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Final Regulatory Amendment to the Reef Fish Fishery Management Plan

Greater Amberjack – Recreational Fishing Season Closure

Including an Environmental Assessment, Regulatory Impact Review, Regulatory Flexibility Act Analysis, and Social Impact Analysis

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ABBREVIATIONS USED IN THIS DOCUMENT

ALS	Annual landings summary
AMs	Accountability measures
APA	Administrative Procedures Act
ASPIC	A Stock-Production Model Incorporating Covariates
B	Biomass
B_{MSY}	Stock biomass level capable of producing an equilibrium yield of MSY
CI	Confidence Interval
Council	Gulf of Mexico Fishery Management Council
CPUE	Catch per unit effort
CS	consumer surplus
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F	Instantaneous rate of fishing mortality
FL	fork length
F_{MSY}	Fishing mortality rate corresponding to an equilibrium yield of MSY
F_{OY}	Fishing mortality rate corresponding to an equilibrium yield of OY
$F_{30\% \text{ SPR}}$	Fishing mortality corresponding to 30% spawning potential ratio
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
HAPC	Habitat Area of Particular Concern
HBS	Headboat Survey
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
M	Mortality
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MRFSS	Marine Recreational Fisheries Survey and Statistics
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NMFS	NOAA's National Marine Fisheries Service
nm	nautical mile
NOR	net operating revenues
OMB	Office of Management and Budget
OY	Optimum Yield
PRA	Paperwork Reduction Act
PS	Producer surplus
QMS	Quota Monitoring System

RA	Regional Administrator
RFA	Regulatory Flexibility Act of 1980
RFFMP	Reef Fish Fishery Management Plan
RIR	Regulatory Impact Review
Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment and Review
SEFSC	Southeast Fisheries Science Center
SSBR	Spawning Stock Biomass per Recruit
SSC	Scientific and Statistical Committee
SoVI	Social Vulnerability Index
SPR	Spawning Potential Ratio
TAC	Total Allowable Catch
TPWD	Texas Parks and Wildlife Department
VPA	Virtual Population Analysis

ENVIRONMENTAL ASSESSMENT COVER SHEET

Responsible Agencies and Contact Persons

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Name of Action

Regulatory Amendment to the Reef Fish Fishery Management Plan to Set a Recreational Fishing Closure for Greater Amberjack

Type of Action

(X) Administrative
( ) Draft
( ) Legislative
(X) Final

ABSTRACT

In 2009, the greater amberjack recreational sector was closed on October 24 with an estimated 9% harvest overage; resulting in 69 fewer fishing days than in 2008. The Gulf of Mexico Fishery Management Council subsequently requested that the greater amberjack recreational fishing season be evaluated to potentially establish a recreational season closure. Currently, the recreational sector is open to harvest all year. The intent of this framework action is to avoid in-season quota closures during peak recreational fishing months, increase social and economic benefits, and potentially provide biological benefits by protecting the stock during the peak spawning period. This regulatory amendment would close the greater amberjack recreational fishing season from June 1-July 31 beginning in 2011. This closure of the recreational greater amberjack fishing season during these dates would coincide with open recreational seasons for other managed reef fish species such as red snapper. By dividing the recreational greater amberjack season into two portions that would bracket the red snapper season, the proposed action could potentially offer recreational anglers the opportunity to fish for at least one of the targeted reef fish species year round.

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's National Marine Fisheries Service (NOAA Fisheries Service published Instructions 30-124-1 with guidelines for the preparation of a Finding of No Significant Impact. 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 Fisheries Service (#30-124), 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. The quota is established based on an allowable biological catch level determined from the results of a peer-reviewed and vetted stock assessment, which is based on the best scientific information available. The proposed action does not alter the manner in which the fishery is conducted, nor does it change the allowable harvest. The proposed action providing the authority to allow harvest of any available quota during a different portion of the fishing year is an administrative action. Subsequent action to close the recreational fishing season during June and July will lead to reduced direct effects on the target resource. To that end, the proposed action to close the recreational fishing season for greater amberjack would have a positive biological impact compared to "no action" whereby the recreational fishing season remains open which would increase overall fishing mortality. However, the proposed action is biologically neutral compared to the norm, whereby the full quota is normally harvested during the established fishing season. Closing the recreational greater amberjack fishing season during an adjusted fishing season may indirectly lessen fishing pressure and fishing mortality on other reef fish stocks, some of which are undergoing overfishing, thus providing some benefit to these other target species as well.

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

Response: No. The proposed action does not alter the manner (except the timing) in which the fishery is conducted, nor does it change the allowable harvest; the proposed action would only impose an annual closure to the recreational fishing season during June and July. Incidental catch would consist of alternative target species that are managed (e.g., vermilion snapper, red snapper) or non-managed species that are not known to be in jeopardy from fishing, e.g., grunts and porgies. Fishing regulations exist for several of these species to constrain harvest and those regulations are unaffected by this action. As elaborated in Criterion 5, the proposed actions are not expected to adversely affect endangered and threatened species.

3) *Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson Stevens Fisheries Conservation and Management Act (Magnuson Stevens Act) and identified in Fishery Management Plans (FMPs)?*

Response: No. The proposed action to provide authority to close the recreational harvest of greater amberjack 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. Vertical line gear could damage coral or other hard bottom habitat if it becomes entangled within these structures, but these effects are expected to be minimal. In addition, NOAA Fisheries Service has concluded the proposed action is consistent with the enforceable policies of the Coastal Zone Management programs of affected states.

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

Response: No. The proposed action is not reasonably expected to have a substantial adverse impact on public safety or health. The proposed action does not alter the manner (except the timing) in which the fishery is conducted. The federal and State governments have strong systems in place to test and monitor seafood safety and to prohibit harvesting from affected areas, keeping oiled products from being harvested. NOAA Fisheries Service is working closely with the U.S. Food and Drug Administration (FDA) and the States to ensure seafood safety. The first and most important preventive step in protecting the public from potentially contaminated seafood is from NOAA Fisheries Service's actions to close fishing and shellfish harvesting areas in federal waters of the Gulf that have been or are likely to be exposed to oil from the Deepwater Horizon MC252 oil spill.

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 to give NOAA Fisheries Service the authority to close the recreational harvest of greater amberjack during the months of June and July does not adversely effect endangered or threatened species, their critical habitat, marine mammals, or other non-target species. This action does not alter the overall manner in which the fishery is conducted, only the timing of the fishing season; thus they would not affect endangered or threatened species or marine mammals in a manner not already considered in previous biological opinions conducted for the fishery under the Endangered Species Act. In addition, regulations implemented in February 2008 require for-hire reef fish permitted vessels 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 (2009) 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, December 1, 2008). This classification indicates the annual mortality and

serious injury of a marine mammal stock resulting from the fishery is less than or equal to 1% of the potential biological removal.

6) *Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?*

Response: No, the proposed action is not expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area. The proposed action to close the recreational fishing season during June and July is not expected to substantially alter the manner in which the fishery is conducted in the Gulf of Mexico.

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

Response: No. The proposed action to implement a June-July seasonal closure of the recreational sector of the greater amberjack component of the Gulf reef fish fishery would mainly result in minimizing the adverse social and economic effects of quota closures. The ACL and AM would still apply to ensure the rebuilding strategy for the stock remains on track and overfishing is addressed. While the proposed action would result in social and economic benefits, it is neutral with respect to its effects on natural or physical environment. The economic impacts of the proposed action are described in Sections 3 and 4 of the Environmental Assessment (EA).

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 requested seasonal closures to help them properly plan for their fishing activities such that for-hire bookings are not unexpectedly cancelled and fishing activities such as rodeos are scheduled around the closed season. The total recreational harvest of greater amberjack would still be constrained by the ACL and AM provisions for this component of the reef fish fishery. In addition, fishing practices in terms of gear usage and length of trips would unlikely be affected.

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 the response to 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. In regard to ecologically critical areas in the Gulf, areas such as the Flower Gardens and the Tortugas Marine Sanctuaries are closed to fishing, Madison Swanson and Steamboat

Lumps ecologically-critical areas are closed to bottom fishing. Fishing activity already occurs in the vicinity of the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places; but this would not increase fishing activity over that exhibited in other years. Therefore, there would be no additional impacts on these components of the environment from the proposed action.

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

Response: No, the effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks. This action proposes to adjust the recreational fishing season for greater amberjack, in accordance with approved procedures outlined in the Council's Reef Fish FMP. Adjustments to fishing seasons and area closures are made regularly in many fisheries, based on updated information regarding the status of a specific stock or stocks.

Impacts of the oil spill may be uncertain, but the impacts of the spill on the greater amberjack stock may be limited to reduced recruitment, which is highly variable and uncertain across years, regardless of the spill and its effects. The outcome will only become apparent in following years as assessments are completed. Although there is some uncertainty as to the impacts of the spill on the stock and its recruitment, it is not considered significant in light of standard uncertainty associated with such factors.

