978); Bjorndal *et al*. (1983); Ehrhart, unpublished data.
10 Melissa Snover, NMFS, personal communication, 2005; see Table A1-6.
11 Dahlen *et al*. (2000).

Table 3.2. Reported size distributions, stage durations, annual survival probabilities, and growth rates for loggerhead sea turtles nesting in the U.S. See citations for details regarding values reported. Excerpted from the Recover Plan for the Northwest Atlantic Population of the Loggerhead Sea turtle, Second Edition (NMFS and USFWS 2008).

Life Stage	Size (Curved Carapace Length)	Stage Duration	Annual Survival Probabilities	Growth Rate
Hatchling	4 cm CCL[1]	1-5 days[2]	Year 1 = 0.7[3,6]	--
Post-hatchling	4-6 cm CCL[4]	<6 months[5]		10.8 cm/yr[5]
Oceanic juvenile	8.5-64 cm CCL[5,7]	7-11.5 years[8]	0.9[6,9]	2.9-5.4 cm/yr[10]
Neritic juvenile	46-87 cm CCL[11]	13-20 years[12]	0.7-0.8[13]	1.8-2.1 cm/yr[14]
Adult female	>87 cm CCL[1,15]	>25 years[16]	0.9[6,17]	0.6 cm/yr[18]
Adult male	>83 cm CCL[19]	--	--	0.1 cm/yr[20]

[1] Ehrhart (1980).
[2] Duration from hatching out of the egg until entering the water.
[3] Hatchling and post-hatchling stages are combined because estimates of survival probabilities from stage-based models are based on annual rates; these two stages occur within the first year. Stage based survival estimates are based on similar size classes used in the matrix population models (Heppell *et al*. 2003b) and differ slightly with those presented in this table, which are based on empirical data.
[4] Blair Witherington, FFWCC, personal communication, 2006.
[5] Bjorndal et al. (2000).
[6] Heppell et al. (2003b).
[7] Bjorndal et al. (2003b).
[8] Bjorndal et al. (2003a) (7 years: 8.5-46 cm CCL; 11.5 years: 8.5-64 cm CCL).
[9] Bjorndal et al. (2003b) (estimated annual survivorship for years 2-6).
[10] Snover (2002) (mean 2.9 cm SCL/yr); Bjorndal et al. (2003a) (mean 5.4 cm CCL/yr).
[11] Bjorndal et al. (2001).
[12] Bjorndal et al. (2001) (13 years: 64-87 cm CCL; 20 years: 46-87 cm CCL).
[13] Heppell et al. (2003b).
[14] Bjorndal et al. (2001) (mean = 1.8 cm CCL/yr (64-87 cm CCL); mean = 2.1 cm CCL/yr (46-87 cm CCL)); Snover (2002) (mean = 2.1 cm SCL/yr (45.1-80.6 cm SCL)).
[15] Witherington (1986), Byrd et al. (2005).
[16] Dahlen et al. (2000).
[17] Hedges (2007).
[18] Bjorndal et al. (1983).
[19] Schroeder, unpublished data from Florida Bay (based on tail lengths >40 cm from plastron to tip of tail).
[20] Schroeder, unpublished data from Florida Bay.

3.2.3 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), 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 (NMFS 2002a; SEDAR 12 2007), gag (Turner et al. 2001; SEDAR 10 2006), 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 fourth quarter report of the 2008 Status of U.S. Fisheries (http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm) classifies three as overfished (greater amberjack, gray triggerfish, and red snapper), and four as undergoing overfishing (red snapper, gag, gray triggerfish, and greater amberjack). 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.

3.2.4 Status of Protected Resources

There are 28 species of marine mammals that may occur in the Gulf. All 28 species are protected under the Marine Mammal Protection Act (MMPA) and six are also listed as endangered under the ESA (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). Other species protected under the ESA occurring in the 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 EFH amendment (GMFMC, 2004a), the February 2005 opinion on the reef fish fishery (NMFS 2005) and *Acropora* Status Review (*Acropora* Biological Review Team 2005). Marine Mammal Stock Assessment Reports and additional information are also available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/species/.

The Gulf reef fish fishery is classified in the 2009 MMPA List of Fisheries as Category III fishery (73 FR 73032). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1 percent of 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. 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.

Smalltooth sawfish are also affected by the Gulf reef fish fishery, but to a much lesser extent. Smalltooth sawfish primarily occur in the Gulf off peninsular Florida. Incidental captures in the commercial and recreational hook-and-line components of the reef fish fishery are rare events,

with only eight smalltooth sawfish estimated to be incidentally caught annually, and none are expected to result in mortality (NMFS 2005). Fishermen in this fishery are required to follow smalltooth sawfish safe handling guidelines. The long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in fishing gear.

All five species of sea turtles are adversely affected by the Gulf reef fish fishery. Incidental captures are relatively infrequent for most gears, but occur in all commercial and recreational hook-and-line components of the reef fishery. Captured sea turtles can be released alive or can be found dead upon retrieval of the gear as a result of forced submergence. Sea turtles 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 minimize post-release mortality.

3.3 Economic and Social Environment

3.3.1 Commercial Sector

This section provides an overview of the commercial reef fish fisheries in the Gulf. Landings, ex-vessel values and effort by gear type are discussed. Several species and species groups are presented as specific fishery components, specifically, reef fish, SWG (includes gag, rock hind, red hind, red, black, yellowfin, yellowmouth grouper and scamp), and DWG (includes yellowedge, snowy, misty, Warsaw grouper, and speckled hind). The SWG information includes red grouper and gag plus all other shallow water groupers, while the reef fish information includes all grouper and tilefish, plus all other species in the reef fish management unit. Additional information on the reef fish fisheries including components for grouper and tilefish is contained in Reef Fish Amendments 29 and 30B and is included herein by reference (GMFMC 2008a and GMFMC 2008b). It is specifically noted that the grouper, tilefish, and general reef fish fisheries are prosecuted Gulf-wide and Reef Fish Amendments 29 and 30B contain performance information by state. However, this action deals primarily with the Florida fishery and, as a result, descriptions of the fishery by state are not presented here. Over the 2005-2007 fishing seasons, approximately 77% of all longline harvests (all species) were grouper or tilefish species (NMFS, 2009a), while grouper or tilefish constituted 94% of all reef fish longline landings. As a result, it is concluded that the reef fish bottom longline fishery essentially targets grouper (SWG and DWG) and tilefish and the harvest of other species are ancillary. As a result, the information in the following sections focuses on the grouper and tilefish fisheries rather than on the general reef fish fishery.

Annual Landings, Ex-vessel Values, and Effort

The commercial grouper and tilefish components of the commercial reef fish fishery in the Gulf are composed of vessels using different gear types and catching a variety of species. A license limitation program is in effect in the commercial reef fish fishery and the harvest of commercial quantities of reef fish requires a valid reef fish permit on board the vessel. Commercial reef fish permits are renewable every year, with a grace period of one year to renew the permit. Non-

renewal of a permit during this grace period results in permanent loss of the permit. On November 24, 2008, there were 884 active permits and 196 renewable permits, or a total of 1,080 permits.

Landings and ex-vessel values for the reef fish fishery are provided in Table 3.3. The table provides landings for the various grouper complexes as well as select individual grouper species. The table also provides estimates for all reef fish species combined. An average of 7.82 MP of SWG, 1.17 MP of DWG, and 0.52 MP of tilefish were harvested annually in the commercial reef fish fishery during 1993-2006. The respective ex-vessel values were $18.91 million, $3.06 million, and $0.77 million in nominal (current year) prices, or $21.51 million, $3.49 million, and $0.88 million in real (adjusted to 2006 dollars) prices. Within the SWG complex (1993-2006 averages), red grouper and gag dominated the fishery, with red grouper accounting for 67 percent of landings and 62 percent of ex-vessel values, and gag accounting for 18 percent of landings and 21 percent of ex-vessel values.

Average annual landings for all species increased from 1993-1998 to 1999-2004 but declined in 2005-2006. Landings for all species were highest in the 1999-2004 period. Nominal and real ex-vessel revenues increased and declined similar to landings, with the exception that the changes in the nominal ex-vessel prices for red grouper and tilefish showed slight increases instead of declines in 2005-2006. In general, 1999-2004 registered the highest ex-vessel values for all species. Nominal ex-vessel values increased in 1999-2004 relative to 1993-1998 by 34 percent, 143 percent, 47 percent, 45 percent, and 17 percent for red grouper, gag, SWG, DWG, and tilefish, respectively. A substantial portion of these increases were due to inflation as can be inferred from the corresponding lower increases in real ex-vessel revenues of 16 percent, 112 percent, 28 percent, 26 percent, and 1 percent for the respective species.

Table 3.3. Average Annual Landings and Revenues for Selected Species, 1993-2006.

Period	Red Grouper	Gag	SWG	DWG	Tilefish	Reef
Landings (1,000 lbs)						
1993-98	4,790	850	6,840	1,047	507	17,584
1999-04	5,831	1,885	8,946	1,331	534	19,756
2005-06	5,074	1,525	7,389	1,053	510	16,598
1993-06	5,276	1,390	7,821	1,170	519	18,374
Nominal Value ($1,000)						
1993-98	9,854	2,243	15,057	2,488	697	34,097
1999-04	13,223	5,453	22,136	3,604	814	44,895
2005-06	13,360	4,915	20,779	3,150	841	44,252
1993-06	11,799	4,000	18,908	3,061	768	40,176
Real Value ($1,000)						
1993-98	12,494	2,814	19,045	3,145	880	43,173
1999-04	14,541	5,959	24,301	3,956	893	49,265
2005-06	13,155	4,868	20,499	3,123	830	43,595
1993-06	13,466	4,455	21,505	3,489	879	45,844

Distribution by of Harvest by Gear Type

Table 3.4 presents several fishery performance measures by gear type. It should be noted that traps have been prohibited for use in the reef fish fishery since February 2007 and it is not yet known how historic trap landings will be distributed among the remaining gear types. In terms of landings, longlines have dominated the grouper and tilefish components of the reef fish fishery. Handlines have been the dominant gear used to target gag. Except for fish traps, all the other gear types have historically accounted for relatively small amounts of grouper and tilefish landings. In addition, trap catches were only substantial for the SWG fishery. The distribution of ex-vessel revenues mimics that of landings. In terms of the number of boats, number of trips, and days away from port, the handline fleet dominated the grouper and tilefish fisheries.

Table 3.4. Selected fishery performance measures by gear type, annual averages, 1993-2006.

	Diving	Handlines	Longlines	Other Gear	Traps	Trolling
Landings (1,000 lbs)						
Red Grouper	10	1,299	3,203	8	754	2
Gag	30	893	448	5	12	3
SWG	52	2,907	4,040	18	796	8
DWG	0	198	966	1	4	1
Tilefish	0	20	497	0	1	0
Revenues ($1,000)						
Red Grouper	26	3,296	8,250	22	1,866	6
Gag	95	2,870	1,427	16	37	11
SWG	159	8,399	10,875	52	1,996	24
DWG	1	462	2,585	2	8	2
Tilefish	0	29	847	1	1	1
Boats						
Red Grouper	42	586	146	10	65	12
Gag	31	465	112	5	28	14
SWG	50	791	165	14	67	27
DWG	4	262	127	2	8	5
Tilefish	1	121	98	1	4	1
Trips						
Red Grouper	210	4,509	1,298	28	562	21
Gag	172	3,654	788	17	158	35
SWG	324	7,344	1,475	43	612	63
DWG	4	1,401	718	3	12	6
Tilefish	1	364	457	1	8	2
Days Away						
Red Grouper	350	17,229	11,749	122	3,035	46
Gag	276	12,451	7,411	47	890	58
SWG	489	25,217	13,203	153	3,151	121
DWG	10	5,951	6,546	16	90	22
Tilefish	3	2,086	4,187	7	44	6

Species Composition of Harvest

Table 3.5 presents the distribution of species caught on trips landing at least one pound of selected species. All numbers are calculated as percent of the total reef and non-reef fish species caught on a trip. Trips that harvested red grouper or gag have historically had a higher portion of their harvests comprised of SWG species than trips that harvested any SWG species, while trips that harvested DWG species have historically harvested the highest portion of non-grouper species. On average across the entire period and during 2004-2006, trips that harvested any SWG species harvested the largest portion of non-reef species.

Table 3.5. Percent species composition on trips landing at least one pound of selected species, 1993-2006.

Period	Red Gr	Gag	OSWG*	ASWG*	DWG	Tilefish	Snappers	ORF*	Reef	Non-Reef	All Species
Red Grouper											
1993-98	55.4	10.6	12.7	78.7	3.5	0.6	9.7	4.8	97.3	2.7	100.0
1999-04	52.1	19.2	10.7	82.0	3.5	0.4	9.6	2.5	98.1	1.9	100.0
2004-06	52.4	18.0	8.1	78.5	2.4	0.4	14.6	2.3	98.3	1.7	100.0
1993-06	53.3	15.9	10.9	80.2	3.3	0.5	10.6	3.3	97.8	2.2	100.0
Gag											
1993-98	43.7	20.1	3.9	67.8	5.2	0.7	18.2	5.8	97.7	2.3	100.0
1999-04	41.4	26.7	3.7	71.8	5.5	0.5	17.6	3.3	98.7	1.3	100.0
2004-06	46.7	23.6	3.8	74.1	4.6	0.4	16.9	2.6	98.7	1.3	100.0
1993-06	43.2	23.8	3.8	70.8	5.2	0.5	17.7	4.1	98.4	1.6	100.0
SWG											
1993-98	36.9	8.3	11.1	56.3	6.1	1.1	27.4	6.2	97.2	2.8	100.0
1999-04	36.7	15.3	9.6	61.6	5.8	0.7	26.3	3.6	98.0	2.0	100.0
2004-06	39.3	14.5	7.4	61.2	5.8	0.6	27.9	2.7	98.2	1.8	100.0
1993-06	37.3	12.7	9.7	59.6	5.9	0.8	27.0	4.3	97.7	2.3	100.0
DWG											
1993-98	15.4	2.9	7.2	25.5	23.4	5.3	37.1	5.5	96.8	3.2	100.0
1999-04	15.0	8.1	7.4	30.5	23.8	4.3	36.1	3.7	98.4	1.6	100.0
2004-06	16.2	8.3	6.4	30.9	29.2	4.3	32.1	2.4	99.0	1.0	100.0
1993-06	15.3	6.3	7.2	28.7	24.7	4.7	35.7	4.1	97.9	2.1	100.0
Tilefish											
1993-98	11.3	2.2	7.5	21.1	34.8	13.0	23.7	5.1	97.6	2.4	100.0
1999-04	9.2	5.9	6.7	21.8	43.3	13.3	17.0	3.1	98.5	1.5	100.0
2004-06	9.5	5.5	5.1	20.1	40.4	15.5	19.7	2.9	98.5	1.5	100.0
1993-06	10.1	4.5	6.7	21.2	39.6	13.6	19.9	3.8	98.2	1.8	100.0

*OSWG=other shallow water grouper, ASWG=all shallow water grouper, ORF=other reef fish

Vessels by Landing Categories

Table 3.6 presents the number of vessels by average landing category (pounds of fish landed), by gear type, for trips landing at least one pound of grouper or tilefish. As can be seen from the table, the largest number of longline vessels fall into the largest landing categories.

Table 3.6. Number of unique vessels (totals over all years) by average landing category, by gear type, for trips landing at least one pound of grouper or tilefish, 1993-2006 and 1999-2004.

Category	Diving	Handlines	Longlines	Other Gear	Traps	Troll
1993-2006						
1-499 lbs	126	963	39	103	62	191
500-999 lbs	29	247	23	15	22	31
1000-3999 lbs	52	535	48	27	33	35
4000-9999 lbs	18	318	33	14	27	3
10000-49000 lbs	14	459	83	4	43	0
=> 50000 lbs	2	202	208	0	60	0
1999-2004						
1-499	74	437	17	26	13	115
500-999	9	131	11	3	4	14
1000-3999	30	308	26	11	9	17
4000-9999	12	236	20	6	6	2
10000-49000	7	310	51	2	25	0
=> 50000	0	112	146	0	36	0

Fish Dealers

There are approximately 159 Gulf reef fish dealers with active permits. Because the reef fish dealer permitting system in the Gulf is an open access program, the number of dealers can vary from year to year. For the period 2004-2007, these dealers handled an average of 10.8 MP of grouper and tilefish valued at $25.4 million. These dealer transactions were distributed as follows: Florida, 10 MP worth $23.5 million; Alabama and Mississippi, 102,000 pounds worth $222,000; Louisiana, 270,000 pounds worth $592,000; and Texas, 434,000 pounds worth $1.03 million. The rest of the transactions were handled by dealers outside of the Gulf states.

Economic Impacts

Estimates of the output (sales) and job (full time equivalent (FTE)) impacts of the commercial grouper and tilefish components of the reef fish fishy were derived using 2006 west Florida landings and value data (James E. Kirkley, Virginia Institute of Marine Science, personal communication, August 2008). Gag and red grouper landings accounted for approximately 84 percent of the total ex-vessel value from all grouper and tilefish species from west Florida landings in 2006. Further, while grouper and tilefish are landed in other states, west Florida accounted for approximately 98.5 percent of total Gulf gag landings (pounds; NOAA Fisheries commercial data at www.st.nmfs.noaa.gov/st1/commercial/index.html) and approximately 99.7 percent of red grouper landings. The total 2006 output (sales) impacts of the commercial grouper and tilefish fishery on the Florida economy is estimated to be approximately $88.2 million, supporting an estimated 1,848 jobs. The largest component of these impacts accrues to the restaurant sector, accounting for approximately $45.8 million and 1,202 FTE jobs, followed by the harvest sector, accounting for approximately $22.3 million and 425 FTE jobs. These estimates 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 by employees in the direct and indirectly affected sectors).

Imports

Table 3.7 summarizes imports of snappers and groupers into the U.S. Imports steadily increased over the 1993-2006 period, from a low of 22 MP in 1994 to a high of 49.7 MP in 2005, with a slight drop in 2006. This is in contrast to domestic production of all reef fish in the Gulf which, although averaging 18.4 MP annually, had been declining since its peak in 2002 (see Figure 3.2). In addition, the lowest import level of 22 MP in 1994 is higher than the highest reef fish production of 20.5 MP in 2002. Although the levels of domestic production and imports are not totally comparable for a variety of reasons, such as fresh product versus frozen product and possible import mis-labeling, the quantity of imports indicates the dominance of imports in the reef fish market.

The value of imports also rose steadily over the years, from a low of $42.3 million (after adjusting for inflation) in 1994 to its highest level of $101.7 million in 2006. The value of domestic production, on the other hand, rose slightly in the first years but declined after reaching its peak of $50.1 million in 2001 (see Figure 3.3). In 2006, the value of domestic reef fish production stood at $43.5 million, which is less than half of that of imports. Again, it should be noted that the two values are not strictly comparable, but the difference in magnitude still signifies the large market share of imports in the domestic market for reef fish.

Table 3.7. U.S. imports of snapper and grouper, combined fresh and frozen).