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

Response: No. The Deepwater Horizon MC252 oil release is expected to have long-term significant impacts to major portions of the Gulf, and these actions are being taken in response to those impacts. However, there are no past and reasonably foreseeable future actions to manage greater amberjack that, if combined with this proposed action, would have a significant cumulative effect. The proposed action is not related to other actions with individually insignificant but cumulatively significant impacts.

12) *Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?*

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 there are none located in the affected area. The proposed management measures affects have been described in Amendment 30A in Section 5.3.1.

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 and management alternatives involves only the harvest of existing native species in the Gulf of Mexico, and is not reasonably expected to result in the introduction or spread of a non-indigenous species. The proposed seasonal closure 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. NOAA Fisheries Service regularly implements closed seasons when it has been determined quotas have the potential to be exceeded. In addition, NOAA Fisheries Service regularly opens and closes specific areas to fishing in accordance with regulations established from various fishery management plans; these include actions such as the seasonal Texas Shrimp Closure in the Gulf and the season closure to bottom fishing in Madison Swanson and Steamboat Lumps ecologically-critical areas. The Council and NOAA Fisheries Service have established a management strategy for greater amberjack whereby overfishing has been projected to have ended, and the stock should be rebuilt by 2012. The allowable harvest now and in the future will be in accordance with that rebuilding plan. The proposed action, conducted in accordance with regulations established under the FMP, as amended to date, in no way constitutes a decision in principle about a future consideration. FMPs and their implementing regulations are always subject to future changes. The Council and NOAA Fisheries Service have discretion to amend the FMP and accompanying regulations and may do so at any time, subject to the Administrative Procedures Act, National Environmental policy Act, and other applicable laws.

15) *Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?*

Response: No. The proposed action is being taken to ensure compliance with federal laws such as the Magnuson-Stevens Act, 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 recreational greater amberjack quota is established based on an allowable biological catch level determined from the results of a peer-reviewed and vetted stock assessment, which is based on the best scientific information available. The proposed actions do not alter the manner in which the fishery is conducted, nor does it change the allowable harvest; the proposed actions would only provide the authority to close the recreational fishing season, and subsequently adjust the time of year that the allowable harvest can be taken. However, the proposed action is biologically positive compared to the status quo of previous years, whereby the quota has been exceeded during the regular recreational fishing season. Although it is currently unknown if the greater amberjack stock has been biologically impacted by the Deepwater Horizon MC252 oil spill, if that is the case, then allowing additional fishing pressure on the stock could result in a reduced stock size. Nevertheless, at this time, no information is

available to make such a determination regarding the impacts of the Deepwater Horizon MC252 oil spill on any fish stock. Substantial portions of the stock reside and spawn in other areas of the Gulf that have not been impacted by the oil spill. Benthic habitats within the oil-impacted area, where juvenile and adult greater amberjack are found, may not have been impacted. By adjusting the fishing season for greater amberjack , the proposed action may lessen fishing pressure and fishing mortality on other reef fish stocks, some of which are undergoing overfishing, thus providing some benefit to these other target species as well.

DETERMINATION:
In view of the information presented in this document and the analysis contained in the supporting EA prepared for the temporary rules for the Gulf of Mexico reef fish fishery, it is hereby determined that this proposed 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.

_____ _____

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

EXECUTIVE SUMMARY

Greater amberjack (*Seriola dumerili*) is currently overfished and undergoing overfishing and has been under a rebuilding plan since 2003. In 2006, a new stock assessment was completed and determined the stock was not recovering at the rate previously projected. A stock assessment update is scheduled to occur during 2010 with the Scientific and Statistical Committee (SSC) review scheduled November-December 2010.

During the February 2010 Gulf of Mexico Fishery Management Council (Council) meeting, the Council requested that the greater amberjack recreational fishing season be reviewed and analyzed to potentially establish a recreational season closure. Currently, the recreational sector is open to harvest all year while the commercial sector has a seasonal closure of March through May each year.

The intent of this regulatory framework action is to avoid in-season quota closures during peak economic fishing months, maximize social and economic benefits, and potentially provide biological benefits by protecting the stock during the peak spawning period. This regulatory framework action proposes one action consisting of four alternatives to modify the existing greater amberjack recreational fishing season.

In 2008, Reef Fish Amendment 30A was approved for the greater amberjack stock establishing recreational and commercial quotas of 1,368,000 pounds whole weight and 503,000 pounds whole weight, respectively. In 2008, the recreational sector remained open throughout the year with an estimated harvest of 88,731 pounds under the quota. In 2008, the commercial sector harvested an estimated 412,516 pounds whole weight, 82% of the available commercial quota.

In 2009, the greater amberjack recreational sector was projected to reach its quota and closed on October 24 with an estimated harvest overage of 124,817 pounds whole weight. The 9% overage in 2009 by the recreational sector resulted in 69 fewer fishing days than in 2008. Accountability measures established in Reef Fish Amendment 30A reduced the 2010 quota to 1,243,184 pounds whole weight, which is estimated to be filled by late October. The commercial sector was closed on November 7, 2009 and harvested an estimated 632,928 pounds or 25.8% over the commercial quota of 503,000 pounds. The 129,928 pound overage was deducted from the 2010 commercial quota resulting in a quota of 373,072 pounds whole weight as prescribed in the accountability measures.

The greater amberjack rebuilding plan is scheduled to increase the total allowable catch (TAC) or annual catch limit to 2,547,000 pounds whole weight for the recreational sector and 938,000 pounds whole weight for the commercial sector in the years 2011-2013. These increases would only take place if the 2010 stock assessment reveals the greater amberjack stock is on schedule to be rebuilt to B_{msy} in 2012. Should the 2010 stock assessment reveal that greater amberjack is not rebuilding on target, the quotas would remain at the current levels of 1,368,000 pounds whole weight for the recreational sector and 503,000 pounds whole weight for the commercial sector.

During the June 2010 Gulf of Mexico Fishery Management Council meeting, the Council selected **Alternative 4** as the preferred alternative. **Preferred Alternative 4** would close the greater amberjack recreational fishing season from June 1- July 31 beginning in 2011. This closure of the recreational greater amberjack fishing season during these dates would coincide with open recreational seasons for other managed reef fish species such as red snapper. By dividing the recreational greater amberjack season into two portions that would bracket the red snapper season the preferred alternative would offer recreational anglers the opportunity to fish for at least one of the targeted species year round (provided the recreational quota is not exceeded). Under **Preferred Alternative 4**, the for-hire and private recreational sectors would have the opportunity for a greater number of fishing days for highly targeted or prized reef fish species, potentially improving the social and economic benefits.

MANAGEMENT ALTERNATIVES

Under **Alternative 1,** no action, the season would remain the same and the in-season accountability measure would close the recreational sector when the quota is reached. Additionally, any overage in harvest would be subtracted from the next year's quota. If the quota remains at 1,368,000 pounds for 2011 and no overage needs to be repaid from the previous year, landings are estimated to reach the quota by August 26, 2011. In this case, the recreational sector would be closed from August 27 through December 31. The 127 day closure would provide the anglers an estimated 238 total fishing days with an estimated lower catch limit harvest of 693,680 pounds whole weight and an upper catch limit harvest of 2,038,970 pounds whole weight with a mean harvest of 1,366,325 pounds whole weight.

Alternative 2 would close the recreational fishing season from March 1 through May 31. The 92 day closure would provide the anglers an estimated 273 fishing days with an estimated lower catch limit harvest of 574,742 pounds whole weight and an upper catch limit harvest of 1,793,452 pounds whole weight with a mean of 1,184,097 pounds whole weight.

Alternative 3 would close the recreational fishing season from May 1 through June 30. The 61 day closure would provide the anglers and estimated 304 fishing days with an estimated lower catch limit harvest of 396,898 pounds whole weight and an upper catch limit harvest of 1,449,594 pounds whole weight with a mean of 923,246 pounds whole weight.

Preferred Alternative 4 will close the recreational fishing season from June 1 through July 31. The 61 day closure will provide the anglers an estimated 304 fishing days with an estimated lower catch limit harvest of 476,877 pounds whole weight and an upper catch limit harvest of 1,525,135 pounds whole weight with a mean of 1,001,006 pounds whole weight.

1.0 INTRODUCTION

1.1. Background

There are 42 species of reef fish in the management unit for the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP) implemented in 1984, of which greater amberjack is one of four jack species. Two serranids are not managed, leaving 15 groupers, 14 snappers, five tilefishes, four jacks, one triggerfish and one wrasse. The jurisdiction of the Reef Fish FMP includes all waters of the Gulf of Mexico bounded outside by 200 nautical miles (nm) and inside by the state's territorial waters which are 3 nm in Alabama, Mississippi and Louisiana, and about 9 nm in Florida and Texas.

Greater amberjack landings history and relationship to previous amendments

Landings from the commercial sector for greater amberjack are available from the Accumulated Landings System since 1962, and the most recent stock assessment used data from 1963 through 2004. Recreational landings have been collected since 1979 through the Marine Recreational Fishing Statistical Survey (MRFSS). During this time period 2002-2008, the recreational sector took about 72% of the annual harvest with the commercial sector taking on average the remaining 28%, annually (Table 1.1.1). Landings appear to have been affected by regulations in 1990 through Amendment 1 that set minimum size limits to 28 inches fork length (FL) for the recreational and 36 inches FL for the commercial fisheries and established a bag limit of three fish for the recreational sector (Figure 1.1.1). A recreational bag limit reduction to one fish in 1997 and a commercial closed season in 1998 may also have caused reductions in landings, although it is less clear compared to size limit changes in 1990.

Table 1.1.1. Recreational and commercial landings of greater amberjack in whole weight (pounds) from 2002-2009. Note 2009 commercial landings are incomplete, and 2009 recreational landings are based upon raw data from Marine Recreational Fisheries Statistics Survey (MRFSS), Texas Parks and Wildlife Department (TPWD), and Southeast Headboat Survey (HBS) sampling programs.

YEAR	For Hire	Recreational	Recreational Total	Commercial	Grand Total	Total Allowable Catch
2002	1,406,264	645,968	2,052,232	721,102	2,773,334	
2003	1,292,766	1,373,780	2,666,546	881,610	3,548,156	2,900,000
2004	1,233,689	1,141,145	2,374,834	890,350	3,265,184	2,900,000
2005	532,513	901,192	1,433,705	690,888	2,124,593	2,900,000
2006	1,022,412	351,577	1,373,989	588,303	1,962,292	5,200,000
2007	755,060	323,007	1,078,067	532,267	1,610,334	5,200,000
2008	592,111	687,158	1,279,269	462,026	1,741,295	1,871,000
2009	776,397	716,421	1,492,818	632,928	2,125,746	1,871,000

Sources: Southeast fisheries science center (SEFSC) ACL Datasets (2000-2008), MRFSS; TPWD; HBS; Annual Landings Summary (ALS); Quota Monitoring System (QMS) (2009).

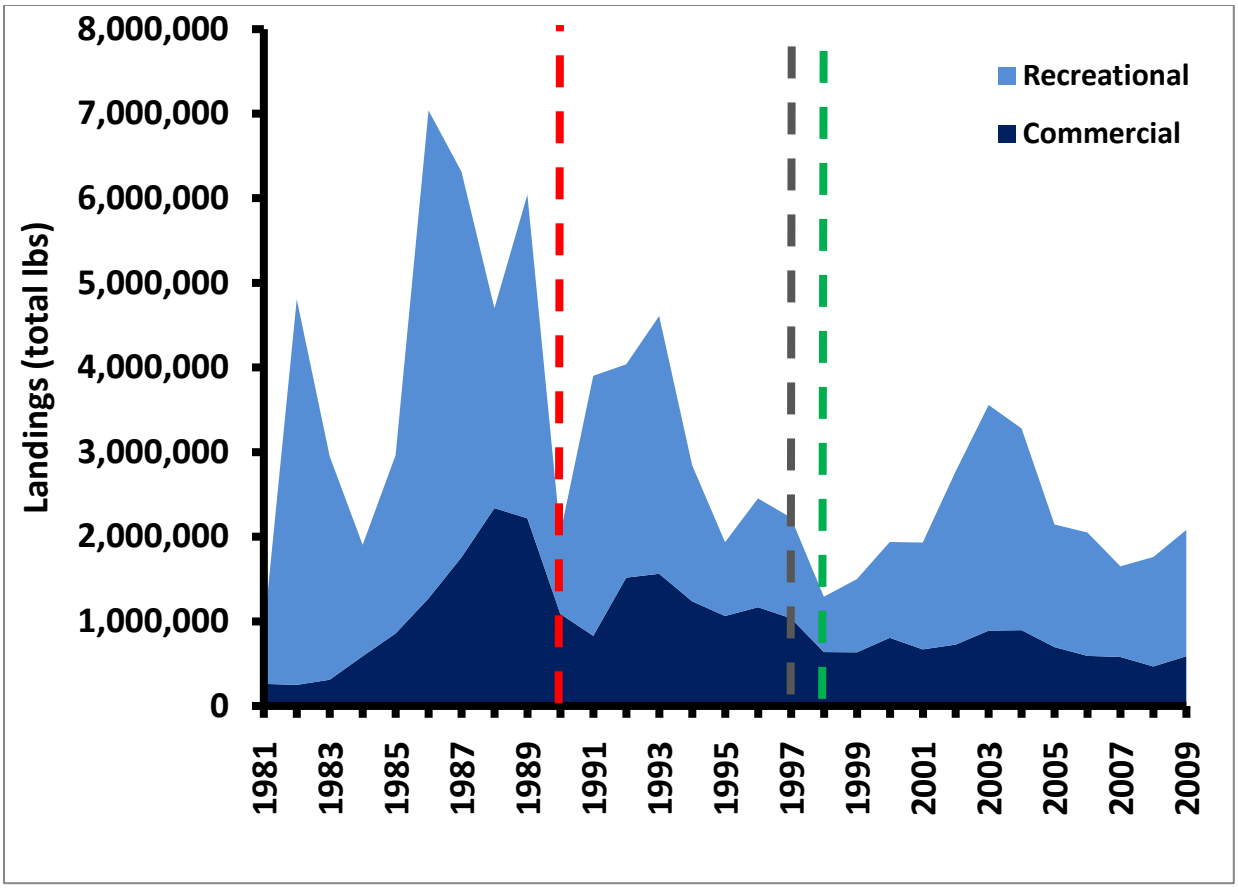

Figure 1.1.1. Recreational and commercial landings of greater amberjack from 1981 through 2008 with the implementation date for management regulations noted. Amendment 1 (---) implemented a recreational three-fish bag limit, 28-inch fork length (FL) size limit, and a commercial 36-inch FL size limit. Amendment 12 (---) reduced the bag limit to one fish. Amendment 15 (---) set a commercial closed season from March through May. Recreational and commercial landings include 'greater amberjack' and generic/unclassified 'amberjacks' per SEDAR 9 (2006). Sources: SEFSC ACL datasets (2000-2008), MRFSS; TPWD; HBS (2009).

1.2 Status of the Greater Amberjack Stock in the Gulf of Mexico

Greater amberjack have been under a rebuilding plan since 2003 with implementation of Secretarial Amendment 2. In 2006, a stock assessment was completed and determined the greater amberjack stock was not recovering at the rate previously projected. The stock continues to be overfished and is undergoing overfishing (SEDAR 9 2006). The Gulf of Mexico Fisheries Management Council (Council) and NOAA Fisheries Service developed and implemented Amendment 30A to the Reef Fish FMP in response to the stock assessment results in order to end overfishing and rebuild the stock (GMFMC 2008). The minimum reduction required to rebuild the stock by 2012 was 40% of current fish mortality. The total allowable catch (TAC) implemented in Amendment 30A was 1,871,000 pounds whole weight for 2008 through 2010 (GMFMC 2008). Amendment 30A also established quotas for the recreational and commercial sector at 1,368,000 and 503,000 pound whole weight, respectively. In addition to establishing

quotas, Amendment 30A also implemented sector accountability measures. If the either sector exceeds their sector allocation of TAC, the Regional Administrator can close that sector for the remainder of the year. Additionally, if the sector's landings exceed their share of TAC, the Regional Administrator can reduce the fishing season for the time necessary to recover the overage in the following fishing year.

In 2009, the recreational sector was projected to reach the greater amberjack quota and closed October 24, 2009. The recreational sector exceeded their 2009 quota by 9% resulting in accountability measures reducing the 2010 quota to 1,243,184 pounds whole weight, estimated to be filled by late October. If the recreational sector does not exceed the 2010 quota, the 2011 quota would be 1,368,000 pounds whole weight. The Council and stakeholders have requested an analysis of various scenarios to modify the recreational greater amberjack season.

Secretarial Amendment 2 to the Reef Fish FMP established a rebuilding plan for greater amberjack based on a stock assessment conducted in 2000. That assessment determined that the greater amberjack stock was overfished and undergoing overfishing as of 1998 (Turner et al. 2000). Management measures to reduce the recreational bag limit from three to one fish were implemented in January 1997 and the commercial seasonal closure from March through May was implemented in January 1998; however, these closures were not incorporated into the assessment. The projected effects of these management measures were expected to eliminate overfishing; therefore, no new management measures were implemented.