Year	Quantity (million lbs)	Nominal Value (million $)	Real Value (2006 $)
1993	24.1	32.9	45.5
1994	22.0	30.9	42.3
1995	28.2	38.5	50.8
1996	33.0	47.5	61.3
1997	40.3	58.0	74.9
1998	38.8	58.5	77.4
1999	35.4	53.9	70.8
2000	38.7	63.0	78.2
2001	39.5	62.3	76.4
2002	42.6	69.5	87.3
2003	44.5	73.3	87.4
2004	43.1	75.6	84.9
2005	49.7	93.1	97.5
2006	48.6	101.7	101.7

Figure 3.2. Landings of selected species, 1993-2006

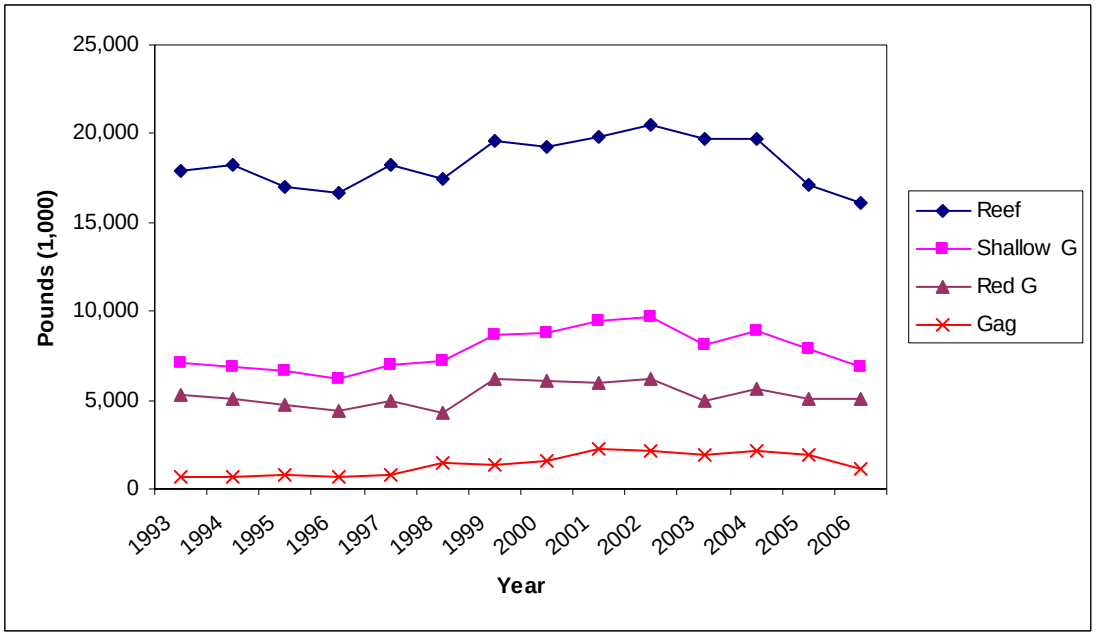
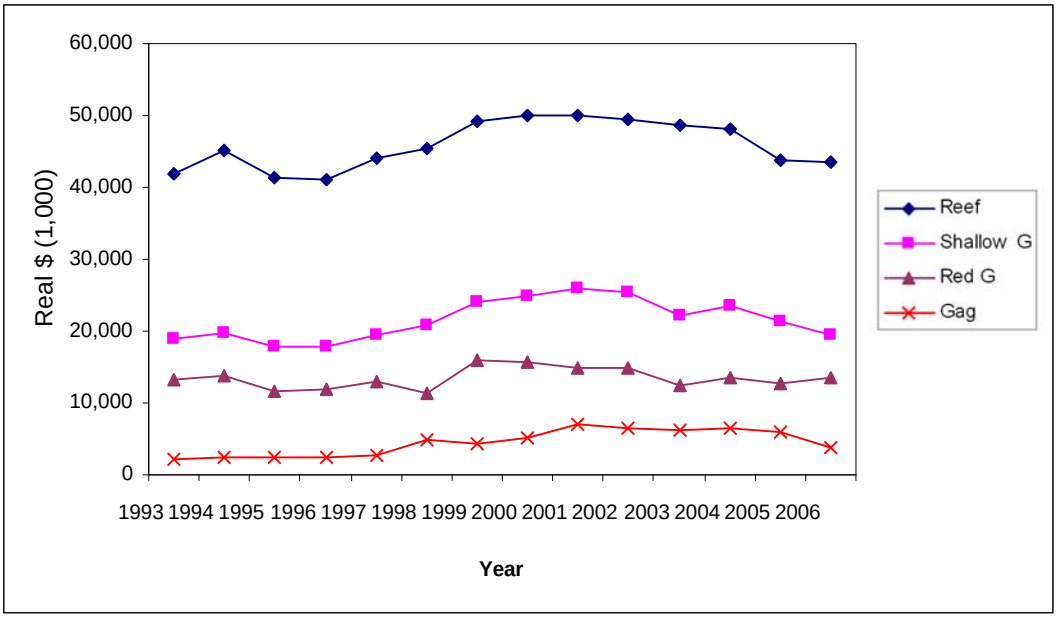


Figure 3.3. Real ex-vessel values (2006 dollars) for selected species, 1993-2006.



3.3.2 Fishing communities

A more detailed discussion of representative communities substantially involved in fishing that would be expected to be affected by this proposed rule is contained in Reef Fish Amendment 30B (GMFMC 2008a) and is incorporated herein by reference. Information on additional communities is contained in IAI (2005). Representative communities were selected based on an examination of secondary data including landings data, federal permits data, and census data. The communities of Madeira Beach, Panama City, and St. Petersburg, Florida, were selected for this description. These communities accounted for, in order, the highest combined SWG commercial landings from 2004-2007. Over this period, more than 70 Gulf and central Florida communities recorded commercial purchases (landings) of SWG. It is noted that the absolute value of landings is not necessarily indicative of the magnitude of the potential expected social or economic effects of regulatory change because a community with larger landings may also have a larger overall economic base and opportunities and, thereby be better positioned to absorb the adverse effects of management change. Further, although the communities profiled present a range of population sizes, this metric may not be a good indicator of diversity of opportunity, or lack there of, particularly if a small community, such as Madeira Beach, is close to or continuous with a larger metropolitan area with a diverse economic base.

Madeira Beach, Florida (incorporated, 2000 pop. 4,511)

Madeira Beach is located on a barrier island just west of St. Petersburg and north of John's Pass on Florida's central west coast. The 2000 census enumerated 4,511 persons, up from 4,225 in 1990. The community and fishery associated infrastructure is subject to developmental pressure, similar to other coastal communities. The town is sometimes referred to as the "Grouper Capital of the World" as the majority of grouper landed in the U.S. are landed here. Overall direct employment, related to vessels and fish houses, was estimated at approximately 441 persons in 2000 (Lucas 2001).

Table 3.8 provides 1990 and 2000 demographic data for Madeira Beach. Madeira Beach exhibited a decline in the proportion of the population that reported their occupation under farming, fishing, and forestry, decreasing from 1.4 percent of the population in the 1990 census to 0.7 percent in 2000. While the education level increased over this period, so did the unemployment rate. Economic conditions and job opportunities are currently expected to be worse than the 2000 conditions.

Table 3.8. Madeira Beach demographic data, 1990 and 2000.

	1990	**2000**
Total population	4,225	4,511
Gender Ratio M/F (Number)	2,156/2,069	2,376/2,135
Age (Percent of total population)		
Under 18 years of age	8.7	8.2
18 to 64 years of age	65.7	69.8
65 years and over	25.6	22.0
Ethnicity or Race (Number)		
White	4,160	4,378
Black or African American	10	12

American Indian and Alaskan Native	7	14
Asian	32	26
Native Hawaiian and other Pacific Islander	--	2
Some other race	16	30
Two or more races	--	49
Hispanic or Latino (any race)	105	107
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	4.2	2.6
Percent high school graduate or higher	83.8	87.3
Percent with a Bachelor's degree or higher	19.5	22.2
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	4.5	6.8
Percent who speak English less than very well	1.5	2.0
Household income (Median $)	24,748	36,671
Poverty Status (Percent of population with income below poverty line)	8.4	9.8
Percent female headed household	5.3	5.3
Home Ownership (Number)		
Owner occupied	1,290	1,454
Renter occupied	940	1,074
Value Owner-occupied Housing (Median $)	111,400	171,000
Monthly Contract Rent (Median $)	392	555
Employment Status (Population 16 yrs and over)		
Percent in the labor force	58.5	61.5
Percent of civilian labor force unemployed	2.7	4.4
Occupation (Percent in workforce)**		
Management, professional, and related occupations	--	30.4
Service occupations	--	22.1
Sales and office occupations	--	28.9
Farming, fishing, and forestry occupations	1.4	0.7
Construction, extraction, and maintenance occupations	--	10.6
Production, transportation, and material moving occupations	--	7.2
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	1.4	0.0†
Manufacturing	7.5	7.0
Percent government workers	8.2	4.5
Commuting to Work (Workers 16 yrs and over)		
Percent in carpools	8.7	14.7
Percent using public transportation	2.2	1.6
Mean travel time to work (minutes)	--	23.1
Percent worked outside of county of residence	10.6	16.0

**Differences in the types of data the U.S. Census Bureau used to generate Occupation and Industry percentages in 1990 and 2000 preclude valid comparisons between those census years.

†Year 2000 figures include mining in this group; 1990 figures do not. Mining includes the offshore oil industry workforce.

Table 3.9 provides fishing infrastructure information for Madeira Beach, obtained through a community drive-through in 2003 (IAI 2005). In 2003, four commercial docking facilities, five wholesale fish processors, two retail seafood markets, and 40 commercial vessels were identified. In addition to the commercial infrastructure, Madeira Beach also was observed to have four marinas, including a public marina with over 90 slips, and numerous recreational support industries exist, such as bait and tackle shops, recreational boat yards, and other related businesses. The community continues to hold a Seafood Festival in October.

Table 3.9. Fishing Infrastructure and Services Observed in Madeira Beach in 2003

Infrastructure or Service	Quantity
Air fill stations (diving)	2
Boat yards/ Boat builders (recreational/commercial)	3
Churches with maritime theme	1
Docking facilities (commercial)	4
Fishing Gear, Electronics, Welding, and other repair	4 (2com/2 rec)
Fishing associations (recreational/commercial)	1 (com)
Fish processors, Wholesale Fish House	5
Fisheries research laboratories	0
Fishing monuments/ festivals	1
Fishing pier	0
Hotels/Inns (dockside)	Many
Marine railways/haul out facilities	0
Museums—fishing/marine-related	0
Net makers	0
NMFS or state fisheries office (port agent, etc.)	0
Public boat ramps	2
Recreational docks/marinas	4
Bait & Tackle/fishing supplies	5
Recreational Fishing Tournaments	0
Sea Grant Extension office	0
Seafood restaurants	Many
Seafood retail markets	2
Trucking operations	1
Site-seeing/pleasure tours	7+
Charter/Head Boats	3+
Commercial Boats	40

From 2004-2007, in total, approximately 7.5 million pounds of SWG species, valued at approximately $17.4 million (nominal dollars), approximately 1.4 million pounds of DWG, valued at approximately $3.7 million (nominal dollars), and approximately 604,000 pounds of tilefish, valued at approximately $745,000 (nominal dollars) were landed in Madeira Beach. Across all these species, landings (pounds) recorded in Madeira Beach were over twice the total for the community with second largest total, Panama City, with approximately 9.6 million pounds and 4.7 million pounds, respectively. A 2000 assessment identified 26 federal commercial permits with physical addresses located in Madeira Beach.

Panama City, Florida (incorporated, 2000 pop. 36,417)

Panama City is located on St. Andrews Bay just inland from the Gulf in the central Panhandle region. The 2000 census enumerated 36,417 persons in Panama City, up from 34,378 in 1990. More than 6,700 residents are employed at neighboring Tyndal Air Force Base. The U.S. Navy maintains a 648-acre Coastal Systems Station in the area, and employs approximately 2,200 persons, many of whom reside in Panama City. Many residents are employed in positions associated with regional commerce and government.

Table 3.10 provides 1990 and 2000 demographic data for Panama City. Panama City exhibited a decline in the proportion of the population that reported their occupation under farming, fishing, and forestry, decreasing from 1.5 percent of the population in the 1990 census to 0.5 percent in 2000. The education level increased over this period, while the unemployment rate declined. The proximity to military facilities as well as serving as a significant vacation destination are likely significant factors in local employment. Nevertheless, current economic conditions have likely reduced employment opportunities.

Table 3.10. Panama City Demographics for 1990 and 2000

	1990	**2000**
Total population	34,378	36,417
Gender Ratio M/F (Number)	16,094/18,284	17,683/18,734
Age (Percent of total population)		
Under 18 years of age	24.5	23.0
18 to 64 years of age	58.5	61.1
65 years and over	17.0	15.9
Ethnicity or Race (Number)		
White	25,954	26,819
Black or African American	7,500	7,813
American Indian and Alaskan Native	215	231
Asian	583	564
Native Hawaiian and other Pacific Islander	--	28
Some other race	126	274
Two or more races	--	688
Hispanic or Latino (any race)	460	1,060
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	12.1	6.7
Percent high school graduate or higher	70.3	79.2
Percent with a Bachelor's degree or higher	16.7	18.9
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	5.3	7.2
Percent who speak English less than very well	1.9	2.0
Household income (Median $)	26,629	31,572
Poverty Status (Percent of population with income below poverty line)	19.6	17.2
Percent female headed household	23.0	15.4
Home Ownership (Number)		
Owner occupied	8,193	8,565
Renter occupied	5,860	6,254
Value Owner-occupied Housing (Median $)	49,800	75,800
Monthly Contract Rent (Median $)	279	526
Employment Status (Population 16 yrs and over)		
Percent in the labor force	58.6	56.4
Percent of civilian labor force unemployed	8.0	5.8
Occupation (Percent in workforce)**		
Management, professional, and related occupations	--	32.2
Service occupations	--	20.8
Sales and office occupations	--	27.7
Farming, fishing, and forestry occupations	1.5	0.4
Construction, extraction, and maintenance occupations	--	8.6
Production, transportation, and material moving occupations	--	10.4

Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	1.5	0.5†
Manufacturing	7.7	7.0
Percent government workers	20.4	18.6
Commuting to Work (Workers 16 yrs and over)		
Percent in carpools	12.5	13.7
Percent using public transportation	0.2	0.7
Mean travel time to work (minutes)	--	18.6
Percent worked outside of county of residence	1.8	3.3

**Differences in the types of data the U.S. Census Bureau used to generate Occupation and Industry percentages in 1990 and 2000 preclude valid comparisons between those census years.
†Year 2000 figures include mining in this group; 1990 figures do not. Mining includes the offshore oil industry workforce.

Table 3.11 provides fishing infrastructure information for Panama City for 2008. This information was based on previous information provided in IAI (2005), but was updated through contacts with port agents for a subsequent amendment for the red snapper fishery. In 2003, four commercial docking facilities, six wholesale fish processors, over 20 retail seafood markets, and over 100 commercial vessels were identified. In addition to the commercial infrastructure, Panama City also was observed to have 28 recreational docks or marinas, and numerous recreational support industries, including 108 bait and tackle shops, and hosts several recreational fishing tournaments each year.

Table 3.11. Fishing Infrastructure in Panama City, Florida as of January 2008.

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+

From 2004-2007, in total, approximately 3.8 million pounds of SWG species, valued at approximately $9.4 million (nominal dollars), approximately 707,000 pounds of DWG, valued at approximately $1.9 million (nominal dollars), and approximately 242,000 pounds of tilefish, valued at approximately $367,000 (nominal dollars) were landed in Panama City. A 2000 assessment identified 139 federal commercial permits with physical addresses located in Panama City.

St. Petersburg, Florida (incorporated, 2000 pop. 248,232)

St. Petersburg is situated just west of Tampa on the Pinellas Peninsula and is part of a 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.

Table 3.12 provides 1990 and 2000 demographic data for St. Petersburg. St. Petersburg exhibited a decline in the proportion of the population that reported their occupation under farming, fishing, and forestry, decreasing from 1.5 percent of the population in the 1990 census to 0.1 percent in 2000. The education level increased over this period, and the unemployment rate remained stable. Despite its position within the large metropolitan area, however, current economic conditions have likely reduced employment opportunities relative to earlier years.

Table 3.12. St. Petersburg Demographics for 1990 and 2000

	1990	**2000**
Total population	238,629	248,232
Gender Ratio M/F (Number)	110,824/127,805	118,411/129,821
Age (Percent of total population)		
Under 18 years of age	19.8	21.5
18 to 64 years of age	58.0	61.1
65 years and over	22.2	17.4
Ethnicity or Race (Number)		
White	186,125	177,133
Black or African American	46,726	55,502
American Indian and Alaskan Native	596	769
Asian	3,967	6,640
Native Hawaiian and other Pacific Islander	--	130
Some other race	1,215	2,661
Two or more races	--	5,397
Hispanic or Latino (any race)	6,255	10,502
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	8.2	4.9

Percent high school graduate or higher	75.1	81.9
Percent with a Bachelor's degree or higher	18.6	22.8
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	8.8	11.7
Percent who speak English less than very well	3.2	4.9
Household income (Median $)	23,577	34,597
Poverty Status (Percent of population with income below poverty line)	13.5	13.3
Percent female headed household	21.3	13.8
Home Ownership (Number)		
Owner occupied	105,703	69,626
Renter occupied	66,577	40,037
Value Owner-occupied Housing (Median $)	63,000	81,000
Monthly Contract Rent (Median $)	353	567
Employment Status (Population 16 yrs and over)		
Percent in the labor force	59.2	62.4
Percent of civilian labor force unemployed	5.2	5.2
Occupation (Percent in workforce)**		
Management, professional, and related occupations	--	34.0
Service occupations	--	16.7
Sales and office occupations	--	28.3
Farming, fishing, and forestry occupations	1.3	0.1
Construction, extraction, and maintenance occupations	--	8.2
Production, transportation, and material moving occupations	--	12.7
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	1.5	0.1†
Manufacturing	12.8	10.1
Percent government workers	12.7	12.1
Commuting to Work (Workers 16 yrs and Over)		
Percent in carpools	13.2	11.8
Percent using public transportation	3.0	2.9
Mean travel time to work (minutes)	--	22.9
Percent worked outside of county of residence	10.2	13.4

**Differences in the types of data the U.S. Census Bureau used to generate Occupation and Industry percentages in 1990 and 2000 preclude valid comparisons between those census years.
†Year 2000 figures include mining in this group; 1990 figures do not. Mining includes the offshore oil industry workforce.

Table 3.13 provides fishing infrastructure information for St. Petersburg for 2003. In 2003, one commercial docking facility, four wholesale fish processors, five retail seafood markets, and 12 commercial vessels were identified. One processor serves as a fish house with dockages reserved for five to six independent Vietnamese grouper fishermen and five or six shrimpers. The other processors are situated in landlocked areas and receive products trucked from fish houses or independent fishermen from adjacent communities like Madeira Beach and Tarpon Springs. St. Petersburg has not assigned an industrial area to enhance commercial fishing operations. In 2003, the total available commercial fishing dockage supported less than 15 spaces, with much of the waterfront area occupied by hotels, homes, marinas, and tourist attractions. The municipal marina is largely occupied by sailboats, but approximately ten public boat ramps serve recreational fishing and other recreational interests.

Table 3.13. Fishing Infrastructure and Services Observed in St. Petersburg in 2003

Infrastructure or Service	Quantity
Air fill stations (diving)	0
Boat yards/ Boat builders (recreational/commercial)	3 (builders)
Churches with maritime theme	0
Docking facilities (commercial)	1
Fishing Gear, Electronics, Welding, and other repair	3 (rec)
Fishing associations (recreational/commercial)	0
Fish processors, Wholesale Fish House	4
Fisheries research laboratories	2
Fishing monuments/ festivals	0
Fishing pier	1
Hotels/Inns (dockside)	10
Marine railways/haul out facilities	0
Museums—fishing/marine-related	0
Net makers	0
NMFS or state fisheries office (port agent, etc.)	1
Public boat ramps	7
Recreational docks/marinas	10
Bait & Tackle/fishing supplies	6
Recreational Fishing Tournaments	0
Sea Grant Extension office	0
Seafood restaurants	Many
Seafood retail markets	5
Trucking operations	0
Site-seeing/pleasure tours	0
Charter/Head Boats	5
Commercial Boats	12

From 2004-2007, in total, approximately 3.6 million pounds of SWG species, valued at approximately $8.1 million (nominal dollars), approximately 405,000 pounds of DWG, valued at approximately $990,000 (nominal dollars), and approximately 111,000 pounds of tilefish, valued at approximately $107,000 (nominal dollars) were recorded by processors located in St. Petersburg. A 2000 assessment identified 69 federal commercial permits with physical addresses located in St. Petersburg.

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).

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 was greater than or equal to 1.2 times the state average, then the community was considered an area of potential EJ concern. Census data for the year 2000 was used. The 2000 estimate of the minority (interpreted as non-white) population was 34.6 percent, while 12.5 percent of the total population was estimated to be below the poverty line. These values translate in EJ thresholds of approximately 41.5 percent and 15 percent, respectively.

Based on the demographic information provided above for each community, no potential EJ concern is evident for Madeira Beach, the poverty rate for Panama City (approximately 17 percent) exceeds the EJ threshold, and the minority rate for St. Petersburg (approximately 46 percent) exceeds the EJ threshold. Additional discussion on potential EJ concerns will be provided in Section 4.4.

3.4 Administrative Environment

3.4.1 Federal Fishery Management

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

Responsibility for federal fishery management decision-making is divided among the 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 MSFCMA 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 (APA), 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 USCG, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the MSFCMA. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee have developed a five-year "Gulf Cooperative Law Enforcement Strategic Plan - 2006-2011."

3.4.2 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 2004a).

4.0 ENVIRONMENTAL CONSEQUENCES

This section provides the scientific and analytical basis for comparing the alternatives described in Section 2.0. The direct, indirect, and cumulative effects on the physical, biological, social, economic, and administrative environments for each management alternative are described below. This section also describes: 1) Any unavoidable adverse effects resulting from the proposed action, 2) the relationship between short-term uses of man's environment and long-term productivity, and 3) any irreversible or irretrievable commitments of resources resulting from implementation of the proposed action.