Based on the parameter estimates from the SEDAR 9 2004 stock assessment, the stock was determined to be overfished ($B_{2004}/B_{MSY} < 1.0$) and undergoing overfishing ($F_{2004}/F_{MSY} > 1.0$). Biomass was less than half of B_{MSY} and fishing mortality was 52% too high in 2004. Stock biomass declined from at least 1986 through 1998 and then increased through 2003. However, these results were very dependent upon the weighting applied to the catch rate indices by fishing sector. The base-case model weighted the indices by the proportion of total catch for each sector over the last eight years. When each catch rate is weighted equally, the stock remains overfished but less so than the base case (SEDAR 9 2006).

The Sustainable Fisheries Act compliant thresholds and targets were defined in Secretarial Amendment 2. The maximum fishing mortality threshold (MFMT) is defined as the fishing mortality rate at maximum sustainable yield (MSY). Minimum stock size threshold (MSST) is defined as (1-M)*Biomass at maximum sustainable yield (B_{MSY}) with natural mortality (M) equal to 0.25. Maximum sustainable yield is the yield associated with F_{MSY} (proxy = $F_{30\%SPR}$) when the stock is at equilibrium and optimum yield (OY) is the yield associated with $F_{40\%\ SPR}$ when the stock is at equilibrium. The fishing mortality (F) and 30% spawning potential ratio ($F_{30\%SPR}$) was defined as the proxy for F_{MSY} for greater amberjack because biomass-based estimates were considered less accurate than SPR-based estimates in the 2000 assessment. However, the more recent SEDAR 9 assessment accepted the biomass-based estimates for these parameters.

A new assessment was conducted in 2006 using a simple surplus production model called A Stock-Production Model Incorporating Covariates (ASPIC; Prager 2004). Other models, such as the calibrated Virtual Population Analysis (VPA) used in the 2000 assessment and an age-

structured surplus production model were applied to the stock, but a lack of good-quality ageing data added an unknown amount of uncertainty to these methods and they were not considered adequate (SEDAR 9 2006).

Results from the ASPIC base model are:

Parameter	***Value***
Population parameters and management benchmarks	
MSY (million pounds)	5.039
B_{MSY}	8.873
F_{MSY}	0.568
Stocks parameters in 2004	
F_{2004}	0.863
F_{2004} / F_{MSY}	1.520
B_{2004}	4.250
B_{2004} / B_{MSY}	0.479

Some of the uncertainty in the stock status is derived from the indices of relative abundance being inconsistent between sectors in 2004 (Figure 1.2.1). The SEDAR 9 Review Panel stated an explanation of this might be due to different selectivities between sectors and different fishing locations. There also could be the possibility of strong recruitment into the fishery combined with the selectivity by the charter boats for smaller fish. This makes the projections both uncertain and uninformative, so the SEDAR 9 Review Panel recommended that an update assessment be conducted in the next few years to determine the stock trajectory with more precision.

Subsequent to the SEDAR 9 report, the indices were updated to include the values for 2005 (Figure 1.2.1). The MRFSS and commercial handline indices, representing 92% of the total catch, continued to decline in 2005 and the head boat index declined significantly in 2005 to near historic lows. Collectively these three sectors represent over 97% of the total harvest. Only the commercial longline index representing 2.5% of the total harvest continued to increase. Therefore, the SEDAR 9 assessment including weighted indices by the proportion of catch by sector appears to be valid; the stock is continuing to undergo overfishing and remains overfished.

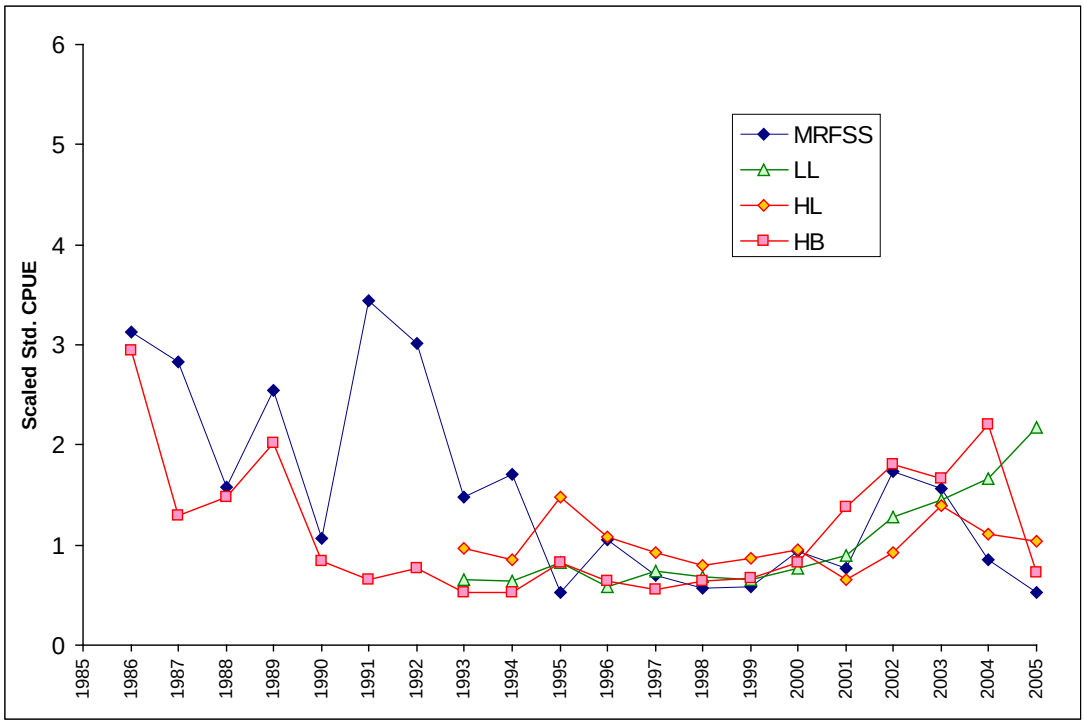

Figure 1.2.1. Greater amberjack catch per unit effort (CPUE) trends from recreational (MRFSS and Head boat, HB) and commercial (Longline, LL and Handline, HL) sectors from 1985 through 2005. Source: PowerPoint presentation given to the Scientific and Statistical Committee (SSC) and Reef Fish Advisory Panel on August 8, 2006 by Guillermo Diaz, SEFSC.

1.3 Greater Amberjack Reproductive Biology Review

Recent studies conducted in the South Atlantic have consistently estimated that the greater amberjack peak spawning season occurs in April and May (Sedberry et al. 2006; Harris et al. 2007); whereas, studies conducted in the Gulf of Mexico have consistently estimated that peak spawning occurs a month earlier during March and April (Wells and Rooker 2002; Murie and Parkyn 2008).

Early studies on greater amberjack conducted in south Florida indicated that the maximum gonad development occurred in the spring months (Burch 1979). Studies in the 1990s on greater amberjack in the Gulf of Mexico estimated the spawning season off Louisiana peaked in April-June based on increased gonad weight (Beasley 1993) and in May and June by Thompson et al. (1991). Wells and Rooker (2002) conducted studies in the northwestern Gulf on larval and juvenile fish associated with floating *Sargassum*. Based on the size and season larvae and juvenile greater amberjack were captured by researchers they estimated that peak spawning season occurred in March and April.

Sedberry et al. (2006) documented greater amberjack spawning in the South Atlantic on both the middle and outer shelf as well as on upper-slope reefs from 15-216 m, but spawning females were found at deeper depths of 45 to 122 m. They collected spawning females from January to

June, and estimated peak spawning occurred in April and May. Harris et al. (2007) completed a fishery-dependent and fishery-independent study on greater amberjack reproductive biology in the southeastern U.S. Atlantic from 2000-2004. Greater amberjack in spawning condition were captured from North Carolina to the Florida Keys; however, spawning was concentrated in areas off south Florida and the Florida Keys. Harris et al. (2007) documented evidence of spawning from January-June with peak spawning during April and May. Female greater amberjack were significantly larger than males. Male size at 50% maturity was (25.4 inches) 644 mm FL and female size at 50% maturity was (32.5 inches) 826 mm FL. They estimated a spawning season of approximately 73 days off south Florida, with a spawning period of 5 days, estimating that an individual female could spawn as frequently as 14 times during the season. Female fecundity increased with size, but was essentially constant throughout the spawning season. Greater amberjack are extremely fecund releasing 18 to 59 million eggs per female in a single spawning season (Harris et al. 2007).

Murie and Parkyn (2008) completed a recent study on reproductive biology of greater amberjack throughout the Gulf of Mexico using fishery-dependent as well as fishery-independent data from 1989-2008. They also found females were significantly larger than males but that peak spawning occurred during March and April, and by May, they documented low gonad weights. Female size at 50% maturity was (33-35 inches) 850 to 900 mm FL, larger than what Harris et al. (2007) documented off south Florida.

It was suggested in the Harris et al. (2007) study that there are known spawning aggregations of greater amberjack targeted by fishers in the South Atlantic, but no evidence of this was presented. Observations by SCUBA divers in Belize documented greater amberjack in pair courtship when they were in a school of approximately 120 fish (Graham and Castellanos 2003). However, no aggregation or indication of spawning aggregations was discussed by the Murie and Parkyn (2008) Gulf of Mexico study or other earlier Gulf studies.

1.4 Purpose and Need

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires NOAA Fisheries Service and regional Fishery Management Councils to prevent overfishing, and rebuild overfished stocks, and to protect, restore and promote long-term health and stability of the fishery, achieve, on a continuing basis, the optimum yield from federally managed fish stocks. These mandates are intended to ensure fishery resources are managed for the greatest overall benefit to the nation, particularly with respect to providing food production and recreational opportunities, and protecting marine ecosystems. To further this goal, the Magnuson-Stevens Act requires fishery managers to specify through rebuilding plans their strategy for rebuilding overfished stocks to a sustainable level within a certain time frame, provide accountability measures to minimize the risk of overharvest, minimize bycatch levels, and bycatch mortality to the extent practicable, and ensure that management decisions are based on the best available scientific information.

The purpose of this framework action is to consider a range of alternatives, with various seasonal closures for the greater amberjack recreational fishing season. The main objective is to maximize the number of fishing days available for the recreational sector in the Gulf of Mexico

and reduce the probability of exceeding the quota, triggering accountability measures. This objective would be accomplished by analyzing historical landings data to determine when a seasonal closure is needed to provide the recreational sector with maximum number of fishing days possible. The need is to address social and economic impacts of keeping greater amberjack open while other highly targeted and prized reef fish species, such as red snapper, are closed.

1.5 History of Management

The Reef Fish FMP [with its associated environmental impact statement (EIS)] was implemented in November 1984. The original list of species included in the management unit consisted of snappers, groupers, and sea basses. Gray triggerfish and *Seriola* species, including greater amberjack, were in a second list of species included in the fishery, but not in the management unit. The species in this list were not considered to be target species because they were generally taken incidentally to the directed fishery for species in the management unit. Their inclusion in the Reef Fish FMP was for purposes of data collection, and their take was not regulated.

Amendment 1 [with its associated environmental assessment (EA), regulatory impact review (RIR), and initial regulatory flexibility analysis (IRFA)] to the Reef Fish FMP, implemented in 1990, added greater amberjack and lesser amberjack to the list of species in the management unit. It set a greater amberjack recreational minimum size limit of 28 inches fork length (FL) and a three-fish recreational bag limit, and a commercial minimum size limit of 36 inches FL. This amendment set as a primary objective of the FMP the stabilization of long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age to achieve at least 20% spawning stock biomass per recruit (SSBR), relative to the SSBR that would occur with no fishing. A framework procedure for specification of TAC was created to allow for annual management changes. This amendment also established a commercial vessel reef fish permit as a requirement for harvest in excess of the bag limit and for the sale of reef fish.

Amendment 4 (with its associated EA and RIR), implemented in May 1992, added the remaining *Seriola* species (banded rudderfish and Almaco jack) to the management unit, and established a moratorium on the issuance of new commercial reef fish vessel permits for a maximum period of three years.

Amendment 5 (with its associated supplemental EIS, RIR, and IRFA), implemented in February 1994, required that all finfish except for oceanic migratory species be landed with head and fins attached, and closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

Amendment 12 (with its associated EA and RIR), submitted in December 1995 and implemented in January 1997, reduced the greater amberjack bag limit from three fish to one fish per person, and created an aggregate bag limit of 20 reef fish for all reef fish species not having a bag limit (including lesser amberjack, banded rudderfish, Almaco jack and gray triggerfish). NOAA Fisheries Service disapproved proposed provisions to include lesser amberjack and banded rudderfish along with greater amberjack in an aggregate one-fish bag limit and to establish a 28-inch FL minimum size limit for those species.

Amendment 15 (with its associated EA, RIR, and IRFA), implemented in January 1998, closed the commercial sector for greater amberjack Gulf-wide during the months of March, April, and May. A regulatory amendment in August 1999 (with its associated EA, RIR, and IRFA) closed two areas (i.e., create two marine reserves), 115 and 104 square nautical miles respectively, year-round to all fishing under the jurisdiction of the Council with a four-year sunset closure.

Generic Sustainable Fisheries Act Amendment (with its associated EA, RIR, and IRFA), partially approved and implemented in November 1999, set the MFMT for greater amberjack at $F_{30\%\ SPR}$. Estimates of MSY, MSST, and OY were disapproved because they were based on SPR proxies rather than biomass-based estimates.

Amendment 16B (with its associated EA, RIR, and IRFA), implemented in November 1999, set a slot limit of 14 to 22 inches FL for banded rudderfish and lesser amberjack for both the commercial and recreational fisheries, and an aggregate recreational bag limit of five fish for banded rudderfish and lesser amberjack.

Secretarial Amendment 2, implemented in July, 2003 for greater amberjack, specified MSY as the yield associated with $F_{30\%\ SPR}$ (proxy for F_{MSY}) when the stock is at equilibrium, OY as the yield associated with an $F_{40\%\ SPR}$ when the stock is at equilibrium, MFMT equal to $F_{30\%SPR}$, and MSST equal to (1-M)*B_{MSY} or 75% of B_{MSY}. It also set a rebuilding plan limiting the harvest to 2.9 mp for 2003-2005, 5.2 mp for 2006-2008, 7.0 mp for 2009-2011, and for 7.9 mp for 2012. This was expected to rebuild the stock in seven years. Regulations implemented in 1997 and 1998 (Amendments 12 and 15) were deemed sufficient to comply with the rebuilding plan so no new regulations were implemented.

Amendment 30A implemented August 2008, was developed to stop overfishing of gray triggerfish and greater amberjack. The amendment established annual catch limits and accountability measures for greater amberjack and gray triggerfish. For greater amberjack, it modified the rebuilding plan, increased the recreational minimum size limit to 30 inches FL, set a zero bag limit for captain and crew of for-hire vessels, and set commercial and recreational quotas.

Temporary Rule implemented in June 2010, specified the greater amberjack accountability measures for annual catch limits for the 2010 fishing season. The accountability measures developed in Amendment 30A required the commercial and recreational quotas for greater amberjack to be reduced to compensate for the harvest being exceeded in 2009. The commercial quota went from 503,000 pounds whole weight to 373,072 pounds while the recreational harvest was reduced from 1,368,000 pounds to 1,243,184 pounds whole weight.

1.6 Description of the Affected Physical Environment

The physical environment for reef fish, including greater amberjack, has been described in detail in the EIS for the Generic Essential Fish Habitat Amendment and is incorporated here by reference (GMFMC 2004a). The Gulf has a total area of approximately 600,000 square miles

(1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily affected by the Loop Current, the discharge of freshwater into the Northern Gulf, and a semi-permanent, anticyclonic gyre in the western Gulf. Gulf water temperatures range from 12º C to 29º C (54º F to 84º F) depending on time of year and depth of water. In the Gulf, adult greater amberjack are pelagic and epibenthic, occurring over reefs and wrecks as well as around buoys (GMFMC, 2004a).

Environmental Sites of Special Interest Relevant to Greater Amberjack (Figure 1.6.1)

Longline/Buoy Gear Area Closure - Permanent closure to use of these gears for reef fish harvest inshore of 20 fathoms off the Florida shelf and inshore of 50 fathoms for the remainder of the Gulf (72,300 square nautical miles).

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

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

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

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

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

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

Alabama Special Management Zone (SMZ) - In the Alabama SMZ, fishing by a vessel operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, is limited to hook-and-line gear with no more than 3 hooks. Nonconforming gear is restricted to bag limits, or for reef fish without a bag limit, to 5 percent by weight of all fish aboard.

Additionally, Generic Amendment 3 for addressing EFH requirements (GMFMC 2005a) requires a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf EEZ. A weak link is defined as a length or section of the tickler chain that has a breaking strength less than the chain itself and is easily seen as such when visually inspected. Also, the amendment establishes an education program on the protection of coral reefs when using various fishing gears in coral reef areas for recreational and commercial fishermen.