CEQ regulations (40 CFR 1508.8) define direct effects as those "which are caused by the action and occur at the same time and place." Indirect effects are defined as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Cumulative effects are defined as "impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions."

This temporary action could be effective for a maximum of 366 days (180 days + one additional 186 day extension) but may be terminated at anytime. Because of the short duration of this action, all effects on the environment are expected to be short-term. The following describes direct and indirect effects on the environment during the time period this temporary action would potentially be effective. Such effects would be expected to continue over the long-term if the Council establishes similar permanent management measures after this temporary action. The effects would be expected to discontinue if the rule was terminated at an earlier date.

Alternative 1, no action, would allow the bottom longline fishery to proceed in waters greater than 20 fathoms in the eastern Gulf year-round unless existing quotas have been met.

Preferred Alternative 2 would prohibit bottom longline gear in the eastern Gulf in waters less than 50 fathoms. Currently, longlines can only be used at depths greater than 20 fathoms (36.6 m) east of 85°30' longitude. West of this line, longlines can only be used at depths greater than 50 fathoms. All but one sea turtle taken during the NMFS observer studies were on sets at 50 fathoms or less (NMFS 2008; Figure 4.2).

Actual implementation would be through a series of point-to-point lines following the approximate isobath, similar to the existing seaward coordinates of the longline and buoy gear restricted area (Figure 2.1). The new line would apply only to bottom longline gear. Buoy gear has not been in use in recent years and the 2005 opinion did not analyze sea turtle takes for this gear. Buoy gear does not have the same potential for sea turtle mortality as longline gear; it is a floating device that could allow a hooked sea turtle to reach the surface.

Preferred Alternative 2 would only apply to the reef fish fishery. Longline fishing would not be prohibited for HMS, such as sharks. Because some reef fish fishers have both vertical line and longline gear on board their vessels, and vessels with longline gear would need to transit the closed area to reach shore, stowage of the longline gear while possessing reef fish in the closed area would be required. Stowage means all gangions and hooks are disconnected and stowed

below deck. **Alternative 2, Option a** would prohibit bottom longline gear targeting reef fish in water of all depths in the eastern Gulf when the DWG and tilefish fisheries are closed. If the emergency rule is extended past December 31, 2009, the DWG and tilefish fisheries would still open again on January 1, 2010, and longline fishing would be allowed in waters greater than 50 fathoms. Under **Option b** fishers could continue to fish in waters deeper than 50 fathoms for SWG (e.g., gag) or other reef fish even after the DWG and tilefish fisheries have closed.

Alternative 3 would prohibit all bottom longline fishing for reef fish in the eastern Gulf. Bottom longline gear would still be allowed in the western Gulf in waters greater than 50 fathoms.

4.1. Direct and Indirect Effects on the Physical Environment

Impacts of these alternatives on the physical environment will depend on the resulting reduction in the level fishing effort in the commercial reef fish fishery. The commercial bottom longline fishery targets bottom dwelling reef fish species. Specifics on the biology and habitat utilization of reef fish are detailed in section 3.2.1. Longline gear is used to target SWG and DWG, as well as red snapper and other reef fish. Consequently, the close proximity of the deployed longline gear to the bottom, adds to interactions with the habitat. Prior to 2007, longline gear accounted for 36 percent of the commercial gag landings and 59 percent of the commercial red grouper landings. Vertical line gear accounted for 27 percent of the commercial red grouper landings and nearly all of the recreational red grouper landings. Fishing effort by the SWG longline fleet is most concentrated in water depths between 20 and 50 fathoms; only 3 percent of red grouper and 4 percent of gag caught during the reef fish observer study were from water of 50 fathoms or deeper. Economic impacts on the fishermen are discussed in section 4.3.

Alternative 1 would maintain the existing levels of impact on the physical environment. Longline gear comes 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 direct observations of longline fishing from submersibles, High (1998) observed in a halibut longline fishery off of Alaska that the longline gear on the bottom would sometimes take extreme angle turns as currents, snags, and hooked fish would affect its location. Longlines were observed in contact with or snagged on a variety of objects including coral, and upon retrieval, corals were brought to the surface. In contrast, a submersible study by Grimes et al. (1982) on the tilefish longline fishery off of New Jersey, there was no evidence that longlines shifted significantly even when set in currents. This was attributed to the use of anchors at the ends and weights placed along the line.

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). If vertical line gear is lost or improperly disposed of, it can entangle marine life (Hamilton 2000; Barnette, 2001). Entangled gear often becomes fouled with algal growth. If this gear becomes entangled on corals, the algae can eventually overgrow and kill the coral.

Anchor damage by vertical line fishing vessels, particularly by the recreational fishery, is also potentially damaging. 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 reef fish occurs.

Alternative 2 would eliminate the commercial bottom longline fishing effort in the waters ranging in depth from 20 to 50 fathoms. The impact on the physical environment from longline gear would be decreased; however, a shift in effort from longline to vertical line gear would still create physical impacts, but these would likely be less than those incurred by longline gear. The spatial shift of the longline gear to water depths greater than 50 fathoms may increase the impacts in depths greater than 50 fathoms. **Option a** would decrease the effort and potential effects in water depths greater than 50 fathoms by prohibiting the gear after the DWG and tilefish fisheries are closed. **Option b** would allow the continued use of the gear in water depths greater than 50 fathoms which may result in an increase of effort in the deepwater resulting in more impacts to the physical environment.

Alternative 3 would eliminate the commercial bottom longline fishing effort and in turn the physical environment impacts in the eastern Gulf to a minimal level. However, a shift in effort from longline to vertical line gear may occur and result in increased impacts associated with the vertical gear, but these impacts would likely be less than those incurred by longline gear.

4.2 Direct and Indirect Effects on the Biological/Ecological Environment

Sea Turtles

Direct effects of the Gulf reef fish fishery on sea turtles occur when sea turtle interactions with fishing gear result in the incidental capture, injury, or mortality. A variety of factors may affect the likelihood and frequency of sea turtles being caught in reef fish bottom longline gear. The spatial overlap between fishing effort and sea turtles is one such factor. The more abundant sea turtles are in a given area where the fishing gear is set, the likely greater probability a sea turtle will be incidentally caught on the gear.

The distribution of sea turtles in the eastern Gulf is presented in several studies. A satellite telemetry study (Figure 4.1) conducted from 1998-2002 tagged 24 female loggerhead sea turtles (Schroeder et al., manuscript in prep). The highest concentration of time spent by the sea turtles was in water depths between 20 fathoms and 40 fathoms (Figure 4.2). Migratory tracks show loggerhead sea turtles moving along shore, usually in depths less than 50 fathoms, along the entire west coast of Florida (FWC letter to Crabtree, December 9, 2008). Some migratory tracks also show loggerhead sea turtles in much deeper water while traversing the Gulf. However, 89 percent of foraging destinations of female loggerhead sea turtles were in depths of 50 fathoms or less (A.D. Tucker, Mote Marine Laboratory unpublished data). The aerial survey study (NMFS in prep) observed sea turtles during the summer and winter of 2007. For the sea turtles observed in water depths greater than 20 fathoms and east of Cape San Blas, Florida (85^{o}30' W), the majority were found in water depths between 20 fathoms and 50 fathoms (Figure 4.2).

Loggerhead sea turtle encounter rates were generally higher in the summer (Figure 4.3) than the winter (Figure 4.4) in water depths between 20 fathoms and 60 fathoms. Additional studies by Braun-McNeill and Epperly (2002), and Davis et al. (2000) present the distribution of loggerhead sea turtles in the Gulf based on Marine Recreational Fishery Statistics Survey and aerial survey, respectively. These studies provide spatial distributions of loggerhead sea turtles that may indicate a spatial correlation in the geographic extent of the population in the Gulf. The spatial correlation is important for estimating the probability associated with reducing sea turtle interactions with the bottom longline fishery through establishing closed areas.

Figure 4.1. Spatial frequency distribution of sea turtle satellite telemetry data from 1998-2002 (Schroeder et al., manuscript in prep) and SEFSC sea turtle take data from the longline observer study for 2006-2007 (NMFS 2008a). The depth contours are presented in meters (conversion: 1 meter = 0.5468 fathom). Using this conversion, 50 fathoms is approximately 91 meters in depth.

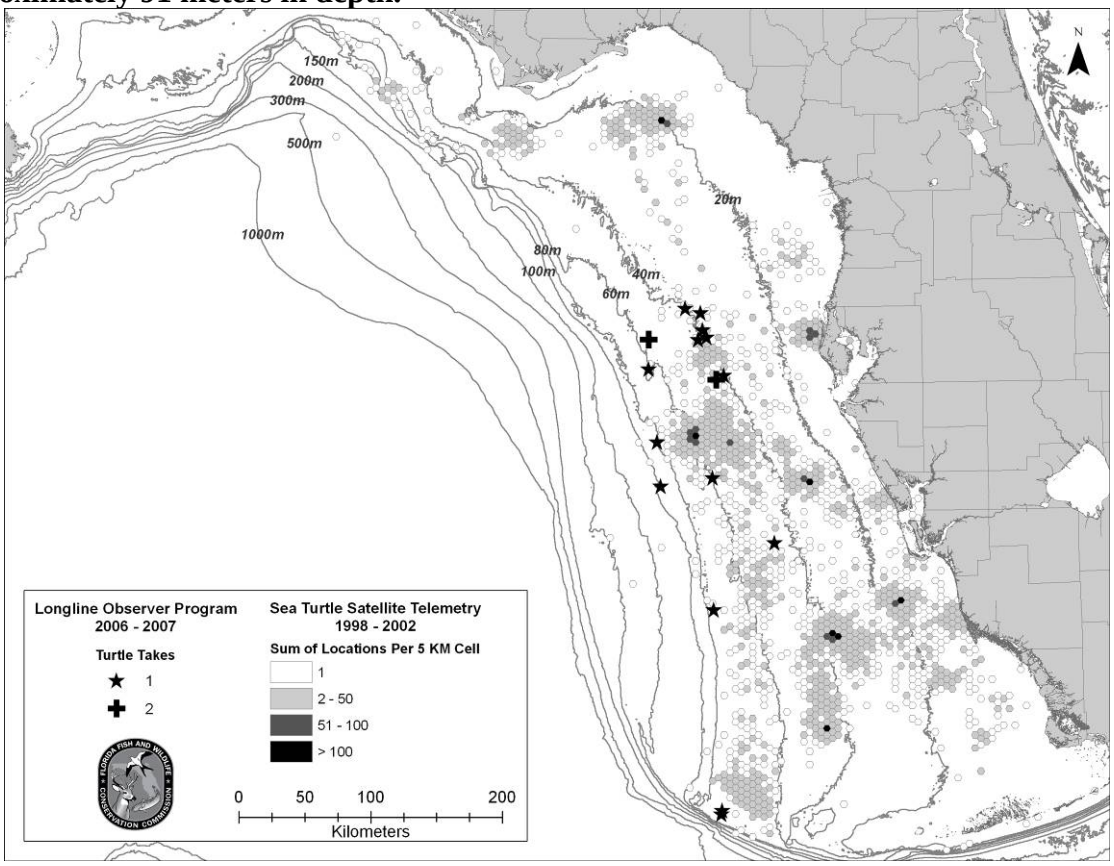


Figure 4.2. SEFSC sea turtle take data for 2006-2008 (NMFS 2009b) and sea turtle location data from the aerial survey study (NMFS in prep). The map shows the sea turtles observed in depths greater than 20 fathoms. The aerial surveys were conducted during the summer and winter 2007.

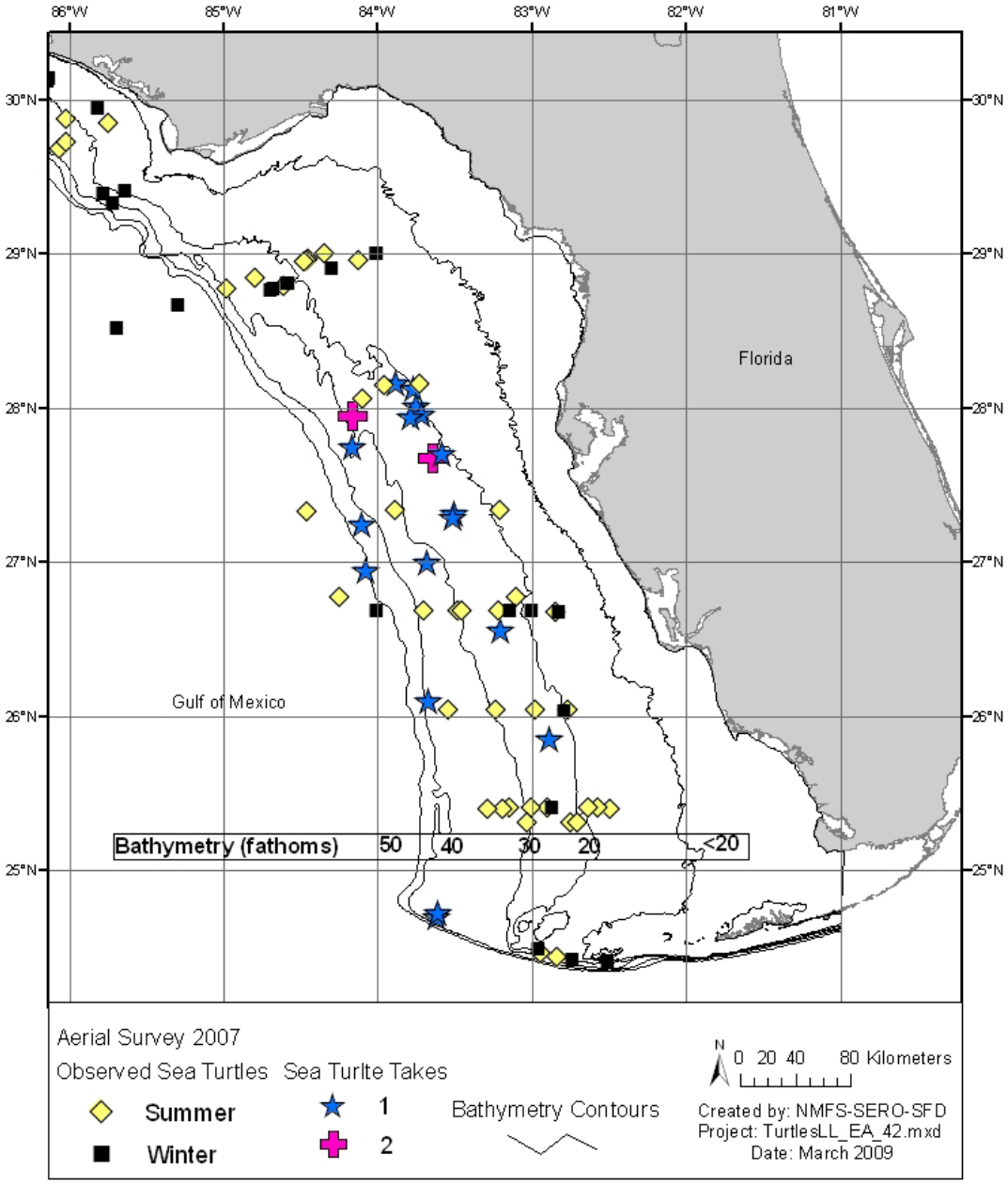


Figure 4.3. Loggerhead sea turtle encounter rate (number of sea turtles per km of aerial survey trackline) as a function of depth during the summer survey. Plots include (A) identified loggerheads, (B) loggerheads + all unidentified hardshells, and (C) loggerheads with apportioned hardshells based on neighborhood averaging (NMFS 2009c).

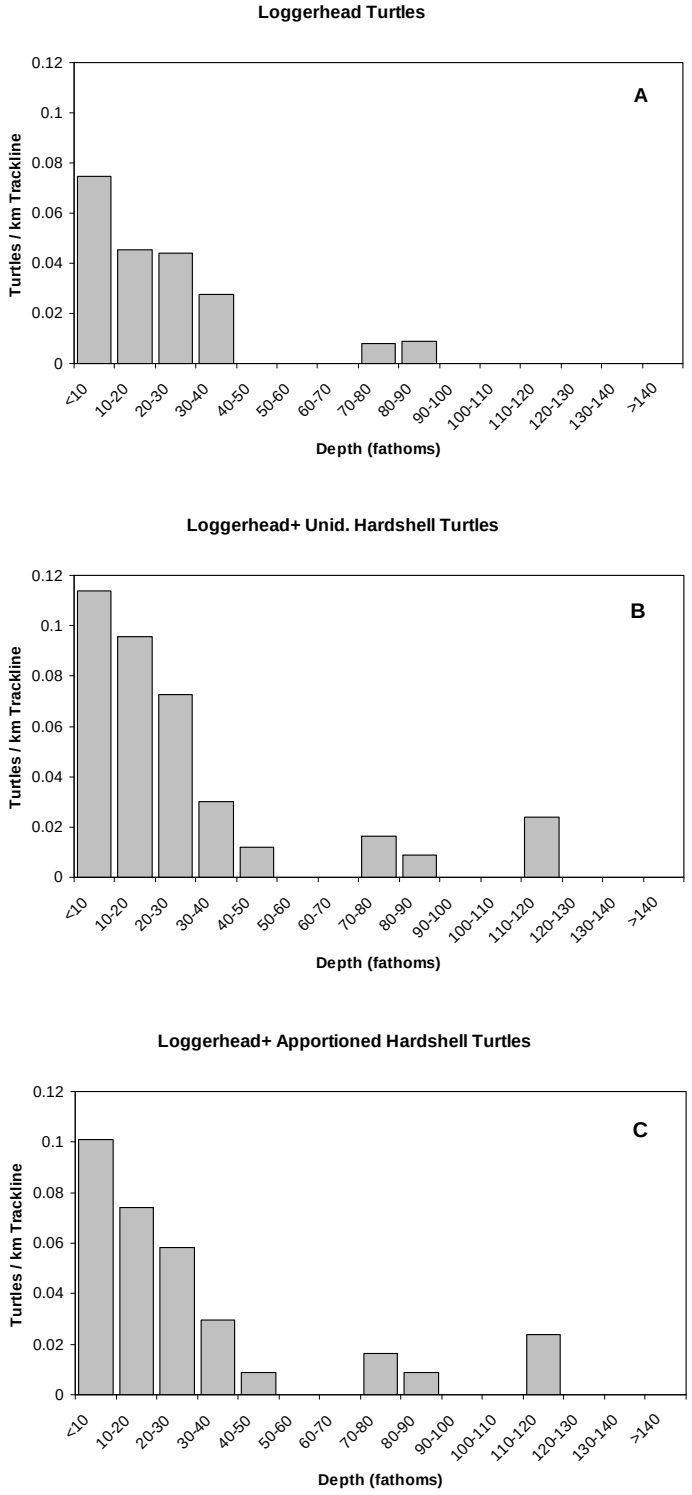
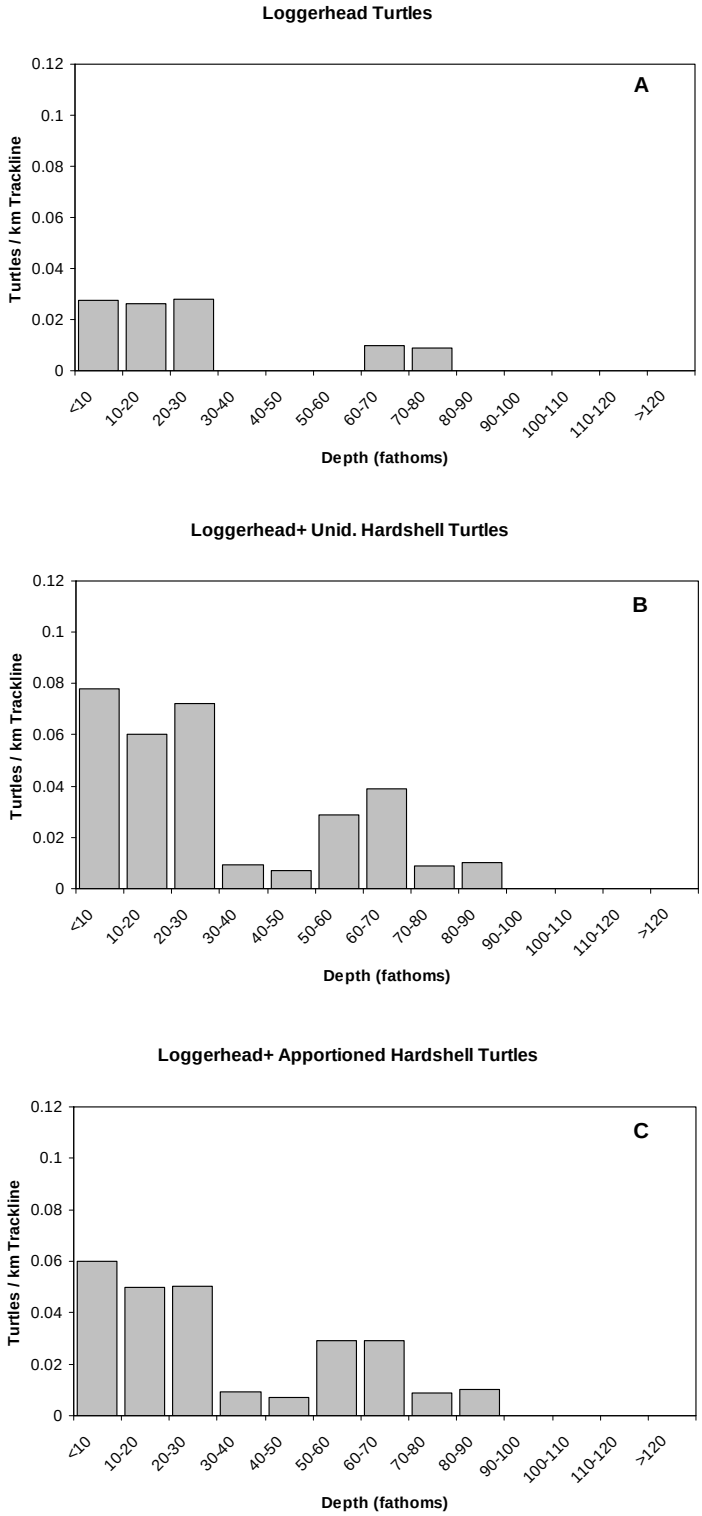


Figure 4.4. Loggerhead sea turtle encounter rate (number of sea turtles per km of aerial survey trackline) as a function of depth during the winter survey. Plots include (A) identified loggerheads, (B) loggerheads + all unidentified hardshells, and (C) loggerheads with apportioned hardshells based on neighborhood averaging (NMFS 2009c).