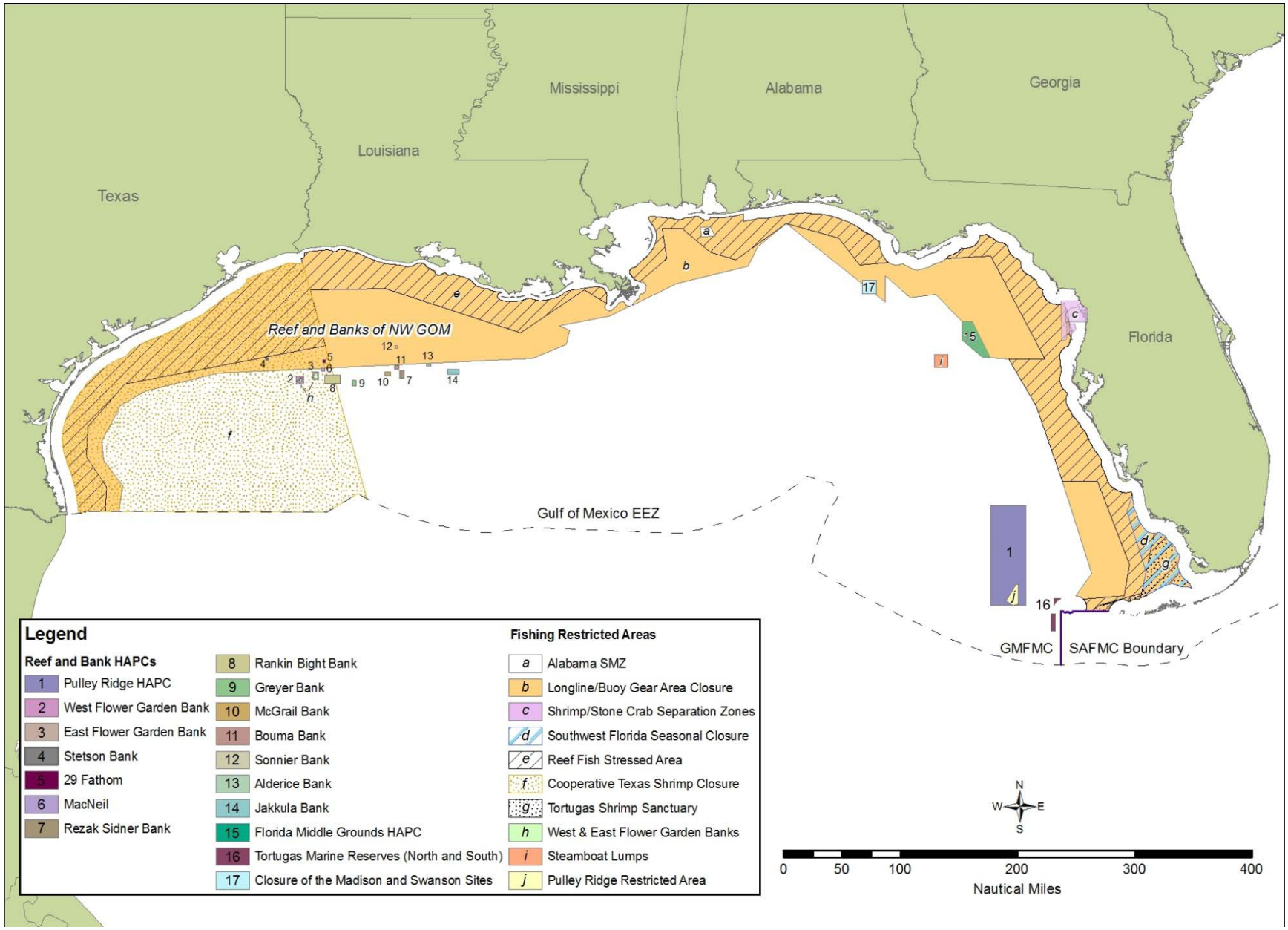

Figure 1.6.1. Map of most fishery management closed areas in the Gulf of Mexico.

1.7 Description of the Affected Biological Environment

The biological environment of the Gulf of Mexico, including the species addressed in this amendment, is described in detail in the final EIS for the Generic Essential Fish Habitat amendment and is incorporated here by reference (GMFMC 2004a).

Greater Amberjack Life History and Biology

Greater amberjack demonstrate the typical reef fish life history pattern (Table 1.7.). Eggs and larvae are pelagic and smaller juveniles (<20 mm SL) are found associated with pelagic Sargassum mats (Bortone et al. 1977; Wells and Rooker 2004a). Juveniles then shift to demersal habitats (5-6 months), where they congregate around reefs, rock outcrops, and wrecks. Since greater amberjack are only seasonally abundant in certain parts of their range, they likely utilize a variety of habitats and/or areas each year. A more complete description of greater amberjack life history can be found in the Council's EFH EIS (GMFMC, 2004a). In the Gulf, spawning is protracted (January to May), with peak spawning occurring in the spring (Burch 1979; Beasley 1993; Wells and Rooker 2004; Harris et al. 2004). The age and size at sexual maturity for greater amberjack in the Gulf of Mexico is not known well. Harris et al. (2004) reported all female greater amberjack taken off the U. S. Atlantic coast were mature by 865 mm FL and age 4.2 years. For males, it was 795 mm FL and 3.5 years. Greater amberjack have been reported to live as long as 17 years (Manooch and Potts 1997a) and commonly reach sizes greater than 1000 mm FL. Females reach larger sizes at age than males (Harris et al. 2004).

Status of the Greater Amberjack Stock

See Section 1.2.

General Information on Reef Fish Species

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

In general, reef fish are widely distributed in the GOM, occupying both pelagic and benthic habitats during their life cycle. Habitat types and life history stages are summarized in Table 1.7.1 and can be found in more detail in GMFMC (2004a). 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 (SAV). Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf (<100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. Juvenile red snapper are common on mud bottoms in the northern Gulf, particularly off Texas through Alabama. Also, some juvenile snappers (e.g. mutton, gray, red, dog, lane, and yellowtail snappers) and groupers (e.g. goliath grouper, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981). More detail on hard bottom substrate and coral can be found in the FMP for Corals and Coral Reefs (GMFMC and SAFMC 1982).

Table 1.7.1. Summary of habitat utilization by life history stage for species most species in the Reef Fish FMP. This table is adapted from Table 3.2.7 in the final draft of the EIS from the Council's EFH generic amendment (GMFMC 2004a).

Common name	Eggs	Larvae	Post-larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Red snapper	Pelagic	Pelagic		Hard bottoms, Sand/ shell bottoms, Soft bottoms	Hard bottoms, Sand/ shell bottoms, Soft bottoms	Hard bottoms, Reefs	Sand/ shell bottoms
Queen	Pelagic	Pelagic				Hard bottoms	
Mutton snapper	Reefs	Reefs	Reefs	Mangroves, Reefs, SAV, Emergent	Mangroves, Reefs, SAV, Emergent marshes	Reefs, SAV	Shoals/ Banks, Shelf edge/slope
Schoolmaster	Pelagic	Pelagic		Mangroves, SAV	Hard bottoms, Mangroves, Reefs, SAV, Emergent marshes	Hard bottoms, Reefs, SAV	Reefs
Blackfin snapper	Pelagic			Hard bottoms	Hard bottoms	Hard bottoms, Shelf edge/slope	Hard bottoms, Shelf edge/slope
Cubera snapper	Pelagic			Mangroves, Emergent marshes, SAV	Mangroves, Emergent marshes, SAV	Mangroves, Reefs	Reefs
Gray (mangrove) snapper	Pelagic, Reefs	Pelagic, Reefs	SAV	Mangroves, Emergent marshes, Seagrasses	Mangroves, Emergent marshes, SAV	Emergent marshes, Hard bottoms, Reefs, Sand/ shell bottoms, Soft bottoms	
Dog snapper	Pelagic	Pelagic		SAV	Mangroves, SAV	Reefs, SAV	Reefs
Mahogany snapper	Pelagic	Pelagic		Reefs, Sand/ shell bottoms	Reefs, Sand/ shell bottoms	Hard bottoms, Reefs, Sand/ shell bottoms, SAV	

Common name	Eggs	Larvae	Post-larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Lane snapper	Pelagic		Reefs, SAV	Mangroves, Reefs, Sand/ shell bottoms, SAV, Soft bottoms	Mangroves, Reefs, Sand/ shell bottoms, SAV, Soft bottoms	Reefs, Sand/ shell bottoms, Shoals/ Banks	Shelf edge/slope
Silk snapper						Shelf edge	
Yellowtail snapper	Pelagic			Mangroves, SAV, Soft bottoms	Reefs	Hard bottoms, Reefs, Shoals/ Banks	
Wenchman	Pelagic	Pelagic				Hard bottoms, Shelf edge/slope	Shelf edge/slope
Vermilion snapper	Pelagic			Hard bottoms, Reefs	Hard bottoms, Reefs	Hard bottoms, Reefs	
Gray triggerfish	Reefs	Drift algae	Drift algae	Drift algae, Mangroves	Drift algae, Mangroves, Reefs	Reefs, Sand/ shell bottoms	Reefs, Sand/ shell bottoms
Greater amberjack	Pelagic	Pelagic	Pelagic	Drift algae	Drift algae	Pelagic, Reefs	Pelagic
Lesser				Drift algae	Drift algae	Hard bottoms	Hard bottoms
Almaco jack	Pelagic			Drift algae	Drift algae	Pelagic	Pelagic
Banded rudderfish		Pelagic		Drift algae	Drift algae	Pelagic	Pelagic
Hogfish				SAV	SAV	Hard bottoms, Reefs	Reefs
Blueline tilefish	Pelagic	Pelagic				Hard bottoms, Sand/ shell bottoms, Shelf edge/slope, Soft bottoms	