Based on the information provided by the best available research, the biological impacts on sea turtles will depend on the level fishing effort is reduced in the commercial reef fish fishery. If the Council chooses **Alternative 1,** no action, other actions would need to be taken to reduce sea turtle takes sufficiently to protect and conserve sea turtles.

Preferred Alternative 2 would close an area based on the 50-fathom depth contour. Currently, longlines can only be used at depths greater than 20 fathoms (36.6 m) east of 85°30' longitude (**Alternative 1)**. All but one sea turtle taken during the observer study (NMFS 2009b) were on sets at 50 fathoms or less, and 89 percent of sea turtles taken were on sets at 40 fathoms or less. The average fishing depth for observed sets that captured sea turtles was 28.5 fathoms, as opposed to an average fishing depth of 36.6 fathoms for all observed sets. The probability of interactions between the longline gear is increased in these depth ranges due to the diving behavior of sea turtles. Loggerhead sea turtles spend most of their time in the top 3 fathoms of water, but may dive to 100 fathoms (Spotila 2004).

An aerial survey by the SEFSC (NMFS in prep) documented sightings of sea turtles on the west Florida shelf. Of the sea turtles observed in depths greater than 20 fathoms, the concentrations of sea turtles were low in depths greater than 60 fathoms in winter (Figure 4.4) and in depths greater than 40 fathoms in summer (Figure 4.3). Distribution of longline fishing effort, based on is greatest between 20 fathoms and 50 fathoms (NMFS 2009a). The closure of areas based on these depths would displace the majority of the fishing effort. The shift in fishing effort may include a geographic and/or gear shift of effort. For **Preferred Alternative 2**, the probability of interactions with sea turtles would be reduced in waters less than 50 fathoms due to the reduction in overall fishing effort; however, the probability of interaction may either increase or decrease in waters greater than 50 fathoms depending on whether a geographic or gear effort shift occurs in the fishery. **Preferred Alternative 2, option a,** would further reduce the fishing effort in water depths greater than 50 fathoms and therefore decreasing the probability of interaction with sea turtles. **Alternative 2, option b,** may result in higher effort in water depths greater than 50 fathoms due to a geographic shift in effort of the longline fishery. In turn, this may increase the probability of interaction with sea turtles in deeper waters. Closed areas (**Preferred Alternative 2** and **Alternative 3**) may not reduce sea turtle takes if effort shifts to other areas where sea turtles are found. Therefore, if fishing effort shifts geographically to deeper water, sea turtle interactions could be reduced although probably not eliminated. Establishing a gear boundary in depths less than the 50 fathoms could be expected to shift bottom longline effort to areas beyond the boundary rather than actually reducing total effort, and in turn, may increase interactions with hardshell sea turtles in those deeper areas. Establishing a gear boundary in depths greater than the 50 fathoms would potentially interfere with the DWG fishery, and unduly restrict longline activity in areas where turtle interactions are much less frequent. Most hardshell sea turtles are found in depths less than 50 fathoms. Additionally, only one observed hardshell sea turtle take occurred in depths greater than 50 fathoms (NMFS 2009b). The development of long-term measures to reduce sea turtle bycatch may consider a gear boundary in depths less than 50 fathoms; however, without additional measures such as effort limitations, seasonal closures, or gear modifications, the currently anticipated reduction in hardshell sea turtle takes would not likely be sufficient to satisfy the legal mandates.

Alternative 3 would prohibit all bottom longline fishing for reef fish east of 85°30' (near Cape San Blas, Florida) starting immediately upon implementation of the emergency rule. The impact on sea turtles would include reduced takes by the bottom longline reef fish fishery from the decrease in fishing effort and elimination of gear. However, a shift in effort may cause an increase in sea turtle interactions in the vertical line fishery. Based on the observer data (NMFS 2009b), an area closure for the entire eastern Gulf would encompass the area where 100 percent of the sea turtles were taken by the reef fish bottom longline fishery and would displace nearly all of the fishing effort.

Reef Fish

The biological impacts under **Alternative 1** would be the same as currently realized in the fishery. The analysis below is based on data from logbooks submitted to the SEFSC. Data are from trips in statistical areas 1-8 (eastern Gulf); area 8 extends west of 85°30', so the analysis may overestimate the expected effects of the proposed alternatives. The analysis uses data from 2005-2007 because logbook data is incomplete for 2008. During 2005-2007, longline landings in the eastern Gulf averaged 77 percent groupers and tilefishes; in 2008, these species made up 93 percent of longline landings (through September 15). Therefore, most of the analysis focuses on the grouper and tilefish components of the reef fish fishery.

During 2005-2007, an annual average of 122 vessels made an average of 1,261 trips that used bottom longline gear and landed SWG (at least one record in the logbook) in the eastern Gulf. SWG include red grouper, black grouper, gag, rock hind, red hind, yellowmouth grouper, yellowfin grouper, and scamp. In 2007, red grouper dominated the commercial longline SWG landings by weight (78 percent; NMFS 2009a).

Restricting the use of longline gear to waters deeper than 50 fathoms (**Preferred Alternative 2**) should reduce effort in the reef fish bottom longline fishery. Reduced effort would reduce direct fishing mortality of many target species as well as discard mortality of non-target species and regulatory discards. Longline landings make up 71 percent of the total commercial red grouper landings (NMFS 2009a) and have an estimated release mortality of 45 percent versus 10 percent for vertical lines (SEDAR 12 2007). Thus, reductions in longline effort could reduce both directed fishing mortality and release mortality for red grouper even if vertical line fishing were to increase.

Fishing effort by the SWG longline fleet is most concentrated in water depths between 20 and 50 fathoms. Logbooks show 82 percent of longline trips landing SWG during 2005-2007 were in less than 50 fathoms of water (NMFS 2009a). During the 2006-2008 NMFS reef fish observer study, 96 percent by number of gag and red grouper were caught on sets in less than 50 fathoms of water. During reef fish trips observed in the 2006-2007 NMFS shark bottom longline observer study, 99 percent by number of gag and red grouper were caught on sets in less than 50 fathoms of water (Table 4.1). Logbooks from the same time period show 95 percent by weight of SWG longline landings were from depths less than 50 fathoms (NMFS 2009a).

Table 4.1 Numbers of red grouper and gag caught on observed trips during two observer programs. Data for the Shark Bottom Longline Observer Program includes only trips when reef fish were targeted. The highlighted cells show the cumulative percent of catch in waters less than 50 fathoms.

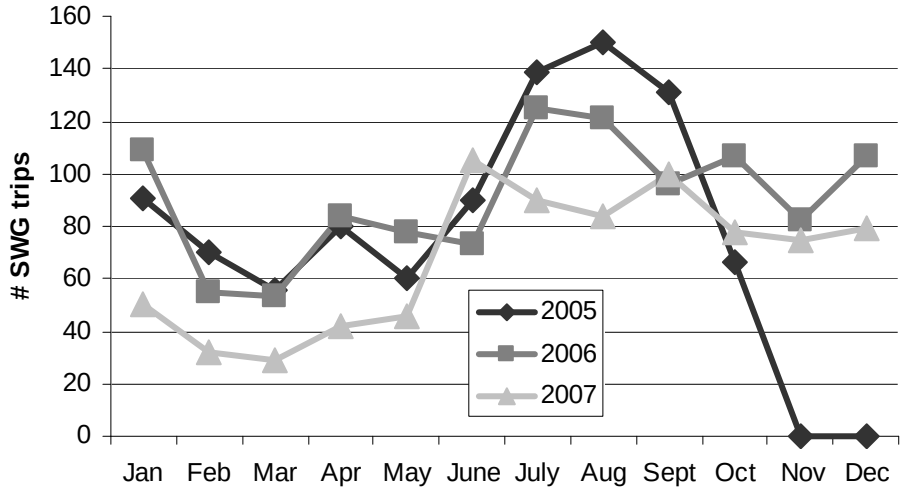
	Reef Fish Observer Program				Shark Bottom Longline Observer Program			
Depth (fathoms)	Red Grouper	Gag	Percent	Cumulative Percent	Red Grouper	Gag	Percent	Cumulative Percent
20-30	6900	80	78.8	78.8	1408	36	54.9	54.9
30-40	1208	68	14.4	93.2	943	184	42.8	97.7
40-50	177	32	2.4	**95.6**	19	11	1.1	**98.9**

50-60	161	88	2.8	98.4	0	17	0.6	99.5
≥ 60	101	42	1.6	100	0	13	0.5	100
Total	8547	310	100		2370	261	100	

Source: Reef Fish Observer Program database, Southeast Fisheries Science Center

The emergency rule associated with this environmental assessment is expected to be implemented in May or June and to last up to six months or may be extended by up to 186 days. In 2006-2007, 58 percent of SWG longline trips were during May-October and 60 percent of SWG longline trips were during June-November (Figure 4.5; NMFS 2009a). During the same years, 51 percent of SWG longline landings were in May-October and 53 percent were in June-November (NMFS 2009a). In 2005, the SWG fishery closed in October because the quota was met.

Figure 4.5 Number of trips landing shallow water grouper with longline gear in the eastern Gulf by month (NMFS 2009a). Note: In 2005, the shallow water quota was met and the fishery closed in October.



Some fishermen that currently use bottom longline gear may switch to vertical line gear if waters less than 50 fathoms are closed to longlining. The amount of potential effort shift cannot be estimated at this time. Table 4.2 shows the expected reductions in SWG landings given various levels of shift in effort (NMFS 2009a). These reductions were calculated as follows:

$$\text{Percent Reduction} = 1 - \frac{\bar{L}_{\text{all gears}} - \bar{L}_{\text{longline(<50 fathoms)}} + \delta * \bar{E}_{\text{longline(<50 fathoms)}} * \dfrac{\bar{L}_{\text{verticalline(<50 fathoms)}}}{\bar{E}_{\text{verticalline(<50 fathoms)}}}}{\bar{L}_{\text{all gears}}}$$

where $\bar{L}$ is mean annual landings (total weight in lbs) in the eastern Gulf from 2005 – 2007, δ is a scalar proportional effort shift, and $\bar{E}$ is mean annual effort (days at sea) in the eastern Gulf from 2005-2007.

Table 4.2. Percent change (relative to 2006-2007 average) in expected shallow water grouper landings given prohibition of bottom longline gear in less than 50 fathoms, and some proportional effort shift to vertical line gear (handline, bandit rig) in the eastern Gulf (NMFS 2009a). Negative numbers are reductions, positive numbers are increases.

	Proportional Effort Shift				
	0.2	**0.4**	**0.6**	**0.8**	**1.0**
Percent Change in Landings					
SWG	-48.2	-43.9	-39.6	-35.3	-31.0
Gag	-24.0	-18.1	-12.3	-6.4	-0.6
Red Grouper	-48.3	-44.5	-40.7	-36.9	-33.1

Although total SWG landings would be reduced, some species, such as gag, have a higher catch per unit effort for vertical lines, and therefore may show lower reductions in landings. Based on regulations to be implemented soon under Amendment 30B, if 80 percent of either the gag or the red grouper quota is reached, and 100 percent of the quota is projected to be reached prior to the end of the fishing year, a 200-pound trip limit will be implemented for the applicable species. If 100 percent of any one of the three quotas is reached, the entire SWG commercial fishery will close for the remainder of the fishing year. During 2006-2007, red grouper landings averaged 74 percent of the red grouper quota. A gag quota was implemented in 2009 at 1.32 MP; landings from 2006-2007 averaged 92 percent of this amount. Thus, if the fishery is prosecuted similarly in 2009 to previous years, 80 percent of the gag quota could be reached before the end of the year; however, even with a 100 percent shift in effort, the full quota would not be projected to be reached. Therefore, the trip limit would not be implemented and no closures would take place.

If longline fishermen do not change to vertical line gear, they may shift effort to the DWG or tilefish components of the reef fish fishery. However, the DWG fishery reached its quota and closed in June during the 2005-2007 fishing seasons. If the DWG fishery is prosecuted similarly in 2009, at most that fishery would be open only one month after the emergency rule was implemented. In recent years, many longline fishermen have targeted DWG early in the year, and then switched to SWG after the deepwater fishery met its quota and closed. However, fishermen anticipating the closure of shallow water to longline fishing this year may alter behavior and target SWG earlier in the year, assuming they could then target DWG while the emergency rule is in effect. Quota monitoring data for January-February 2009 show some indication that this effort shift may be occurring; deepwater grouper landings were 29 percent less than landings during the same months in 2008.

Effort could also shift to other species besides groupers. During 2005-2007, 23 percent of fish landed from longline trips were species other than grouper or tilefish species (NMFS 2009a). Three reef fish species outside the grouper and tilefish complex are undergoing overfishing and could be impacted by the emergency rule. Red snapper is under an individual fishing quota program that limits effort and would prevent increases in landings. During 2005-2007, 16 percent of greater amberjack and 13 percent of gray triggerfish were landed with longline gear. Gray triggerfish occur mainly in depths less than 50 fathoms (SEDAR 9 2006c). Greater amberjack occur in a wide range of depths, but as pelagic feeders would not be expected to interact with longline gear except in relatively shallow water or as gear is deployed or retrieved in deeper water. The highest landings are for vertical line gear in 30-40 fathoms for greater

amberjack (30 percent of total) and in 20-40 fathoms for gray triggerfish (64 percent of total). Thus, the catch per unit effort of both these species is substantially higher for vertical line gear than for longline gear (NMFS 2009a). For that reason, any shift in effort from longline to vertical line gear could result in increases in catch of these species (Table 4.3). A substantial increase in catch could threaten rebuilding plans for these species; however, in 2005 more than a quarter of vessels landing greater amberjack and more than half of vessels landing gray triggerfish reported less than 100 pounds of landings of those species (NMFS 2008). This implies that a relatively large number of vessels either operate on a part time basis catching greater amberjack and gray triggerfish, or these species are sources of secondary revenue for operators primarily targeting other reef fish. Landings did not exceed quotas for either of these species in 2008 (first year of quotas), and catch limits and accountability measures for these species should be sufficient to prevent over-harvest. Potential increases with effort shift were calculated as follows:

$$\text{Percent Reduction} = 1 - \frac{\bar{L}_{\text{all gears}} - \bar{L}_{\text{longline (<50 fathoms)}} + \delta * \bar{E}_{\text{longline (<50 fathoms)}} * \dfrac{\bar{L}_{\text{vertical line (<50 fathoms)}}}{\bar{E}_{\text{vertical line (<50 fathoms)}}}}{\bar{L}_{\text{all gears}}}$$

where $\bar{L}$ is mean annual landings (total weight in lbs) in the eastern Gulf from 2006 – 2007, δ is a scalar proportional effort shift, and $\bar{E}$ is mean annual effort (days at sea) in the eastern Gulf from 2006-2007.

Table 4.3. Percent change in expected greater amberjack and gray triggerfish landings given prohibition of bottom longline gear in less than 50 fathoms, and some proportional effort shift to vertical line gear (handline, bandit rig) in the eastern Gulf (NMFS 2009a). Negative numbers are reductions, positive numbers are increases.

	Proportional Effort Shift				
	0.2	**0.4**	**0.6**	**0.8**	**1.0**
Percent Change in Landings					
Greater Amberjack	+3.2	+16.4	+29.6	+42.8	+56.0
Gray Triggerfish	+6.4	+16.9	+27.4	+37.9	+48.4

Preferred Alternative 2, Option a would prevent fishing for SWG or other reef fish in waters greater than 50 fathoms when the deepwater and tilefish fisheries are closed. In 2005-2007, only 5 percent of SWG longline landings were from waters of 50 fathoms or greater (NMFS 2009a). These landings were probably incidental catch by vessels targeting deep water species. If **Option b** is chosen, fishermen on longline vessels might target SWG in deeper water if they cannot fish for deepwater species or for SWG in shallower water. Because they would be fishing in areas where DWG and tilefishes are normally found, high catch levels of these species are to be expected while targeting SWG, increasing the amount of discards (and mortality rate) of DWG and tilefish.

Alternative 3 would prohibit all bottom longline fishing in the eastern Gulf, including waters deeper than 50 fathoms. Thus the impacts would be the same as those for **Preferred Alternative 2**, plus additional impacts on the DWG and tilefish components of the fishery. Longline landings of all grouper and tilefish species for 2005-2007 averaged 5,027,200 pounds. During the same years, 54 percent of all grouper and tilefish longline trips were during May-

October and 48 percent of longline trips were during June-November (NMFS 2009a). In each of those years, the DWG fishery closed by the end of June. If the deepwater fishery is prosecuted similarly in 2009, at most that fishery would be closed down two months early. The tilefish fishery closed on progressively earlier dates during those same years; in 2005 it closed in November, in 2006 it closed in July, and in 2007 it closed in April (the tilefish fishery was closed prematurely and subsequently reopened in 2008, so comparisons are not appropriate). If 2009 follows the same trend, the emergency rule should have no impact on the tilefish fishery as that fishery would be closed by the implementation date.

Under **Alternative 3**, effort shift to vertical line gear or non-reef fish species would be greater than under **Preferred Alternative 2** because the options for bottom longliners would be even fewer. Thus species undergoing overfishing could experience an even greater negative impact. Further, very few DWG and tilefish are caught using vertical lines. The impacts of potential effort shift on select reef fish were calculated as follows:

$$\text{Percent Reduction} = 1 - \frac{\bar{L}_{\text{all gears}} - \bar{L}_{\text{longline(all depths)}} + \delta * \bar{E}_{\text{longline(all depths)}} * \frac{\bar{L}_{\text{vertical line (all depths)}}}{\bar{E}_{\text{vertical line (all depths)}}}}{\bar{L}_{\text{all gears}}}$$

where $\bar{L}$ is mean annual landings (total weight in lbs) in the eastern Gulf from 2005 – 2007, δ is a scalar proportional effort shift, and $\bar{E}$ is mean annual effort (days at sea) in the eastern Gulf from 2005-2007.

Table 4.4. Percent change in landings given prohibition of bottom longline gear in the eastern Gulf, and some proportional effort shift to vertical line gear (handline, bandit rig) in same region (NMFS 2009a). Negative numbers are reductions, positive numbers are increases.

	Proportional Effort Shift				
	0.2	**0.4**	**0.6**	**0.8**	**1.0**
Percent Change in Landings					
SWG	-50.0	-45.3	-40.6	-35.9	-31.2
Gag	-29.6	-22.5	-15.4	-8.8	-1.2
Red Grouper	-57.5	-53.3	-49.0	-44.5	-36.2
DWG	-89.0	-85.5	-82.0	-78.5	-75.0
Greater Amberjack	+14.4	+35.5	+56.7	+79.9	+99.1
Gray Triggerfish	+13.5	+20.2	+26.9	+33.6	+40.3

4.3 Direct and Indirect Effects on the Economic Environment

Methodology

Consistent with the determination that the Gulf reef fish bottom longline fishery is essentially a grouper and tilefish target fishery, as discussed in Section 3.3.1, certain points in the following discussion will emphasize these components of the reef fish fishery. It should be noted, however, that the harvests and revenues associated with all species harvested by affected vessels and trips are included in this analysis.