Common name	Eggs	Larvae	Post-larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Tilefish	Pelagic, Shelf edge/ slope	Pelagic		Hard bottoms, Shelf edge/slope, Soft bottoms	Hard bottoms, Shelf edge/slope, Soft bottoms	Hard bottoms, Shelf edge/slope, Soft bottoms	
Dwarf sand perch					Hard bottoms	Hard bottoms, Soft bottoms	
Sand perch						Reefs, SAV, Shoals/ Banks, Soft bottoms	
Rock hind	Pelagic	Pelagic				Hard bottoms, Reefs	Hard bottoms, Reefs
Speckled hind	Pelagic	Pelagic				Hard bottoms, Reefs	Shelf edge/slope
Yellowedge grouper	Pelagic	Pelagic			Hard bottoms	Hard bottoms	
Red hind	Pelagic	Pelagic		Reefs	Reefs	Hard bottoms, Reefs, Sand/ shell bottoms	Hard bottoms
Goliath grouper	Pelagic	Pelagic	Man-groves	Mangroves, Reefs, SAV	Hard bottoms, Mangroves, Reefs, SAV	Hard bottoms, Shoals/ Banks, Reefs	Reefs, Hard bottoms
Red grouper	Pelagic	Pelagic		Hard bottoms, Reefs, SAV	Hard bottoms, Reefs	Hard bottoms, Reefs	
Misty grouper	Pelagic	Pelagic				Hard bottoms, Shelf edge/slope	Hard bottoms
Warsaw grouper	Pelagic	Pelagic			Reefs	Hard bottoms, Shelf edge/slope	
Snowy grouper	Pelagic	Pelagic		Reefs	Reefs	Hard bottoms, Reefs, Shelf edge/slope	
Nassau grouper		Pelagic		Reefs, SAV		Hard bottoms, Reefs, Sand/ shell bottoms	Hard bottoms, Reefs, Sand/ shell bottoms

Common name	Eggs	Larvae	Post-larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Black grouper	Pelagic	Pelagic		SAV	Hard bottoms, Reefs	Hard bottoms, Mangroves, Reefs	
Yellowmouth grouper	Pelagic	Pelagic		Mangroves	Mangroves, Reefs	Hard bottoms, Reefs	
Gag	Pelagic	Pelagic		SAV	Hard bottoms, Reefs, SAV	Hard bottoms, Reefs	
Scamp	Pelagic	Pelagic		Hard bottoms, Mangroves, Reefs	Hard bottoms, Mangroves, Reefs	Hard bottoms, Reefs	Reefs, Shelf edge/slope
Yellowfin grouper				SAV	Hard bottoms, SAV	Hard bottoms, Reefs	Hard bottoms

Status of Reef Fish Stocks

The Reef Fish FMP currently encompasses 42 species (Table 3.2.2.2). Stock assessments have been conducted on 11 species: red snapper (SEDAR 7, 2005), vermilion snapper (Porch and Cass-Calay, 2001; SEDAR 9, 2006c), 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, 2006a), hogfish (Ault et al., 2003; SEDAR 6, 2003a), 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 2007 Status of U.S. Fisheries (http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm) classifies two as overfished (greater amberjack and red snapper), and three as undergoing overfishing (red snapper, gag, and greater amberjack). The recent assessment for vermilion snapper (SEDAR 9, 2006a) indicates this species is not overfished or undergoing overfishing. Recent assessments for gray triggerfish and gag (SEDAR 9, 2006b and SEDAR 10, 2006, respectively) suggest these two species are experiencing overfishing and are overfished, and stock recovery for greater amberjack is occurring slower than anticipated. 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.

Table 1.7.2. Species of the reef fish FMP. Species in bold have had stock assessments. *Deep-water groupers. (Note: if the shallow-water grouper quota is filled, then scamp are considered a deep-water grouper.) **Protected groupers.

Common Name	Scientific Name	Stock Status
Balistidae--Triggerfishes		
Gray triggerfish	Balistes capriscus	Overfished Overfishing
Carangidae—Jacks		
Greater amberjack	Seriola dumerili	Overfished Overfishing
Lesser amberjack	Seriola fasciata	Unknown
Almaco jack	Seriola rivoliana	Unknown
Banded rudderfish	Seriola zonata	Unknown
Labridae—Wrasses		
Hogfish	Lachnolaimus maximus	Unknown
Lutjanidae—Snappers		
Queen snapper	Etelis oculatus	Unknown
Mutton snapper	Lutjanus analis	Unknown
Schoolmaster	Lutjanus apodus	Unknown
Blackfin snapper	Lutjanus buccanella	Unknown
Red snapper	Lutjanus campechanus	Overfished Overfishing
Cubera snapper	Lutjanus cyanopterus	Unknown
Gray(mangrove) snapper	Lutjanus griseus	Unknown
Dog snapper	Lutjanus jocu	Unknown
Mahogany snapper	Lutjanus mahogoni	Unknown
Lane snapper	Lutjanus synagris	Unknown

Silk snapper	Lutjanus vivanus	Unknown
Yellowtail snapper	Ocyurus chrysurus	Not Overfished or Overfishing
Wenchman	Pristipomoides aquilonaris	Unknown
Vermilion snapper	Rhomboplites aurorubens	Not Overfished or Overfishing
Malacanthidae—Tilefishes		
Goldface tilefish	Caulolatilus chrysops	Unknown
Blackline tilefish	Caulolatilus cyanops	Unknown
Anchor tilefish	Caulolatilus intermedius	Unknown
Blueline tilefish	Caulolatilus microps	Unknown
(Golden) Tilefish	Lopholatilus chamaeleonticeps	Unknown
Serranidae—Groupers		
Dwarf sand perch	Diplectrum bivittatum	Unknown
Sand perch	Diplectrum formosum	Unknown
Rock hind	Epinephelus adscensionis	Unknown
Yellowfin grouper	Mycteroperca venenosa	Unknown
Scamp	Mycteroperca phenax	Unknown
Red hind	Epinephelus guttatus	Unknown
**Goliath grouper	Epinephelus itajara	Unknown Not Overfishing
**Nassau grouper	Epinephelus striatus	Unknown Not Overfishing
Red grouper	Epinephelus morio	Overfished Overfishing
Gag	Mycteroperca microlepis	Overfished Overfishing
Yellowmouth grouper	Mycteroperca interstitialis	Unknown
Black grouper	Mycteroperca bonaci	Unknown
*Yellowedge grouper	Epinephelus flavolimbatus	Unknown
*Snowy grouper	Epinephelus niveatus	Unknown
*Warsaw grouper	Epinephelus nigritus	Unknown
*Misty grouper	Epinephelus mystacinus	Unknown
*Speckled hind	Epinephelus drummondhayi	Unknown

Protected Species

There are 28 different species of marine mammals that may occur in the Gulf. All 28 species are protected under the 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) and the February 2005 ESA biological opinion on the reef fish fishery (NMFS 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 2008 Marine Mammal Protection Act List of Fisheries as Category III fisheries (73 FR 66048). 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 these fisheries. Bottlenose dolphins may predate and depredate on the bait, catch, and/or released discards of the reef fish fishery. They are also a common predator around reef fish vessels, feeding on the discards.

All five species of sea turtles are adversely affected by the Gulf reef fish fishery. Incidental captures are relatively infrequent, 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 in the commercial and for-hire reef fish fisheries to minimize post-release mortality.

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.

1.8 Description of Social Environment

The greater amberjack component of the reef fish fishery is prosecuted throughout the Gulf of Mexico and is primarily recreational. This species is prized for its fighting ability and can also be found on the menus of many coastal seafood restaurants. Although it is not as prized as many other species, it is a mainstay for private, charter and headboat fishermen throughout the Gulf and is often included in fishing tournaments as a target species because it can be fished year round.