This analysis used logbook records from 2005-2007 with recorded landings by bottom longline gear from statistical areas 1-8 that reported landing at least one pound of reef fish species. Because statistical area 8 extends west of Cape San Blas, Florida, the analysis may overestimate the expected effects of the proposed alternatives by an amount equal to the excess proportion of statistical area 8.

This analysis did not incorporate all trips and vessels that harvested reef fish and used bottom longline gear. Some vessels have both longline and vertical line gear and report landings using both gears. For trips that reported using both gears, this analysis only used those trips where a plurality of the revenues (largest share) was reported for species harvested using longline gear. Although this approach may result in an underestimation of the number of potentially affected trips and associated harvests and revenues, any underestimation is not expected to be substantial because most trips with longline harvests exceeded the 50-percent threshold. Also, for dual-gear trips where vertical lines accounted for the majority of harvests, the use of both gears but larger vertical line harvests demonstrates a significant flexibility to rely upon vertical line gear under this proposed action and an increased ability to avoid the adverse economic effects of the proposed action.

Additional criteria considered the fishing depth and whether revenues from shark species accounted for more than 50 percent of the total harvest revenues for the trip. The selection criteria results in the exclusion of some longline trips and associated vessels that may have harvested reef fish using bottom longlines. As a result, the number of vessels included in the analysis may not equal totals reported elsewhere. For example, Section 4.2 states that during 2005-2007, an average of 122 vessels per year made trips that used bottom longline gear and landed SWG in the eastern Gulf. For this analysis, the trip selection criteria resulted in the identification of 130 vessels in 2005, 108 vessels in 2006, and 109 vessels in 2007, or an average of 116 vessels per year, being affected by the proposed action. The vessels that harvested SWG using bottom longlines that were excluded from the analysis were excluded because either they primarily operated in the shark fishery or all SWG landings were reported harvested in waters greater than 50 fathoms. As a result of the exclusion of these vessels, this analysis may underestimate the effects of the proposed action by an unknown amount. However, the selection criteria are expected to identify the trips and vessels expected to be the most severely affected by the proposed action.

Based on the characteristics of each relevant trip reported in the logbook records, trips were assumed to either continue to occur and produce historical landings and revenues, or be canceled

under the appropriate management scenario. Trip cancellation resulted in the loss of all ex-vessel revenues associated with all species harvested on that trip as well as all costs associated with that trip. The net effects of the resultant combination of continued and cancelled trips were summarized in terms of changes in net operating revenues (NOR). NOR was calculated as 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. NOR is reported in nominal dollars (averages over actual values for each year with no standardization to a common base year).

The analysis evaluated the effects of potential gear conversion by affected longline vessels from longline gear to vertical line gear. Conversion rates were modeled to vary from zero percent to 100 percent. The performance of converted longline trips, in terms of trip length, operating costs, ex-vessel revenues (which equates to harvest success), and NOR was assumed to equal that of historical vertical line trips. This assumption may overestimate the true harvest success that would occur on these converted trips, resulting in an overestimation of the NOR "recovered" as a result of conversion and an underestimation of the net change in economic effects. An alternative data-based assumption of a more realistic harvest profile has not been identified. Gear conversion costs were not included in the analysis. Gear conversion costs to a vertical line bandit reel set-up are estimated at approximately $13,750 per vessel (assumes four reels; Robert Spaeth, personal communication, 2009). The cost of gear conversion would not be considered a trip cost and, therefore, would not affect the estimated changes in NOR. The overall costs of gear conversion are included in the effects discussion below.

In addition to directly affecting longline vessels, the proposed alternatives could also affect the harvest success of the traditional vertical line fleet. Although longline vessels are believed to generally fish in different areas than vertical line vessels (successful vertical line fishing is assumed to require more pinpoint accuracy in finding suitable fish aggregations), reduced harvest pressure on the reef fish stocks as a whole as a result of the proposed alternatives could result in increased harvest rates by the vertical line fleet. Alternatively, increased competition from converted longline vessels at sites more suitable to vertical line activity could result in harvest rate declines. While these possibilities are noted, this analysis assumed there would be no change in the harvest rate or economic performance of the vertical line fleet (both historic and converted). Because the actual harvest success that will develop is unknown, the effect of this assumption is unknown.

This analysis does not include any assumed behavioral or performance changes within the historical vertical line fleet. As a result, the economic performance of the historical vertical line fleet under the proposed alternatives would not be expected to change and all reported effects accrue to the longline fleet. Thus, although the analysis allows gear conversion to vertical lines, and reports expected increases in vertical line trips, it should be clear that all projected changes in NOR are borne by longline vessels.

Longline trips are, on average, longer in terms of the number of days fished than vertical line trips. The average longline trip expected to be affected by this action lasted approximately 8.5 days, whereas the average vertical line trip lasted approximately 3.5 days. Imposing the historic

profile of vertical line trips on converted longline trips required an assumption on how to deal with the difference in trip length. This analysis applied the alternative gear conversion rates to the number of affected longline days fished, rather than the number of affected trips, then translated the number of converted days fished to an estimated number of trips using the average number of days fished per vertical line trip (for example, 35 converted days fished would translate into 10 converted vertical line trips using the average of 3.5 days per vertical line trip).

The possibility exists that, in response to two of the proposed alternatives (**Preferred Alternative 2a** if the DWG quota has not been met and **Alternative 2b**), in lieu of gear conversion or cessation of fishing altogether, longline vessels could increase the number of trips taken in waters 50 fathoms or deeper and continue to target SWG species while the SWG fishery remains open. The likelihood of this, however, is expected to be small given the low incidence of documented SWG harvests from the deeper waters. As a result, this analysis does not incorporate any increased effort of this type. The omission of possible increased effort in the deeper waters could result in an overestimation of the effects of the proposed alternatives.

All results are based on average fishery behavior as recorded in the logbook data from 2005-2007. The use of averages over this period allows for the incorporation but not overemphasis of unusual fishery events, such as the closure of the SWG fishery at the end of 2005 and the effects of red tide on subsequent catch rates.

Because the analysis is based on actual recorded trips that establish expectations of future behavior, these recorded trips encompass actual fishery conditions for the respective year. The timing of the closures of the DWG and tilefish fisheries is of particular note within these conditions. With the exception of 2005, while the SWG has been open year-round, the DWG and tilefish fisheries are subject to substantially lower quotas than SWG, which results in these quotas being met by mid-year. The tilefish fishery has closed progressively earlier in the year in recent years, though it closed on May 10 in 2008 compared to April 18 in 2007, while the DWG fishery closed on May 10 in 2008. Both fisheries, however, were re-opened for 10 more days in November to allow the harvest of a quota shortfall. Closure of these fisheries results in effort shifts to SWG species and this behavior is reflected in the data used for this analysis. Because the DWG and tilefish fisheries close so much earlier in the year than the SWG fishery, anticipation of regulatory change this year could induce effort shifts within the longline fleet to target SWG species instead of DWG and tilefish during the early months of 2009 in an effort to reserve the DWG and tilefish species for harvest later in the year if longline gear is prohibited from the shallower waters. Quota monitoring data for January-February 2009 show some indication that this effort shift may be occurring; deepwater grouper landings were 29 percent less than landings during the same months in 2008. Considerations of price differences, with DWG receiving, on average, higher ex-vessel prices than SWG, would also be expected to factor into behavioral change decisions. Nevertheless, insufficient data exists to draw any conclusions at this time on possible behavioral change. As a result, this analysis does not incorporate any adjustments to target and harvest patterns in anticipation of such change and, as a result, may overestimate the effects of the proposed alternatives.

In addition to the analytical issues thus far discussed, quota considerations are relevant. Gag harvests are now subject to a quota, as is red grouper and the combined SWG complex. Under

the new management procedures, once 80 percent of either the gag or red grouper quota is taken, and 100 percent of the quota is projected to be reached prior to the end of the fishing year, a 200-pound (gutted weight) trip limit will be implemented for the applicable species. If 100 percent of any of the three quotas is reached (gag, red grouper, or SWG), then the entire SWG commercial fishery will close for the remainder of the fishing year. The vertical line sector has a higher harvest rate of gag than the longline sector. No closures of the gag, red grouper, or SWG fisheries have been projected under the status quo (no regulatory change). However, it is possible that increased harvests by the vertical line fishery as a result of a larger vertical line fleet due to gear conversion by longline vessels could result in triggering gag harvests restrictions, and lead to additional adverse economic effects. Such conditions, however, have not been projected at this time and this analysis does not include any quantitative estimates of the effects that could result.

This analysis does not incorporate any potential effects of the implementation of an IFQ program for the grouper and tilefish fishery, as proposed by Amendment 29 (GMFMC 2008a). IFQ programs generally result in an increase in the value received for fish and NOR to fishery participants. The implementation of an IFQ program for these fisheries would not be expected to occur until January 2010 at the earliest. Therefore, the direct effects of the IFQ program would not be expected to be relevant to this proposed action unless the proposed prohibition is extended to a full year. However, the expectation of the implementation of an IFQ program may affect behavioral decisions prior to 2010 in response to the implementation of the proposed action because it may affect the incentive for fishermen to convert their gear or even remain in the fishery at all. An IFQ program would give longline fishermen the opportunity to actively fish their allocation, sell their allocation, or sell their shares. To actively fish their SWG allocation under the proposed action, longline fishermen would need to convert their gear, whereas selling their allocation would not require gear conversion, nor would selling their shares (thereby exiting the SWG fishery). The implementation of an IFQ program would be expected to reduce the economic effects of the proposed action, if extended for a full year, due to the expected higher prices and because grouper allocation and shares would represent a sellable asset that the longline fishery participants did not previously have. However, grouper prices and the resultant value of allocation and shares may not be as high as previously expected in the absence of the proposed prohibition. As discussed below, reef fish harvests are expected to decline under the proposed action due to the removal of longline gear, even under100 percent gear conversion. This would be expected to reduce the value of allocation and shares. The full effects of these processes are unknown. Overall, it is simply concluded that the implementation of an IFQ program would be expected to mitigate the projected adverse economic effects of this proposed action by an unknown amount.

Finally, in addition to not incorporating any potential effects of the implementation of an IFQ program, this analysis does not include adaptations for current market or economic conditions. As previously discussed, the analysis is based fishing results from 2005-2007. The resultant expected changes in the quantity of fish landed and NOR under the proposed alternatives reflect market and general economic conditions from that period. Although current economic conditions are discussed qualitatively in the following discussion, the current general economic decline could have already resulted in reduced demand for seafood products, leading to increased inventories and declines in ex-vessels prices. The ability of vessels to sell their harvests at any

price may be affected. This analysis does not capture these considerations and their net effect is unknown. While the regulatory-induced gear conversion of the proposed alternatives would be expected to force an economic inefficiency on the longline sector, the resultant decrease in total reef fish harvests may assist in maintaining price stability, countering the effects of declined demand.

Effects Discussion

The results of the analysis are provided in Tables 4.5 and 4.6. The tables contains estimates of the expected change in trips (Table 4.5) or NOR (Table 4.6) if the harvest of reef fish using longline gear is prohibited in federal waters in statistical areas 1-8 in waters less than 50 fathoms for alternative six-month periods, starting in May, under alternative assumptions of gear conversion to vertical line gear.

Table 4.5. Estimated change in effort (trips).

	Longline	Vertical Line					
		Percent Gear Conversion					
Period		0%	20%	40%	60%	80%	100%
May-Oct	-582	0	268	536	804	1,071	1,339
Jun-Nov	-546	0	255	511	766	1,021	1,277
Jul-Dec	-503	0	241	482	723	964	1,206
Aug-Jan	-510	0	243	486	729	972	1,215
Sep-Feb	-464	0	230	460	690	920	1,150
Oct-Mar	-426	0	220	440	659	879	1,099
Nov-Apr	-439	0	227	453	680	906	1,133
Annual	-1,021	0	494	989	1,483	1,978	2,472

Table 4.6. Estimated change in net operating revenue (millions, nominal dollars).

	Percent Gear Conversion					
Period	0%	20%	40%	60%	80%	100%
May-Oct	-$3.46	-$3.04	-$2.62	-$2.20	-$1.78	-$1.37
Jun-Nov	-$3.15	-$2.74	-$2.32	-$1.91	-$1.49	-$1.08
Jul-Dec	-$2.99	-$2.59	-$2.18	-$1.78	-$1.38	-$0.98
Aug-Jan	-$3.28	-$2.87	-$2.47	-$2.07	-$1.66	-$1.26
Sep-Feb	-$3.17	-$2.80	-$2.44	-$2.08	-$1.71	-$1.35
Oct-Mar	-$3.18	-$2.84	-$2.50	-$2.16	-$1.82	-$1.48
Nov-Apr	-$3.45	-$3.10	-$2.74	-$2.38	-$2.03	-$1.67
Annual	-$6.91	-$6.14	-$5.36	-$4.59	-$3.81	-$3.03

Although the perspective of the analysis does not exactly match the language of the proposed alternatives, given expectations of how the fisheries are prosecuted and when the action is expected to be implemented, the analysis is sufficient to capture the expected effects of these alternatives. Additional explanation of these expectations is provided below, where appropriate.

Alternative 1, the no action alternative (status quo), would allow bottom longline fishing east of Cape San Blas, Florida, year-round in waters greater than 20 fathoms. As the status quo alternative, **Alternative 1** would not be any change in fishery regulations and, as a result, no change in fishery behavior and economic performance would be expected to occur. Because **Alternative 1** would not be expected to result in any change in fishing behavior, continued higher take of threatened sea turtles would be expected. The economic value of these sea turtles is indeterminate and the resultant affect of continued increased take until permanent action can be taken on species recovery is not known. For many actions intended to end overfishing or aid rebuilding for other species, it is often argued that a delay in action would result in subsequently more restrictive regulation and increased adverse economic effects than if immediate action was not taken. However, while more restrictive action could be prescribed at a later date, conceivably encompassing the entire longline and vertical line sectors, such would appear to be beyond the necessary scope of protection required. As a result, the proposed action could be argued to be as severe as is reasonable, such that no worse subsequent restriction might result from delayed action and current participants in the fishery would be expected to receive net positive economic benefits under the status quo. On the assumption that subsequent regulations would be no more restrictive (and possibly less so; delay would allow the collection of new data and analysis, possibly resulting in a less burdensome action that achieved the same objective) than those currently proposed, these benefits to fishery participants would be the avoidance of the adverse economic effects described for **Preferred Alternative 2a, Alternative 2b,** and **Alternative 3**. The net economic effect of the continued unspecified costs of losing more threatened sea turtles and the avoidance of adverse economic effects on fishery participants is unknown.

Under the alternative assumptions of the implementation date (May through November) and gear conversion (zero percent through 100 percent), **Preferred Alternative 2a** is expected to result in a loss of 426 (October-March prohibition) to 582 (May-October prohibition) longline trips and a gain of zero (zero percent gear conversion) to 1,339 (May-October prohibition and 100 percent gear conversion) vertical line trips (Table 4.3.1). If the prohibition is extended for a full year, an estimated 1,021 longline trips would be expected to be lost, and result in an increase of vertical line trips ranging from 494 trips (20 percent gear conversion) to 2,472 trips (100 percent gear conversion). These projections assume an effective date for this action of May 1. The effects would be reduced if the prohibition is rescinded in favor of the implementation of permanent regulation through Amendment 31.

The projected changes in effort (trips; reduced longline trips and increased vertical line trips) under **Preferred Alternative 2a** are expected to result in reductions in NOR to affected longline vessels ranging from $0.98 million (July-December prohibition and 100 percent gear conversion) to $3.46 million (May-October prohibition and zero percent gear conversion). Extension of the prohibition to a full year would increase the reduction in NOR to $3.03 million (100 percent conversion) to $6.91 million (zero percent gear conversion). Actual conversion rates would be expected to be affected by level of current activity in the fishery (vessels with higher average annual landings would be expected to have greater access to the funds required for conversion and more incentive to convert in order to remain active in the fishery) and the expected duration of the prohibition (the longer the expected duration, the more time available to make the

conversion and the greater the incentive to convert). Also, the availability of funds, or lack thereof, cannot be overlooked. Given current economic conditions, vessels that wish to convert may not be able to acquire sufficient funds, particularly if they require loans, to do so. This may be especially true in the short term. Nevertheless, assuming the 40 percent and 60 percent gear conversion rates bracket the reasonable expected rate of conversion, the average expected reduction in NOR across the alternative six-month periods ranges from $2.08 million (60 percent gear conversion) to $2.47 million (40 percent gear conversion).

The expected reductions in NOR under the alternative scenarios for **Preferred Alternative 2a** are indicative of a key effect of the prohibition, even under an assumed 100 percent gear conversion. Assuming no increase in catch rates by vertical line vessels, this alternative is projected to result in a substantial reduction in reef fish harvests. Although not estimated for all reef fish species, which are included in the projected changes in NOR, the expected reductions in SWG landings range from 26.4 percent under 100 percent gear conversion to 41.5 percent under 20 percent gear conversion (NMFS 2009a). Thus, while some species may experience increases in harvest (vertical lines have a higher harvest rate for greater amberjack and gray triggerfish, such that the harvest of these species are projected to increase as much as 56 percent and 48 percent, respectively, under a 100 percent gear conversion), overall, reef fish harvests from this area would be expected to decline, resulting in not only reductions in NOR to fishermen, but decreased product availability to markets and consumers. Although reef fish availability and prices are largely dominated by imports, the decrease in fresh domestic wild harvest supplies would be expected to have additional unquantified adverse economic effects. However, the issue of potential market gluts and declining demand for seafood due to the general decline in the economy, as discussed above, should be recalled.

It should be noted that, consistent with the discussion on the methodology for this analysis, that no projected reductions in the allowable harvest of gag were included in the analysis. If the gag harvest threshold (80 percent of the quota) is reached and the gag quota is projected to be met prior to the end of the year, gag harvests would be limited to 200-lb trip limit. If this occurs as a result of gear modification and fishing behavioral changes motivated by **Preferred Alternative 2a**, the adverse economic effects would be greater than those quantified here. Such effects cannot be quantified at this time.

Over the period 2005-2007, grouper and tilefish harvested by reef fish bottom longline gear off west Florida comprised approximately 18 percent of the volume in terms of pounds of all marine species purchased (NMFS Accumulated Landings System data; average of approximately 4.8 million pounds of grouper and tilefish per year out of approximately 27.1 million pounds of all species) for dealers who purchased these species and approximately 21 percent in terms of value (nominal dollars; approximately $11.1 million for groupers and tilefish out of approximately $51.9 million from all species). These results are summarized across all dealers who purchase longline-harvested groupers and tilefish, or approximately 37 dealers per year. While this demonstrates a substantial reliance on the fishery for the average dealer, it is expected that some dealers are even more dependent on the grouper and tilefish harvests, particularly those in certain high volume areas that cater to certain gear fleets. Although the longline sector does not account for all of these grouper and tilefish harvests, this sector dominates the DWG and tilefish fishery, and also harvests more SWG than the vertical line sector (Section 3.3.1 and NMFS 2009a). As a

result, although gear conversion would be expected to mitigate the reduction of some product flow, interruption of the traditional longline harvests would be expected to have substantial shore-side effects on dealers closely tied to this sector.

In addition to the expected reductions in NOR and economic activity associated with the expected decrease in fresh domestic supplies under **Preferred Alternative 2a**, the projected reductions in trips would also be expected to result in additional reductions in economic activity associated with trip costs. Although not quantified, the loss of these expenditures is most obvious and would be most severe if no longline vessels convert to vertical line gear. Not only would NOR be reduced, which represent captain and crew wages and owner profits, but all operating costs for fuel, bait, ice, food, trip-related gear costs, etc., would not be spent, adversely affecting associated industries. As the rate of gear conversion increases, expenditure flows would recover. However, while some of these expenditure sectors may actually benefit from such conversion, others may not and overall economic disruption would be expected. As discussed above, the estimated cost to convert a longline vessel to vertical line bandit gear is approximately $13,750. Assuming 108-130 vessels converted their gear (100 percent conversion; see the discussion on vessel numbers in the methodology discussion above), the estimated total cost to the fleet would be approximately $1.49-$1.79 million. This may overestimate the actual cost as some longline vessels have both gears already on board, though not necessarily in the full arrangement that a completely converted vessel would have. While this conversion expenditure would be expected to benefit the appropriate suppliers and installers, it would represent a substantial new cost to the industry, one they may not have sufficient funds to pay for, and may have difficulty obtaining through loans. It should also be noted that longline vessels have a substantial financial investment in their current gear, which would be essentially useless except for the more limited harvest opportunities in the DWG and tilefish fisheries.

The net economic effect of these reductions could be substantial. Employment at multiple levels in the economy could be affected, worsening an already difficult situation due to the current general economic decline. Although the duration of the prohibition would be limited (six months and extendable to one year), the severity of the possible disruptions could have long-term implications as some affected entities may not be able to economically survive. This would include both fishing vessels/businesses and infrastructure businesses. Closure of a dealer, processor, or supplier due to reduced reef fish landings as a result of this action would affect not only longline vessels and these dealers, processors, or suppliers, but also the participants in all other fisheries or gear sectors that deal with these businesses.

Preferred Alternative 2a would, however, be expected to result in the reduced take and mortality of threatened sea turtles. The net effect of the reduction in take and mortality of threatened sea turtles in terms of the number of animals and stock status is not known, though it is assumed to be positive, and the economic benefits of such reduction is indeterminate.

The expected economic effects of **Alternative 2b** are expected to be less than those of **Preferred Alternative 2a** by a small, but unknown amount. **Alternative 2b** would allow continued fishing for reef fish using longline gear in waters 50 fathoms or deeper after the DWG and tilefish quotas are caught. Although this alternative is less restrictive than **Preferred Alternative 2a**, the resultant reduction in adverse economic effects relative to **Preferred Alternative 2a** is not

expected to be large because historic data do not suggest that sufficient quantities of non-DWG or tilefish reef fish species can be harvested in these waters to make such trips profitable (see Section 3.3.1). Thus, few if any trips would be expected to occur.

The expected effects of **Alternative 3** are estimated to be approximately equivalent to those of **Preferred Alternative 2a** under the first three implementation scenarios (implementation dates starting in May, June, or July) because the DWG and tilefish quotas are expected to be met by the time this action is implemented. Although some DWG and tilefish harvests have historically occurred in May, these quantities are small compared to the January-April harvests. Delayed implementation of the prohibition beyond July, however, would result in extension of the closure into the months when the DWG and tilefish fisheries are traditionally open and the largest harvests occur (January-April). As such, reductions in NOR and associated adverse economic effects (reductions in trip-related expenditures, fresh domestic product, and economic activity) would increase and exceed those of **Preferred Alternative 2a**. These effects have not been quantified. Additionally, the extension of the prohibition under **Alternative 3** to a full year would result in the elimination of all DWG and tilefish harvests, resulting in even greater reductions in NOR and associated adverse economic effects. These effects have also not been quantified.

4.4 Direct and Indirect Effects on the Social Environment

Effects Discussion

Although the social effects are different in nature than economic effects, in general they can be expected to follow the lead established by the economic effects. The economic effects of the proposed alternatives are provided in Section 4.3. The greater the expected adverse economic effects, the worse the resultant expected social effects. This follows from the logic that many social behaviors and relationships are strongly influenced or determined by career choice and income. The selection of a specific career can drive a residency choice, while the community of residency would be expected to affect the availability of alternative employment opportunities. The broader the education and skill level of an individual, the greater the opportunity to find alternative full or part time employment should changes in current employment necessitate such, assuming the general economic environment makes such opportunities available. The larger and more diversified a community, the greater the alternative employment opportunities. While any forced change in employment as a result of regulatory change would not be without social stresses, such as reduced job satisfaction or reduced job freedom, the opportunity to reduce problems directly related to income would increase the more skilled the employee and the broader the economic base of the community. Related considerations exist for businesses and service providers in a particular community. The broader and more diversified the client base, the better a business or service will be able to survive disruptions from reduced activity by a particular client or sector.

Obviously, the reverse of these conditions is also true. Overall, regardless of the size and diversification of an industry or community, the current economic environment has created a situation of severe stress across all communities and sectors of the economy, such that the social

effects of reduced incomes as a result of regulatory change are likely to be magnified. While in previous times regulatory-induced job change might have occurred, leaving people employed in other occupations but unhappy with the circumstances (wanted to still be fishing), at least a greater opportunity for alternative employment existed, particularly when the construction and service industries remained vital. In today's economic climate, however, many would likely just want a job and be able to pay one's bills, reducing career choice or job satisfaction considerations to secondary importance.

Profiles of representative communities substantially involved in fishing that would be expected to be affected by this proposed action are provided in Section 3.3.2. Although more than 70 Gulf and central Florida communities were identified with recorded purchases of the species expected to be affected by this action and, thus, by extension, the respective gear sectors, the majority of the landings flowed through either large metropolitan areas, or communities close to or continuous with large metropolitan areas. This might suggest, as discussed above, greater opportunity to minimize or mitigate potential adverse economic and social effects. However, as discussed above and in Section 3.3.2, it is possible that smaller quantities of fish that flow through smaller communities may have greater relative importance to those communities and the current economic conditions would be expected to magnify the adverse effects on both large and small communities. Also, although the effects of this action could affect the entire Gulf Florida grouper and tilefish sector, only an average of 37 dealers per year from 2005 through 2007 in this area were identified as having purchased grouper and tilefish harvested using bottom reef fish longline gear in Gulf waters off Florida. As a result, fewer than the 70 communities identified above would be expected to be directly affected by this action.

As discussed in Section 3.3.1, **Alternative 1**, the status quo alternative would not be expected to result in any change in fishery behavior and economic performance. As a result, no change in the social behavior or benefits to fishermen and associated businesses, industries, and communities would be expected to occur. Consistent with the discussion on the expected economic effects, on the assumption that subsequent regulations would be no more restrictive than those currently proposed, the benefits of **Alternative 1** would be the avoidance of the adverse social effects described for **Preferred Alternative 2a, Alternative 2b,** and **Alternative 3**. Because **Alternative 1** would not be expected to result in any change in fishing behavior, continued higher take of threatened sea turtles would be expected. The social value of these sea turtles is indeterminate, but expected to be positive, and the resultant affect of continued increased take until permanent action can be taken on species recovery is not known. Regardless of the effect on species recovery, continued increased take of these sea turtles can be expected to lead to societal displeasure. Although fishermen and associated constituents also value sea turtles, and society at large also values fishermen and the products and services they provide, addressing sea turtle take and the needs of fishermen requires a situation of compromise. **Alternative 1**, however, could be viewed as a decision of inaction rather than compromise and might be expected to increase, rather than decrease, the conflict between the different constituent groups.

The expected economic effects of **Preferred Alternative 2a** indicate that a large amount of harvests, revenues, and expenditures would be affected by this alternative. Reductions in NOR to affected longline vessels are projected to range from $0.98 million to $3.46 million, depending

upon the months affected and the amount of gear conversion. Extension of the prohibition to a full year would increase the reduction in NOR to $3.03 million to $6.91 million. Reductions in NOR represent losses to captain and crew wages and owner profits. Because these changes represent net changes, the trip-related fishing expenditures (fuel, ice, bait, etc.) would also not occur, impacting the businesses that sell these items. The projected reductions in NOR are based on an expectation that reef fish landings would be reduced, likely more than 41.5 percent in the SWG fishery alone if no longline vessels convert to vertical line gear, and as much as 26.4 percent of SWG even if 100 percent gear conversion occurs (see Section 4.3). The revenues and economic activity associated with these reduced harvests would not be available to respective markets, consumers, etc. Grouper and tilefish harvested by bottom reef fish longline gear are estimated to account for approximately 21 percent of the total value of all species purchased by dealers who purchase these species harvested by this gear (approximately 37 dealers per year), thus comprising a substantial portion of these dealers business.

The economic effects would depend on a variety of factors, including the ability to convert to vertical line gear and resultant catch rates, by both converted and historical vertical line vessels. Although the general absence of alternative employment opportunities due to current economic conditions may provide a strong incentive to convert to vertical line gear and continue fishing, the ability to do so may be severely restricted due to the cost. Fishermen may not be able to self-finance gear conversion and banks or suppliers may be reluctant to provide loans or extend sufficient credit. **Preferred Alternative 2a** would be expected to affect 47-65 longline vessels (see Section 4.3 for the derivation of these totals). Assuming an average of three persons per vessel (captain and crew), 141-195 individuals would be affected at the vessel level. This is likely an underestimate because a vessel would not be expected to carry the same crew on every trip. Although gear conversion to vertical lines would allow some of these individuals to continue fishing, the net impact of conversion on employment is not known. Although the average crew size for a vertical line vessel is two persons, and it is unknown whether a converted longline vessel would continue to use the larger number of crew. Because vertical line trips harvest fewer fish per trip than longline vessels, crew size of converted vessels is likely to decline, resulting in some affected longline fishermen not being able to continue fishing. Only the most skilled crew are likely to be retained, exacerbating shore-side problems if those less skilled at fishing are also those least likely to be able to find alternative employment. The number of affected individuals in associated businesses and communities is unknown.

Similar to the discussion of the economic effects, the implementation of an IFQ program for the grouper and tilefish fisheries would be expected to mitigate some of the expected adverse social effects of this proposed action. Increased opportunity to remain in the fishery or exit under more favorable conditions, i.e., selling one's IFQ shares, would be expected to result in an increased opportunity of choice, reduced stress, and overall reduced adverse social effects than if no IFQ program is implemented.

The net social effect of the reductions in harvests, revenues, and expenditures could be substantial. Employment at multiple levels in the economy could be affected, worsening an already difficult situation due to the current general economic decline. Although the duration of the prohibition would be limited (six months and extendable to one year), the severity of the possible disruptions could have long-term implications as some affected entities may not be able

to weather the short-term reductions product supply and sales activity. This would include both fishing vessels/businesses and infrastructure businesses. Closure of a dealer, processor, or supplier due to reduced reef fish landings as a result of this action would affect not only the longline vessels targeted by this action and the dealers, processors, or suppliers that conduct business with these vessels, but also the participants in all other fisheries or gear sectors that deal with these businesses. Although the public has demonstrated a general willingness to substitute other domestically harvested or imported species (though niche markets and some consumers are more discriminating in their selections), such that people should generally be able to continue to satisfy their seafood demands, the potential domino effect, extending to a wider variety of species than harvested by the subject gear, could be substantial. As noted previously, a business that goes under due the disruption of a species group that comprises 20 percent of its business would also result in disruption of the markets for the species that comprise the other 80 percent.

The adverse social effects of the reduced economic activity would be expected to ripple through the local communities, adding pressure on already stressed social support services. Unemployment would be expected to increase, leading to increased mortgage, credit card, car payment, and other consumer or business debt defaults.

Because society values sea turtles and other natural resources, the reduction in the take and mortality of threatened sea turtles would be expected to result in unquantifiable social benefits to society. It is unknown, however, how these compare to the adverse social effects expected to accrue to the fishery and associated industries and communities and a net social outcome as a result of **Preferred Alternative 2a** is indeterminate.

The social effects of **Alternative 2b** and **Alternative 3** would be expected to be consistent with those of **Preferred Alternative 2a** in the same way as the economic effects (see Section 4.3). Because **Alternative 2b** would allow continued fishing for reef fish using longline gear in waters 50 fathoms or deeper after the DWG quota is caught, the economic and associated social effects would be expected to be less than those of **Preferred Alternative 2a**. The difference is not expected to be large, however, because historic data does not suggest that sufficient quantities of non-DWG or tilefish reef fish species can be harvested in these waters to make such trips profitable. Thus, few if any trips would be expected to occur and the social effects of **Alternative 2b** could be functionally equivalent to those of **Preferred Alternative 2a**.

The social effects of **Alternative 3** are also expected to be approximately equivalent to those of **Preferred Alternative 2a** under the first three implementation scenarios (implementation dates starting in May, June, or July) because the DWG and tilefish quotas are expected to be met by the time this action is implemented. Similar to the discussion on economic effects, however, delayed implementation of the prohibition beyond July, however, would result in extension of the closure into the months when the DWG and tilefish fisheries are traditionally open and the largest harvests occur (January-April). As such, reductions in the economic variables would increase, and exceed those of **Preferred Alternative 2a,** resulting in increased adverse social effects. The extension of the prohibition under **Alternative 3** to a full year would result in the elimination of all DWG and tilefish harvests, resulting in even greater reductions in the economic variables and associated increased adverse social effects.

Environmental Justice

Information on the issue of environmental justice (EJ) was provided in Section 3.3.2. Persons employed in the bottom reef fish longline 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. Community level data, however, have been assessed. Based on the demographic information of the representative communities profiled that would be expected to be affected by this proposed action, potential EJ concerns were identified for Panama City (poverty rate) and St. Petersburg (minority rate) where the respective rates for these two cities exceeded the EJ thresholds. 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 likely that other communities have poverty or minority rates that exceed the EJ thresholds.

However, although some communities expected to be affected by this proposed action 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 action. While adverse social and economic consequences are expected to accrue to fishermen in the reef fish bottom longline 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 action are expected to be positive. This proposed action is expected to reduce the take and mortality of threatened sea turtles and result in a net short term reduction in the mortality of reef fish species by the commercial reef fish fishery. Reduced mortality of these species would be expected to increase the environmental benefits these species contribute to the marine environment and the general health and condition of this environment.

4.5 Direct and Indirect Effects on the Administrative Environment

Proposed bycatch minimization measures are not expected to significantly impact administrative costs. Impacts on the administrative environment under **Alternative 1** would remain the same as current levels. However, this alternative will continue to create administrative conflicts in determining appropriate management measures for the bycatch of sea turtles. The enforcement of **Preferred Alternative 2** would require the enforcement of the 50 fathom line rather than the current 20 fathom line (Figure 2.1). Changes in the closed area boundary would not require any new administrative action. The differences in distance from the coast and the size of the closed area may increase cost associated with enforcement due to fuel, time, and vessel costs. However, as of May 6, 2007, all commercial reef fish vessels were required to have VMS. The VMS information may assist law enforcement with monitoring the longline activities. **Alternative 3** would require law enforcement to monitor fishing activities in the entire eastern Gulf. This may require increased analysis of the VMS information for potential violations.

Bycatch minimization measures would require additional research to determine the magnitude and extent of reductions in bycatch and bycatch mortality. Additional monitoring required for

sea turtle bycatch may include continued observer monitoring and logbook analysis. The implementation of this temporary rule is not anticipated to cause an increase of work associated with permits. Overall, the increase of work on the administrative environment is not likely to be significant.

4.6 Mitigation, Monitoring and Enforcement Measures

The process of reducing loggerhead sea turtle takes in the reef fish bottom longline fishery through the emergency rule is expected to have a negative short-term effect on the social and economic environment. No alternatives are being considered that would avoid these negative effects because they are a necessary cost associated with protecting sea turtles. The range of alternatives has varying degrees of economic costs and administrative burdens. Some alternatives have relatively small short-term economic costs and administrative burdens, but would also provide smaller and more delayed long-term benefits. Other alternatives have greater short-term costs, but provide larger and more immediate long-term benefits. These would be determined by actions taken by the Council in Amendment 31. Therefore, it is difficult to mitigate these measures and managers must balance the costs and benefits when choosing management alternatives for the reef fish fishery.

To ensure sea turtle take is reduced, periodic reviews of sea turtle interactions within fisheries are needed. These reviews are designed to incorporate new information and to address unanticipated developments in the respective fisheries and would be used to make appropriate adjustments in the reef fish regulations should fishery practices not achieve needed take reductions. Data collected for these reviews come from logbooks and observer studies funded by NMFS. Additionally, NMFS and other government agencies support research on these species by federal, state, academic, and private research entities. Depending on the outcome of these reviews, the Council may determine further management action should be taken. What type of rule making vehicle the NMFS or the Council determine is needed is difficult to predict. Actions would be dictated by the severity of takes and by the time frame needed to implement a regulatory change.

Current reef fish regulations are labor intensive for law enforcement officials. NMFS law enforcement officials work cooperatively with other federal and state agencies to keep illegal activity to a minimum. Violators are penalized, and for reef fish commercial and reef fish for-hire operators, permits required to operate in their respective fisheries can be sanctioned.

Reef fish management measures include a number of area-specific regulations where reef fish fishing is restricted or prohibited in order to protect habitat or spawning aggregations of fish, or to reduce fishing pressure in areas that are heavily fished. Additionally, this emergency rule includes alternative to expand existing restricted fishing areas or create new time/area closures. To improve enforceability of these areas, the Council has established a VMS program for the commercial reef fish fishery to improve enforcement. VMS allows NMFS enforcement personnel to monitor compliance with these area-specific regulations, and track and prosecute violations.

4.7 Cumulative Effect Analysis (CEA)

As directed by NEPA, federal agencies are mandated to assess not only the indirect and direct impacts, but cumulative impacts of actions as well. NEPA defines a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 C.F.R. 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect is when the combined effects are greater than the sum of the individual effects.

Detailed CEAs for the reef fish fishery have been conducted in recent amendments to the FMP (Amendments 27, 29, 30A, and 30B) and are incorporated here by reference. These CEAs evaluated the immediate areas affected by the actions and includes the federal waters of the Gulf. Time frames used for the analysis vary by each amendment; however, landing data available for analysis of stock status ranges from 1963 to present for commercial landings and 1981 to present for recreational landings. A history of management is provided in each amendment beginning with the establishment of the Reef Fish FMP in 1981. Reasonably foreseeable future actions (RFFA) include: Amendment 29 to the Reef Fish FMP which would establish a grouper and tilefish individual fishing quota (IFQ) program for the commercial reef fish fishery; the final rule for Amendment 30B which addresses grouper management and ends gag overfishing; Amendment 31, which would address long-term measures to reduce sea turtle take by the bottom longline fishery and examines modifications of fishing practices; area, season, and depth restrictions; reducing effort through longline endorsement programs; or using observers or electronic monitoring to close the fishery once a sea turtle take threshold has been met; an Aquaculture FMP which would provide a programmatic approach to evaluating the impacts of aquaculture proposals in the Gulf and a comprehensive framework for regulating such activities; and a generic amendment to address annual catch limits (ACLs) and corresponding accountability measures (AMs) for managed stocks as required by the reauthorized MSFCMA as on January 12, 2007.

To examine the magnitude and significance of the cumulative effects, important valued environmental components (VECs) were identified for the overall action to be taken with this rule. VECs are "any part of the environment that is considered important by the proponent, public, scientists and government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern" (EIP 1998). The following is a summary of VECs identified as being affected by this action.

Habitat - Damage caused from reef fish fishing, while minor, is associated with the level of fishing effort. Therefore, actions reducing levels of effort would result in greater benefits to the physical environment because fishing related interactions with habitat would be reduced. Thus, actions such as Amendments 22, 27/14 (red snapper), 23 (vermilion snapper), 30B, Secretarial Amendment 1 (grouper), and 30A and Secretarial Amendment 2 (greater amberjack), which have reduced fishing effort for some species, and possibly the fishery on the whole, have had a positive effect on hard bottom habitats. RFFAs, such as Amendment 31 and the development of ACLs and AMs, should also benefit these habitats as they would also reduce or limit fishing effort. Reef fish and sea turtle EFH, particularly coral reefs and submerged aquatic vegetation, are particularly susceptible to non-fishing activities (GMFMC 2004a). The greatest threat comes from dredge-and-fill activities (ship channels, waterways, canals, and coastal development). Oil and gas activities as well as changes in freshwater inflows can also adversely affect these habitats. EFH and habitat area of particular concern (HAPC) designations are intended to promote careful review of proposed activities that may affect these important habitats to assure that the minimum practicable adverse impacts occur on EFH.

Managed resources - In the past, the lack of management of reef fish has allowed many stocks to undergo both growth and recruitment overfishing and has allowed some stocks to decline (see section 3.2 for a description of the species). Present management measures have allowed many of these stocks to rebuild to a point where the stock is no longer considered overfished (e.g., red grouper). In some cases, measures were inadequate to prevent overfishing (e.g., gag), and so more measures were needed to protect the stock. Fishery management RFFAs are expected to benefit managed species. For example, ACLs and AMs are intended to develop triggers for action to be taken immediately should a stock appear to be approaching an overfishing condition. Non-fishing activities are likely to adversely affect reef fish stocks. Liquefied natural gas facilities are being proposed in the western and northern Gulf. These facilities can have a negative effect on species with pelagic larvae, like most reef fish species. To mitigate the affects of these facilities, regulatory agencies are proposing closed-loop rather than open-loop systems. At this time, the effect of LNG facilities is unknown and is likely to be less for reef fish species than other more coastal species such as red drum. Global warming and the carbon footprint from fishing are other factors which could have a detrimental effect on reef fish species. However, what these effects might be cannot be quantified at this time. Should bottom longline vessels affected by this action convert to other types of fishing gear such as vertical line (see Section 4.3), then the carbon footprint from the reef fish fishery could increase due to more frequent trips and contribute more to global warming. If instead, these vessels are retired from the fishery and are either scrapped or used for other purposes that reduce their operations, then the carbon footprint from the operation of this fishery would be reduced and contribute less to global warming.

Protected resources – Some protected resources are not susceptible to the reef fish fishery; however, interactions between sea turtles and smalltooth sawfish do occur. Loggerhead sea turtles in particular have been shown to be susceptible to hooking on bottom longlines. The complexity of the loggerhead sea turtle's life history leaves them susceptible to many natural and human impacts, including impacts while they are on

land, in the benthic environment, and in the pelagic environment. Hurricanes are particularly destructive to sea turtle nests. Sand accretion and rainfall that result from these storms as well as wave action can appreciably reduce hatchling success. In addition, anthropogenic activities can affect the success of nesting and hatching such as: beach erosion, beach armoring and nourishment, artificial lighting, beach cleaning, increased human presence, recreational beach equipment, beach driving, coastal construction and fishing piers, exotic dune and beach vegetation, and poaching. Secondary threats to nesting from human activities include the introduction of exotic fire ants, feral hogs, dogs, and an increased presence on beaches. Additionally, if sea levels rise as a result of global warming, available beach habitat for nesting might be diminished in developed areas.

Loggerhead sea turtles are affected by a completely different set of anthropogenic threats in the marine environment. These include oil and gas exploration, coastal development, transportation, marine pollution, underwater explosions, hopper dredging, offshore artificial lighting, power plant entrainment and/or impingement, entanglement in debris, ingestion of marine debris, marina and dock construction and operation, boat collisions, poaching, and fishery interactions. Loggerhead sea turtles in the pelagic environment are exposed to a series of longline fisheries. These include the Atlantic HMS pelagic longline fisheries, an Azorean longline fleet, a Spanish longline fleet, and various longline fleets in the Mediterranean Sea (Aguilar et al. 1995, Bolten et al. 1994, Crouse 1999). Loggerhead sea turtles in the benthic environment in waters off the coastal U.S. are exposed to a suite of fisheries in federal and state waters including trawl, purse seine, hook and line, gillnet, pound net, longline, and trap fisheries. Past actions to protect loggerhead sea turtles include turtle excluder devices in shrimp trawls (FMP for the Shrimp Fishery of the Gulf), the requirement of sea turtle-release gear on federally permitted reef fish vessels (Amendment 18A), and circle hook and dehooker requirements for reef fish fishing, although this latter requirement was not designed specifically to reduce sea turtle take (Amendment 27/14). The Council is currently

working on Amendment 31 to reduce fatal loggerhead sea turtle interactions with longline gear.

Commercial fishery-Adverse or beneficial effects of actions to vessel owners, captains, and crew are tied to the ability for a vessel to make money. In commercial fisheries, these benefits are usually derived in terms of shares awarded after fishing expenses are accounted for. The greater the difference between expenses and payment for caught fish, the more revenue is generated by the fishing vessel. Relative to this rule, the commercial fishery has benefited from past actions in the reef fish fishery. By being able to harvest these species unhindered by regulations prior to 1990, many vessels have been able to enter the fishery. However, in constraining harvest to a sustainable level, current management measures have had a negative, short-term impact on the commercial fishery. Permit and landing restrictions were needed to keep the commercial harvest within its quota for applicable species. Quota closures have limited the number of trips vessels may take. Further compounding the negative effects on the fishery are imports. Imports on domestic fisheries can cause fishermen to lose markets through fishery closures as dealers and processors use imports to meet demand, and limit the price fishermen can receive for their products through competitive pricing of imports. Although many RFFAs are likely to have a short-term negative impact on the commercial fishery, the goal of management is to allow stocks to be harvested at higher, sustainable levels for those stocks being rebuilt while minimizing bycatch. In addition, the development of IFQs should allow individual fishermen to fish their shares when and where they want, and as a result, prices for landed fish are expected to increase as observed in other IFQ programs (GMFMC 2006). However, actions to reduce take proposed in Amendment 31 are likely to have a negative effect on the bottom longline segment of the fishery. Vessel operators who can adapt to the resultant regulations either by longlining within the amendment's constraints or by changing gears, would likely be successful. Non-management related RFFAs which could affect the commercial fishery include hurricanes and increases in fishing costs (e.g., fuel). Hurricanes are unpredictable and localized in their effects. Increases in fishing costs, unless accompanied by a similar increase in price per pound of fish, are likely to decrease the profitability of fishing operations.

4.8 Unavoidable Adverse Effects

Sea turtle takes must be reduced to satisfy the requirements of the MSFCMA and ESA. As a result, many of the current participants in the bottom longline segment of the reef fish fishery may never recuperate losses incurred from the more restrictive management actions imposed in the short-term. If the Council can develop long-term measures to reduce takes that have less negative effects, fewer participants may be negatively affected. Other means to continue in the fishery would be to convert to less harmful gear types (e.g., vertical gear) or participate in other fisheries during times or places when reef fish bottom longlining fishing is not allowed.

Actions considered in this rule should not have adverse effects on public health or safety since these measures should not alter actual fishing practices, just where or when activities can occur. Longline gear would still be allowed, just at deeper depths. Unique characteristics of the geographic area are highlighted in Section 3. Adverse effects of fishing activities on the physical

environment are described in detail in Section 4.1. These sections conclude little impact on the physical environment should occur from the temporary action proposed in this document. Uncertainty and risk associated with the measures are described in detail in Section 4.1-4.5 as well as assumptions underlying the analyses.

4.9 Relationship Between Short-Term Uses and Long-Term Productivity

The objective of this rule is to reduce the sea turtle take by the reef fish bottom longline fishery in the eastern Gulf over the short term while the Council develops long-term measures to achieve the same objective. For loggerhead sea turtles, this focuses on the long-term goal of protecting this population from further declines. The relationship between short-term economic uses and long-term economic productivity are discussed in the preceding section and Section 4.4.

4.10 Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of agency resources proposed herein. The action to reduce sea turtle bycatch is readily changeable by future fishery management actions. There may be some loss of immediate income (irretrievable in the context of an individual not being able to benefit from compounded value over time) to some sectors of the fishery caused by area restrictions.

4.11 Any Other Disclosures

CEQ guidance on environmental consequences (40 CFR §1502.16) indicates the following elements should be considered for the scientific and analytic basis for comparisons of alternatives. These are:

a) Direct effects and their significance.
b) Indirect effects and their significance.
c) Possible conflicts between the proposed action and the objectives of federal, regional, state, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.
d) The environmental effects of alternatives including the proposed action.
e) Energy requirements and conservation potential of various alternatives and mitigation measures.
f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.
g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.
h) Means to mitigate adverse environmental impacts.

Items a, b, d, e, f, and h are addressed in Sections 3 and 4. Items a, b, and d are directly discussed in Section 4. Item e is discussed in economic analyses. Alternatives that encourage fewer fishing trips would result in energy conservation. Item f is discussed throughout the document as sea turtle and fish populations are a natural and depletable resource. A goal of this rule is to protect loggerhead sea turtles for the Nation. Mitigation measures (item h) are discussed in Section 4.6.

The other elements are not applicable to the actions taken in this document. Because this rule concerns the management of loggerhead sea turtles, it is not in conflict with the objectives of federal, regional, state, or local land use plans, policies, and controls (Item c). However, it should be noted the goal of this rule is to reduce take of loggerhead sea turtles by the reef fish bottom longline fishery. This is a goal the federal government shares with regional and state management agencies (see Section 3.5). Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures (Item g) is not a factor in this rule. The actions taken in this rule will affect a marine species and the reef fish fishery, and should not affect land-based, urban environments.

The incidental take authorized in the governing biological opinion has already been exceeded, and consultation on the continued authorization of the Gulf reef fish fishery has already been reinitiated. The ongoing consultation will comprehensively analyze the entire reef fish fishery relative to its impacts on threatened and endangered species. The need for the emergency rule is a direct result of the fact that the amount of incidental taking specified in the governing biological opinion has been exceeded in the fishery; thus, the exceedance and associated need for reinitiation are not attributable to changes being made via the emergency rule. The emergency rule is intended to result in short term changes to the prosecution of the fishery, and those changes are specifically designed to reduce the impacts to listed species and critical habitat. The impacts from the emergency rule itself are entirely beneficial to listed species and critical habitat; therefore, implementation of the emergency rule will not alter the determinations contained in the January 9, 2009, memorandum relative to sections 7(a)(2) or 7(d) of the ESA. Further, the short term beneficial impacts of the emergency rule, as well as the continued operation of the fishery into the near future will be more specifically addressed in the ongoing section 7 consultation on the fishery.
With respect to the MMPA, fishing activities conducted under the Reef Fish FMP should have no adverse impact on marine mammals. The reef fish fishery is prosecuted primarily with longline and hook-and-line gear, and is classified in the 2008 List of Fisheries (73 FR 73032) as Category III fishery. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1 percent of 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. The proposed actions are not expected to alter existing fishing practices in such a way as to alter the interactions with marine mammals.

Because the proposed actions are directed towards the management of naturally occurring species in the Gulf, the introduction or spread of nonindigenous species should not occur.

5.0 REGULATORY IMPACT REVIEW

5.1 Introduction

NMFS conducts a Regulatory Impact Review (RIR) as required by Executive Order 12866, as amended. The RIR: (1) Provides a comprehensive review of the incidence and level of impacts associated with a proposed or final regulatory action; (2) provides a review of the problems and the policy objectives prompting the regulatory proposals and an evaluation of 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 provides the information needed to determine if the proposed regulations constitute a significant regulatory action under Executive Order 12866.

5.2 Problems and Objectives

The purpose and need of this action are discussed in Section 1.3 and are incorporated herein by reference. In summary, the number of loggerhead sea turtle takes authorized in the 2005 biological opinion on the bottom longline reef fish fishery in the Gulf have been exceeded (NMFS 2008). The ESA requires the federal government to protect and conserve species and populations that are endangered, or threatened with extinction, and to conserve the ecosystems on which these species depend, while National Standard 9 under the MSFCMA, requires that conservation and management measures to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

While the Council is considering long-term measures to reduce sea turtle bycatch, action is needed in the short term to reduce bycatch. Therefore, the Council requested NMFS to take emergency action to achieve these short-term reductions.

5.3 Description of the Fishery

A description of the Gulf bottom longline reef fish fishery is contained in Section 3.3.1 and is incorporated herein by reference.

5.4 Methodology and Framework for Analysis

The methodology and framework for this analysis is described in Section 4.3 and is incorporated herein by reference.

5.5 Impacts of the Proposed Action

A more detailed discussion of the expected impacts of this proposed action is included in Section 4.3 and is incorporated herein by reference. This proposed action is expected to result in a reduction in net operating revenues (NOR) to vessels in the bottom longline reef fish fleet by approximately $0.98 million (July-December prohibition and 100 percent gear conversion) to

$3.46 million (May-October prohibition and zero percent gear conversion), depending on the month of implementation of the prohibition and amount of gear conversion by affected longline vessels to vertical line gear. Extension of the prohibition to a full year would increase the reduction in NOR to $3.03 million (100 percent conversion) to $6.91 million (zero percent gear conversion). Actual conversion rates would be expected to be affected by the level of current activity in the fishery by an individual fishing vessel, the expected duration of the prohibition, and the availability of funds for conversion. Assuming 40 percent to 60 percent of the vessels convert their gear, the average expected reduction in NOR across the alternative six-month periods of possible prohibition ranges from $2.08 million (60 percent gear conversion) to $2.47 million (40 percent gear conversion).

In addition to the reduction in NOR, this proposed action is expected to result in a net short-term reduction in reef fish harvests, resulting in decreased product availability to markets and consumers. Although reef fish availability and prices are largely dominated by imports, the decrease in fresh domestic wild harvest supplies would be expected to have additional unquantified adverse economic effects.

Although no closures (individual or aggregate SWG species) are projected at this time, if gear modification and fishing behavioral changes as a result of this proposed action result in the gag quota being harvested more quickly than normal, additional adverse economic effects could occur. Overall, grouper and tilefish harvests comprise a substantial portion of many dealers total volume of activity, accounting for approximately 18 percent in terms of pounds and approximately 21 percent in terms of value for dealers that purchase these species harvested by bottom longline reef fish gear. As a result, the expected interruption of traditional longline harvests as a result of this action is expected to have substantial shore-side effects on dealers closely tied to this sector.

This action is also expected to result in additional unquantified reductions in economic activity associated with changes in trip costs. These effects would be mitigated by recovered expenditure flows associated with gear conversion and the trips costs for new vertical line trips. However, the actual rates of conversion, conversion costs, and trip increases are either speculative or unknown, so the net effects of such changes have not been estimated. Longline vessels currently have a substantial financial investment in their longline gear, which would be essentially useless under this action except for the more limited harvest opportunities in the DWG and tilefish fisheries.

The net economic effect of these reductions could be substantial. Employment at multiple levels in the economy could be affected, worsening an already difficult situation due to the current general economic decline. Although the duration of the prohibition would be limited (six months and extendable to one year), the severity of the possible disruptions could have long-term implications as some affected entities may not be able to economically survive.

This action is, however, expected to result in the reduced take and mortality of threatened sea turtles. The net effect of the reduction in take and mortality of threatened sea turtles in terms of number of animals and effects on stock status is not known and the economic benefits of the reduction in sea turtle take and mortality is indeterminate.

5.6 Public and Private Costs of Regulations

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

Council costs of document preparation, meetings, public hearings, and information dissemination	0
NMFS administrative costs of document preparation, meetings, and review	$ 50,000
Law enforcement costs	0
TOTAL	$ 50,000

Because this is an emergency rule, the document preparation, review, and administrative costs are limited to NMFS staff. Although the implementation of a new regulation may result in re-allocation of law enforcement time and priorities, no additional costs have been identified as necessary to enforce the proposed action.

5.7 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 regulatory action has been determined to not be significant for purposes of E.O. 12866.

6.0 BYCATCH PRACTICABILITY ANALYSIS

Background/Overview

Bycatch is defined in the MSFCMA as fish harvested in a fishery, but not sold or retained for personal use. The term "fish" means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds. Therefore, turtles are fish and are bycatch because they cannot be sold or kept for personal use10.

Guidance provided at 50 CFR 600.350(d)(3) identifies ten factors to consider in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable. These are:

1. Population effects for the bycatch species.
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
4. Effects on marine mammals and birds.
5. Changes in fishing, processing, disposal, and marketing costs.
6. Changes in fishing practices and behavior of fishermen.
7. Changes in research, administration, and enforcement costs and management effectiveness.
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources.
9. Changes in the distribution of benefits and costs.
10. Social effects.

The Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

Vertical line gear (bandit rigs, manual handlines) and longline gear are the primary gears used in the commercial reef fish fishery. Observer data indicate high levels of sea turtle bycatch in the bottom longline component of the fishery, relative to the vertical line component.

The 2005 BiOp (NMFS 2005) included a reasonable and prudent measures (RPM) requiring NMFS to ensure any caught sea turtle or smalltooth sawfish is handled in such a way as to minimize stress to the animal and increase its survival rate. The Council addressed this RPM in Amendment 18A to the Reef Fish FMP (GMFMC 2005). Regulations were implemented requiring sea turtle release gear onboard reef fish-permitted vessels when fishing to facilitate the safe release of any sea turtles or smalltooth sawfish. In addition, vessels with commercial and for-hire reef fish vessel permits are required to possess specific documents providing instructions on the safe release of incidentally caught sea turtles or smalltooth sawfish with hook-and-line gear.

10 Memo from S. Rauch to J. Lecky, October 10, 2008.

The 2005 BiOP also included an RPM requiring better data collection from the fishery on sea turtle and smalltooth sawfish takes, including implementation of a reef fish observer program. Mandatory observer coverage in the commercial Gulf reef fish fisheries was implemented via Amendment 27 to the Reef Fish FMP.

The reef fish fishery currently is regulated through measures such as quotas, size limits, bag limits, and seasonal closures. These measures are intended to protect reef fish during spawning and to limit fishing mortality, the size of fish targeted, the number of targeted fishing trips, and/or the time fishermen spend pursuing a species. However, these management tools have the unavoidable adverse effect of creating regulatory discards, which reduces yield from the directed fishery.

In this EA, NMFS considers the practicability of taking short-term action to minimize sea turtle bycatch by the bottom longline component of the reef fish fishery while long-term measures are being developed. Amendment 31 to the Reef Fish FMP will address several potential long-term management measures to reduce sea turtle bycatch including modifying bait type or size; prohibiting use of longline gear in certain areas or depths, or at certain times; establishing endorsements to use longline gear; setting a cap on turtle takes combined with increasing observer coverage; and modifying fishing gear and behaviors.

Sea Turtles

Loggerhead, leatherback, green, Kemp's ridley, hawksbill sea turtles are believed to be adversely affected by the Gulf reef fish fishery via incidental capture in hook-and-line gear. A 2005 BiOp (NMFS 2005) conducted for the Gulf reef fish fishery concluded the continued authorization of the reef fish fishery was not likely to jeopardize the continued existence of threatened or endangered species. Incidental captures of sea turtles were estimated for all commercial and recreational hook-and-line components of the reef fishery. During 2001-2003, an estimated 321 sea turtles were caught incidentally in the entire reef fish fishery (commercial bottom longline and vertical line and recreational vertical line combined). Of these sea turtle takes, 119 were estimated to be lethal. The 2005 BiOP included an ITS authorizing this amount of take for every three-years in the future, anticipating future three-year take levels would be at this same level.

Recent observer data indicate sea turtles are most frequently taken in the bottom longline component of the 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 indicates loggerhead sea turtles are the species most affected by the bottom longline component of the reef fish fishery. Mortality of sea turtles caught is particularly problematic in this fishery component, where many are dead or in poor condition upon retrieval of the gear as a result of forced submergence (i.e., drowning). 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.

Differences between the new longline observer data and the information summarized in the 2005 BiOp may be because: (1) sea turtle catch rates in the bottom longline sector are higher on average now than they were when the fishery was previously observed, (2) all reef fish observer coverage levels to date have been too low for any accuracy or precision in take levels, and/or (3) sea turtle catch rates have been and continue to be highly variable from year to year. Some fishermen have indicated sea turtle bycatch is a relatively new problem in this fishery, but there are no data to substantiate this is true. Sea turtle takes in other longline fisheries are highly variable from year to year (e.g., annual sea turtle bycatch in the HMS pelagic longline fishery). Thus, bycatch in the reef fish fishery probably is also highly variable from year to year.

Loggerhead sea turtle takes observed in the bottom longline component of the reef fish fishery included both later-stage sexually immature sea turtles (larger, older juveniles) and mature sea turtles. These life history stages are very important for population recovery because their reproductive value is high. Satellite telemetry studies of adult female loggerhead sea turtles indicate the importance of the west Florida shelf as benthic foraging habitat (Schroeder et al. manuscript in prep). For the past 20 years, Florida's Fish and Wildlife Research Institute has coordinated a detailed sea turtle nesting-trend monitoring program. Loggerhead sea turtle nests counted annually at core index nesting beaches in Florida from 1989 through 2008 indicate a declining trend in loggerhead sea turtle nesting (FWRI 2008). Witherington et al. (2009) have argued the observed decline in the annual counts of loggerhead sea turtle nests on Index and Statewide beaches in peninsular Florida can best be explained by a decline in the number of adult female loggerhead sea turtles in the population.

Reef Fish

Groupers and tilefishes make up 77% of bottom longline harvest reported in logbooks (NMFS 2009). The action in this EA is most likely to affect SWG. Red grouper make up 78% of commercial longline SWG landings by weight (NMFS 2009); therefore, red grouper will be discussed as the representative reef fish species.

The 2002 red grouper stock assessment used release mortality rates of 33% and 90% for the commercial handline and longline fisheries, respectively. The next red grouper stock assessment, completed in 2007, attempted to determine release mortality rates by depth (SEDAR 12 2007). However, not enough information was available; size-at-depth data were available, but the relationship between discard mortality and depth was less clear. Additionally, analyses demonstrated no difference in median red grouper length over time by gear or depth. Therefore, discard mortality was not calculated using a depth-specific release mortality rate.

Estimates of red grouper release mortality were collected from seven data sources. Data were designated as either pre-release mortality or post-release mortality. Pre-release mortality data were observations of fish condition on the surface at the time of release, usually a minimum estimate of release mortality. Post-release mortality data were observations of fish from cages and tag-recaptures, usually reflecting a higher rate of release mortality than that observed from surface releases. Based on a review of the data collected from these studies, a 10% release mortality rate was estimated for the recreational, vertical line, and trap components and a 45% release mortality rate was estimated for the longline component.

Annual commercial red grouper dead discards were calculated by gear type. Before implementation of a minimum size limit in 1990, discards were assumed to be zero. No significant difference was found in discard rates among years. Vertical line and trap fishery discard rates calculated from logbook reports were similar to bottom longline and observer discard rates. In contrast, longline discard rates from logbook reports were an order of magnitude less than NMFS bottom longline survey data or observer data. To better estimate longline discards, the vertical line red grouper discards-to-landings ratios were multiplied by the longline landings in each area and targeting stratum. Discards in numbers were next estimated in terms of weight by multiplying the estimated number of discards by the derived age composition. Numbers at age were then multiplied by weight at age to estimate total dead discards by weight for each sector and/or gear type.

Since the implementation of the 20-inch minimum size limit in 1990, commercial dead discards have averaged 12% of the commercial removals and 73% of the total dead discards of red grouper. During this time, an average of 87% of the total commercial dead discards was attributed to the longline fishery, an average of 12% was attributed to the vertical line fishery, and <1% was attributed to the trap fishery. Annually, the commercial red grouper dead discards averaged 600-900 thousand pounds.

In the eastern Gulf, red snapper, greater amberjack, gray triggerfish, and vermilion snapper may be discarded due to reef fish regulations. Vermilion snapper are not overfished or undergoing overfishing (SEDAR 9 2006) and bycatch is not expected to jeopardize the status of this stock. Greater amberjack (SEDAR 9 2006) and red snapper (SEDAR 7 2005) are overfished and undergoing overfishing. Greater amberjack release mortality is estimated to be fairly low, ranging 10-20%. Release mortality is higher in the commercial greater amberjack fishery than the recreational fishery because minimum size limits differ. Gray triggerfish release mortality is also relatively low (1.5%, SEDAR 9 2006). Because greater amberjack and gray triggerfish are pelagic and grouper are benthic, bycatch of greater amberjack and gray triggerfish is relatively low on grouper trips and likely not greatly affected by changes in longline management measures. In contrast, red snapper abundance has been increasing in the eastern Gulf over the past ten years and fishermen have indicated they are discarding more red snapper. Most commercial grouper fishermen in the eastern Gulf were allocated few red snapper IFQ shares and are unable to retain large quantities of red snapper caught when fishing for grouper. Bycatch is a significant source of mortality in the red snapper fishery, prompting the Council to approve actions in Amendment 27/14 to reduce directed fishery bycatch (see below). The statuses of other SWG species, such as black grouper and scamp, are unknown. Most SWG trips target red, gag, and black grouper, and incidentally capture other SWG. Regulatory discards are not known to be significant for these species, because many (e.g., yellowmouth grouper, rock hind, and red hind) have no or small minimum size limits.

Other Bycatch

Other species incidentally encountered by the reef fish fishery include mammals and sea birds. The Gulf commercial reef fish fishery is listed as a Category III fishery in NMFS' List of Fisheries (73 FR 73032, December 1, 2008). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to one percent of 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. The 2005 BiOp also estimated eight smalltooth sawfish were caught and released by the commercial and recreational reef fish fishery during 2001-2003 (NMFS 2005). Actions in Amendment 18A addressed the RPMs for smalltooth sawfish.

Three primary orders of seabirds in the Gulf are Procellariiformes (petrels, albatrosses, and shearwaters), Pelecaniformes (pelicans, gannets and boobies, cormorants, tropic birds, and frigate birds), and Charadriiformes (phalaropes, gulls, terns, noddies, and skimmers) (Clapp et al. 1982; Harrison 1983). Several other species of seabirds also occur in the Gulf, and are listed as threatened or endangered by the U.S. Fish and Wildlife Service, including: piping plover, least tern, roseate tern, bald eagle, and brown pelican (the brown pelican is endangered in Mississippi and Louisiana and delisted in Florida and Alabama). Human disturbance of nesting colonies and mortalities of birds being caught on fishhooks and subsequently entangled in monofilament line are primary factors affecting sea birds. Oil or chemical spills, erosion, plant succession, hurricanes, storms, heavy tick infestations, and unpredictable food availability are other threats. No evidence exists that the directed reef fish fishery adversely affects seabirds.

Practicability of current management measures in the reef fish fishery relative to their impact on bycatch and bycatch mortality.

The Council and NMFS took action in Amendment 18A to the Reef Fish FMP (effective September 8, 2006) to comply with the RPM that any sea turtle or smalltooth sawfish taken in the reef fish fishery is handled in such a way as to minimize stress to the animal and increase its survival rate. Regulations were implemented requiring sea turtle release gear be onboard reef fish-permitted vessels when fishing to facilitate the safe release of any incidentally caught sea turtles or smalltooth sawfish. In addition, vessels with commercial and for-hire reef fish vessel permits are required to possess specific documents providing instructions on the safe release of incidentally caught sea turtles or smalltooth sawfish.

Requirements in Amendment 27/14 (effective June 1, 2008) include the use of circle hooks, venting tools, and dehooking devices while harvesting reef fish. These gears can reduce discards and bycatch mortality of reef fishes by selectively reducing the capture of undersized fish or reducing the release mortality of fish after capture. Venting tools and dehooking devices may also increase survival of released fish by improving handling techniques and reducing time a fish spends at the surface. Because mouth gape size for both gray triggerfish and vermilion snapper is small, circle hooks will likely reduce the capture of both sub-legal and legal fish. In one study, circle hooks reduced catch of sea turtles by 71-90% depending on bait type (Watson et al. 2005), while in another study sea turtle catch with circle hooks was not significantly different than for J-

hooks (Kiyota et al. 2004). However, both studies found circle hooks are more likely to hook in the mouth than the gut, which should increase the survival of sea turtles that are captured.

Amendment 30B will lower the commercial red grouper minimum size limit, which should significantly reduce commercial discards. Decreasing the size limit will increase catch rates and allow the commercial quota to potentially be met faster. Mid-season quota closures may also occur for the grouper fishery if the gag commercial quota is reached quickly. These quota closures have the unintended consequences of shifting fishing effort to other species, which could negatively impact reef fish stocks not currently constrained by annual quotas. The magnitude of this impact would depend on the length of the closure and the amount of effort shifting that occurs, and would be eliminated if an IFQ program is implemented.

Alternatives being considered to minimize sea turtle bycatch

This EA considers a short-term management measure to reduce the incidental take of sea turtles by the bottom longline component of the reef fish fishery in the eastern Gulf while longer-term measures are developed in Amendment 31. See Section 4 for more details on the potential environmental impacts of this action.

One way to reduce the chance of sea turtle interactions is to reduce effort in the fishery. Effort could be reduced by prohibiting longline gear in a certain area. The more abundant sea turtles are in a given area and the higher the fishing effort is in that area, the greater the probability a sea turtle will be incidentally caught on the gear. For example, most observed sea turtle takes occurred on fishing trips west of the Tampa Bay area, all but one turtle taken were on sets at 50 fathoms or less, and 89% of sea turtles takes occurred from June through August (NMFS 2009b). Most of the longline fishing effort is conducted in these places and at these times. This EA evaluates a restriction on the use of bottom longline gear in waters less than 50 fathoms as a short-term measure to reduce sea turtle bycatch.

Practicability Analysis

Criterion 1: Population effects for the bycatch species

Recent SEFSC observer analyses (NMFS 2008; NMFS 2009b) indicate the bottom longline component of the reef fish fishery in the Gulf has exceeded the estimated number of total sea turtle takes authorized in the 2005 BiOp. Sea turtles incidentally caught by this component of the fishery are late stage sexually immature juveniles and mature adult loggerheads which have a high reproductive potential. Loggerhead sea turtle nests counted annually at core index nesting beaches in Florida have been declining in recent years, and Witherington et al. 2009 have argued this decline is an indication the population is decreasing. Satellite telemetry studies of adult female loggerhead sea turtles indicate the importance of the west Florida shelf as benthic foraging habitat. Strandings along the west Florida coast also indicate the importance of the shelf as foraging habitat for loggerhead, Kemp's ridley, hawksbill, leatherback, and green sea turtles. Migratory tracks show loggerhead sea turtles moving along shore, usually in depths less

than 50 fathoms, along the entire west coast of Florida (FWC letter to Crabtree, December 9, 2008). Some migratory tracks also show loggerhead sea turtles in much deeper water while traversing the Gulf. However, 89% of foraging destinations of female loggerhead sea turtles were in depths of 50 fathoms or less (A.D. Tucker, Mote Marine Laboratory unpublished data). An aerial survey (NMFS 2009c) observed sea turtles during the summer and winter of 2007. The majority sea turtles observed in water greater than 20 fathoms and east of Cape San Blas, Florida (85°30' W longitude) were found in water between 20 and 50 fathoms.

The action in this EA to reduce sea turtle takes restricts longline gear to waters deeper than 50 fathoms. This action could reduce the chance of interaction between bottom longline gear and sea turtles. The bycatch minimization method being considered in this EA is expected to also affect reef fish stocks. Reduction in effort should reduce landings and in turn reduce both fishing and discard mortality. Overall, the action in this EA would benefit both sea turtles and reef fish.

Criterion 2: Ecological effects due to changes in the bycatch of turtles (effects on other species in the ecosystem)

The relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict with any accuracy. Loggerhead sea turtles are carnivorous; they consume pelagic invertebrates (e.g., jellyfish and crab larvae) as juveniles and benthic invertebrates (e.g., crabs, clams, and soft corals) as mature adults (Spotila 2004). Mature adult loggerhead sea turtles are classified as generalist feeders, but showed a greater preference for benthic species in diet studies, probably because they are easily captured. Consequently, forage and competitor species abundance could decrease in response to an increase in sea turtle abundance. Changes in the catch of reef fish may or may not be large enough to affect prey, predator, or competitor species in the ecosystem.

Criterion 3: Changes in the bycatch of other species of fish and invertebrates and the resulting population and ecosystem effects

Population and ecosystem effects resulting from changes in the bycatch of other species of fish and invertebrates are difficult to predict. Snappers, greater amberjack, gray triggerfish, and other reef fishes are commonly caught in association with SWG. Many of these species have been or are undergoing overfishing, as detailed above. Regulatory discards significantly contribute to mortality in all of these reef fish, except gray triggerfish and vermilion snapper. No measures are proposed in this EA to directly reduce the bycatch of other reef fish species. However, any reduction in effort in the bottom longline component of the reef fish fishery could reduce regulatory discards of all species.

Criterion 4: Effects on marine mammals and birds

The effects of current management measures on marine mammals and birds are described above. The bycatch minimization action evaluated in this EA is not expected to significantly affect marine mammals and birds. No information exists to indicate marine mammals or birds rely on reef fish or sea turtles for their main food source.

Criterion 5: Changes in fishing, processing, disposal, and marketing costs

For a more complete discussion of the changes in fishing costs associated with the management action, see Sections 3 and 4.

Prohibiting longline fishing less than 50 fathoms to longline fishing could have a substantial impact on longline fishermen. Vessels would need to travel farther to reach open fishing grounds, requiring more time at sea, more fuel, and higher operational costs. If reef fish concentrations are lower in the open area, these requirements would increase even more. Some vessels may be too small to make trips to deeper waters and would need to leave the fishery. Conversely, if many longline vessels change to vertical line fishing, user conflicts with existing vertical line commercial fishermen and recreational fishermen may result.

The costs of retrofitting vessels with vertical line gear and the loss of product as a result of lower catch rates may significantly impact fish houses that own a fleet of vessels. This action could have a possible dramatic impact not only on the longline fishery, but also on the bait fishery that provides a considerable amount of bait to longline vessels. The anticipated impacts would go beyond vessels and have impacts on wholesale and retail markets and restaurants who would need to find substitutes for the lost product.

Criterion 6: Changes in fishing practices and behavior of fishermen

For a more complete discussion of the changes in fishing practices and behavior associated with the management action, see Sections 3 and 4.

If the waters where SWG fishing effort is currently concentrated are closed to bottom longlining, some vessels may be too small to make trips to deeper waters and would need to leave the fishery. Some fishermen that currently use bottom longline gear may switch to vertical line gear if shallower depths are closed to longlining. The amount of potential effort shift to vertical line gear cannot be estimated at this time. Fishermen may also redirect their effort to a different fishery, although most other fisheries are not as extensive as the Gulf reef fish fishery. Some fishermen may be able to wait for long-term measures to be implemented before choosing to shift their effort, but others may need to make that choice immediately to keep their businesses viable.

A reduction in the labor force may result in the fishery if many vessels change from longline to vertical line gear. Vertical line vessels routinely have fewer crew members on board than longline vessels. Another difficulty in switching to vertical line gear is that the fishery requires an entirely different set of skills for the captain. Setting out a longline over several miles takes a different skill set than anchoring a vessel in a specific location. Captains of vertical line vessels must be adept at setting an anchor such that the tide and currents will place the vessel in the exact location near the desired bottom type.

Criterion 7: Changes in research, administration, and enforcement costs and management effectiveness

If longline gear is prohibited in shallow water, enforcement would need to increase accordingly. However, enforcement would be complicated because vertical line fishing would be allowed in depths where bottom longline fishing was prohibited. Existing VMS requirements would aid enforcement of all types of time or area closures.

Criterion 8: Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources

The economic and social impacts on fishermen are expected to be negative. Fishermen could have difficulty diversifying and targeting other species if they are prevented from harvesting species they had harvested in the past. Even though an individual fisherman may have minimal participation in a specific fishery, income from that fishery combined with income from other fisheries the fisherman may be involved in may make it possible for him to make a living from fishing. If a new regulation prevents some fishermen who now have a permit from participating in longline fishing, they may not be able to make up for the loss in income by switching gear or targeting other species.

The social value of sea turtles is indeterminate, but expected to be positive, and the resultant effect of continued increased take is not known. Regardless of the effect on species recovery, continued increased take of these sea turtles can be expected to lead to societal displeasure. Although fishermen and associated constituents also value sea turtles, and society at large also values fishermen and the products and services they provide, addressing sea turtle takes and the needs of fishermen requires compromise. Fishermen may be willing to change some fishing behaviors to mitigate the interactions with sea turtles. Thus long-term actions with industry support would have fewer social impacts.

The actions in this EA could also reduce directed catch and bycatch of species undergoing overfishing, thereby providing a net benefit to stock recovery, which will positively affect the social and economic value of fishing activities.

Criterion 9: Changes in the distribution of benefits and costs

The action in this EA would affect the longline sector of the reef fish fishery directly, and the vertical line sector indirectly. Increased costs associated with the new regulation may be too high for some longline operations to remain profitable, even for a short period of time. For this and other economic reasons, some longline fishermen may switch to vertical line gear. This in turn would increase the chance of user conflicts with current vertical line fishermen. In addition, the cost of converting gear may be prohibitive for smaller operations.

Criterion 10: Social effects

Because the bycatch in this instance is a threatened species, NMFS is mandated to ensure the level of interactions will not endanger the species further and to reduce the number of interactions to a level that is acceptable. Although the action in the EA will have negative social impacts upon the fishing industry and communities, both Acts are national mandates. The action within this EA is capable of reducing those interactions to acceptable and practicable levels. Measures that reduce bycatch to the extent practicable may increase efficiency, reduce waste, and benefit stock recovery, thereby resulting in net social benefits in the long term. The action in this EA should reduce sea turtle interactions and would have a great benefit to society as long as long-term actions can balance the negative impacts upon the industry through alternatives that minimize those impacts or provide long term social benefits. Because both acts have Legislative support and have withstood judicial review over the years, protection of these species is assumed to have benefits for society in the long term.

CONCLUSIONS

Analysis of the ten bycatch practicability factors indicates positive biological impacts would be associated with reducing sea turtle bycatch and bycatch mortality in the reef fish fishery. Reducing discards and discard mortality rates of reef fish would result in less forgone yield. Prohibiting the use of longline gear in waters less than 50 fathoms would result in a clear decrease in longline effort, and thereby a clear decrease in potential for interactions of sea turtles with longline gear. However, this action has potential economic and social costs for the industry.

NMFS has weighed the benefits of reducing bycatch with the negative economic effects imposed on the reef fish fishery. NMFS has also considered the practicability of implementing the bycatch minimization measures discussed above with respect to the overall objectives of the Reef Fish FMP, the MSFMCA, and the ESA. This action is both beneficial and practicable as a short-term measure for reducing by catch of hardshell sea turtles by the bottom longline component of the Gulf reef fish fishery.

7.0 OTHER APPLICABLE LAWS

The MSFCMA (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the EEZ. 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. In addition, the 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.

Administrative Procedures Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect. However, NMFS can find good cause to waive the requirement to provide prior notice and opportunity for public comment pursuant to the authority set forth at 5 U.S.C. 553(b)(B), such as prior notice and opportunity for public comment would be contrary to the public interest. This is the case for this emergency rule which is needed to provide short-term protection for threatened loggerhead sea turtles in compliance with the ESA while the Council develops long-term measures. Delaying action to reduce sea turtle takes to provide further notice and opportunity for public prior to implementation would allow continued adverse impacts on loggerhead sea turtle populations, and increase the likelihood of a loss in long-term productivity of this species. Additionally, this would increase the likelihood of more severe restrictions on the fishery in the future, which would result in additional adverse social and economic impacts on the associated fishery participants.

Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal 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, NMFS is required to provide a consistency determination to the relevant state agency at least 90 days before taking final action.

NMFS determined this action is consistent to the maximum extent practicable with the enforceable policies of the approved Coastal Zone Management Program of Florida. This determination was submitted on March 6, 2009, for review by the responsible state agencies under section 307 of the CZMA. Letters of concurrence were received from the Florida Department of Environmental Protection and from the Florida Fish and Wildlife Conservation Commission on March 19, 2009.

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, amendments, other supporting documents, and the use of best available information is the second national standard under the MSFCMA. To be consistent with the DQA, FMPs, amendments, and supporting documents 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, amendments, and supporting documents, 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.

Marine Mammal Protection Act

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea and marine otters, polar bears, manatees, and dugongs.

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

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This rule required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of

take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries, and studies of pinniped-fishery interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a 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 MMPA, such as registration, observer coverage, and take reduction plan requirements (see Section 4.11).

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 rule.

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, NMFS 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. This emergency rule is exempt from the procedures of the Regulatory Flexibility Act because the rule is issued without opportunity for prior notice and public comment.

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.

Specifically, federal agencies shall, to the maximum extent practicable; conduct human health and environmental research and analysis; collect human health and environmental data; collect, maintain and analyze information on the consumption patterns of those who principally rely on fish and/or wildlife for subsistence; allow for public participation and access to information relating to the incorporation of environmental justice principals in Federal agency programs or policies; and share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments.

The Council did conduct a series of scoping meetings for Amendment 31 which addresses long-term measures to reduce sea turtle takes. A summary of the scoping meetings can be found on the Council's website (www.gulfcouncil.org). In addition, the Council will solicit comments through other forms of public input such as public hearings and solicitations for public comment on the long-term measures in Amendment 31's draft EIS. To date, no environmental justice issues were raised during the scoping process. No Native American programs would be affected by actions contained within this rule; therefore no tribal consultation has been initiated.

Several communities in the Gulf where reef fish fisheries have a local presence have been described in detail in Amendments 27, 29, 30A, and 30B. These communities were identified as key communities involved in the Gulf reef fish fishery based on fishing permit and landings data. The demographic information reported for these communities were derived from permit address and census data. However, as described in Section 3.3.4, this data does have some limitations. The proposed actions would be applied to all participants in the fishery, regardless of their race, color, national origin, or income level, and as a result are not expected to result in adverse or disproportionate environmental or public health impacts. Comments received during scoping did not indicate proposed actions are expected to affect any existing subsistence consumption patterns. Therefore, no environmental justice issues are anticipated and no modifications to any proposed actions have been made to address environmental justice issues.

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, NMFS approved and implemented Generic Amendment 3 for EFH, which established additional HAPCs and gear restrictions to protect corals throughout the Gulf. There are no implications to coral reefs by the actions proposed in this rule. Reducing the use of longline gear would likely reduce damage to coral reef as described in Section 4.2.

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 NMFS, 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 rule. Therefore, consultation with state officials under Executive Order 12612 is not necessary.

E.O. 13158: Marine Protected Areas (MPA)

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. The action addressed in this rule would further restrict the use of longlines, at least for the short term, in the eastern Gulf as described in Section 4 and so would not affect any MPA.

Essential Fish Habitat

The 1996 amendments to the MSFCMA included a mandate for the NMFS and regional fishery management councils to identify and protect important marine and anadromous fish habitat. To address these requirements, the Council and NMFS have, under separate actions (GMFMC 2004a and NMFS 2006, respectively) identified and described essential fish habitat (EFH) for federally managed species in the Gulf of Mexico, developed measures to minimize to the extent practicable adverse impacts from fishing activities on EFH, and identified other actions to encourage the conservation and enhancement of EFH. Section 305(b)(2) of the MSFCMA also requires federal agencies which fund, permit, or carry out activities that may adversely affect EFH to consult with NMFS (Habitat Conservation Division) regarding potential adverse impacts of their actions on EFH. The Council and NMFS have determined that the action addressed in this rule would not adversely affect EFH. This determination will be reviewed by the NMFS Habitat Conservation Division.

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11.0 LIST OF TABLES

12.0 LIST OF FIGURES