Although there are no landings data at the community level for the recreational sector, Table 1.8.1 provides a ranking of the top 25 communities based upon commercial amberjack landings, the number of charter permits divided by population, and recreational infrastructure rank as enumerated from the MRFSS site registry. The charter permit count includes both reef fish and coastal pelagic charter permits and the rank is among all communities with charter permits. This is a crude measure of the reliance upon recreational fishing and is general in nature and not specific to greater amberjack. This ranking is consistent with the level of recreational amberjack landings as Florida and Louisiana rank higher than the other three Gulf States with the top ten communities in Table 1.8.1. Florida has by far the most recreational landings of all the Gulf States

<u>Florida</u>
The communities of Destin and several Keys communities are the more reliant communities in Florida with regard to their ranking of amberjack recreational fishing according to Table 1.8.1. These are coastal communities that rely on recreational tourism for a large part of their economies. These communities have numerous charter and headboat operations that require significant support industries and infrastructure such as marinas, bait and tackle shops, and various maintenance shops

for engine and boat repair. The charter service websites from these communities display photos of amberjack as this species is often advertized as a key target species (www.fishdestin.com/fishinggallery.html; www.honeydocharters.com/). Although, it is of less importance than other reef fish and coastal and highly migratory species, it seems to be a mainstay for many charter services. All of the Florida communities are considered to be either primarily or secondarily involved in fishing based upon their community profiles (Impact Assessment, Inc 2005).

Table 1.8.1. Average rank for communities with commercial greater amberjack landings, charter permits/population, and recreational fishing infrastructure.

Community	State	Average rank commercial landings	Average rank charter permits/pop	Infrastructure rank	Average rank
Destin*	FL	5	9	5	6
Islamorada*	FL	2	10	10	7
Key West*	FL	9	12	3	8
Panama City*	FL	6	33	9	16
Grand Isle#	LA	11	33	8	17
Key Largo*	FL	1	51	2	18
Venice*	LA	12	31	18	20
Tavernier#	FL	12	28	22	21
Freeport*	TX	24	28	10	21
Madeira Beach*	FL	4	50	18	24
Pensacola*	FL	16	57	1	25
Fort Myers Beach*	FL	19	65	6	30
Galveston@	TX	15	73	10	33
Saint Petersburg#	FL	8	87	3	33
Clearwater#	FL	13	70	18	34
Tarpon Springs*	FL	24	67	16	36
Houston@	TX	4	117	10	44
Port Isabel*	TX	24	125	10	53
Tampa#	FL	15	148	6	56
Hudson*	FL	19	128	22	56
Ruskin#	FL	22	159	17	66
Golden Meadow*	LA	7	203	21	77
Port Bolivar*	TX	20	203	10	78
Bayou La Batre*	AL	19	202	22	81
Grand Bay*	AL	20	202	25	82

*Primarily Involved; #Secondarily Involved; @Tangentially Involved in fishing (Impact Assessment, Inc 2005)

Table 1.8.2. Census Demographic 2007 Estimates for Counties in Florida (U.S. Census Bureau 2009).

Factor	Escambia Co	Bay Co	Monroe Co
Total population	304,280	163,805	74,397
Population Density (Persons per sq. mi.)*	466.7	216.2	73.5
Median Age	37.8	39.4	46.5
Percent under 5 years of age	6.7	6.9	4.6
Percent 65 years and older	14.6	14.3	15.5
Ethnicity or Race (Percent/one or more races)			
White	73.4	85.4	90.4
Black or African American	23.1	12.1	5.6
American Indian and Alaskan Native	2.5	1.7	1.0
Asian	3.2	2.6	1.5
Hispanic or Latino (any race)	3.6	3.5	18.0
Non-Hispanic (White alone)	68.6	80.4	74.2
Educational Attainment (Population 25 and over)			
Percent with less than 9th grade	3.7	4.1	2.3
Percent high school graduate or higher	86.0	86.3	84.7
Percent with a Bachelor's degree / higher	23.5	20.9	21.1
Household income (Median $)	43,311	48,516	55,550
Poverty Status (Percent Pop below poverty line)	15.2	11.7	10.1
Owner Occupied Housing (Percent)	68.9	66.2	69.3
Value Owner-occupied Housing (Median $)	145,700	182,300	671,800
Civilian Labor Force Unemployed (% 16 yrs & over)	8.0	5.6	2.8
Occupation (Percent)			
Management, professional, and related	31.2	32.4	30.5
Service	20.0	18.5	22.2
Sales and office	27.8	27.6	28.1
Farming, fishing, and forestry	0.2	0.2	1.8
Construction, extraction, and maintenance	11.3	12.6	9.5
Production, transportation, and material moving	9.5	8.7	8.0
Industry and Class of Worker (Percent)			
Agriculture, forestry, fishing and hunting	0.6	0.5	1.6
Arts, entertainment, recreation, accomm, food services	10.0	10.8	21.4
Percent government workers	16.7	18.5	16.0
Self-employed workers	6.6	6.3	9.6

Alabama

The fishing communities in Alabama that are most reliant upon amberjack are Bayou LaBatre and Grand Bay located in Mobile County. This ranking may be weighted heavily toward their commercial landings as these two communities are not considered extensively involved in recreational fishing. Orange Beach, Alabama is an important charter fishing community in Baldwin County, even though it does not appear in Table 1.6.1. This community sponsors several fishing tournaments throughout the year (http://www.orangebeachmarina.com/tournaments.htm). Dauphin Island, Alabama also not included in Table 1.6.1 has a number of charter services that target amberjack. (http://gulfinfo.com/fishing.htm) and sponsors one of the larger fishing tournaments in the Gulf with the Deep Sea Fishing rodeo held in July. All the Alabama communities are considered primarily involved in fishing as noted in the profiles of fishing communities (Impact Assessment, Inc., 2006).

Table 1.8.3. Census Demographics 2007 Estimates for Counties in Alabama (Source: U.S. Census Bureau 2009).

Factor	Mobile Co AL
Total population	404,012
Population Density (Persons per sq. mi.)*	328.9
Median Age	36.0
Percent under 5 years of age	7.3
Percent 65 years and older	12.3
Ethnicity or Race (Percent/one or more races)	
White	62.8
Black or African American	34.5
American Indian and Alaskan Native	1.2
Asian	2.0
Hispanic or Latino (any race)	1.8
Non-Hispanic (White alone)	60.6
Educational Attainment (Population 25 and over)	
Percent with less than 9th grade	4.9
Percent high school graduate or higher	82.1
Percent with a Bachelor's degree or higher	19.6
Household income (Median $)	54,729
Poverty Status (Percent of population below poverty line)	19.4
Owner Occupied Housing (Percent)	68.9
Value Owner-occupied Housing (Median $)	115,400
Percent of Civilian Labor Force Unemployed (16 yrs and over)	4.4
Occupation (Percent)	
Management, professional, and related	29.8
Service	16.5
Sales and office	27.1
Farming, fishing, and forestry	0.7
Construction, extraction, and maintenance	12.5
Production, transportation, and material moving	13.4
Industry and Class of Worker (Percent)	
Agriculture, forestry, fishing and hunting	1.1
Arts, entertainment, recreation, accommodation, food services	7.7
Percent government workers	14.4
Self-employed workers	4.9

Louisiana

Communities in Louisiana that are reliant upon amberjack are located in three parishes: La Fourche, Plaquemine and Jefferson. All three counties have a relatively low population density with Jefferson County having the highest population of the three. The communities of Golden Meadow, Venice, and Grand Isle are all ranked in Table 1.6.1 within the top 25 communities with Golden Meadow ranked toward the bottom. A sampling of charter service websites from these communities indicates they do feature amberjack as a target species.

The communities in Louisiana are relatively rural in nature with low population densities compared to other counties and states (e.g., Destin, Florida and Florida Keys). The number of minorities and poverty status in all three counties do not exceed the thresholds for environmental justice concerns; however, these areas may still be recovering from the hurricane season of 2005. Some of the low unemployment rates for Louisiana may be a result of the rebuilding activity that has followed the devastating hurricane season. The impact from the Deepwater Horizon MC252 event on these communities and on fishing activities is unknown at this point. The communities of Venice and

Golden Meadow are listed as Primarily-Involved in fishing according to their community profiles; Grand Isle is listed as Secondarily-Involved (Impact Assessment, 2005a).

Table 1.8.4. Census Demographics 2007 Estimates for Parishes in Louisiana (Source: U.S. Census Bureau 2009).

Factor	La Fourche Parish	Plaquemine Parish	Jefferson Parish
Total population	92,684	21,494	432,914
Population Density (Persons per sq. mi.)*	85.5	26.8	47.9
Median Age	36.1	37.4	39.4
Percent under 5 years of age	6.3	7.3	6.4
Percent 65 years and older	12.1	11.5	13.7
Ethnicity or Race (Percent/one or more races)			
White	82.30	71.70	66.30
Black or African American	14.10	24.30	27.10
American Indian and Alaskan Native	3.00	3.10	0.90
Asian	0.50	N	4.10
Hispanic or Latino (any race)	2.1	N	9.0
Non-Hispanic (White alone)	80.1	N	59.5
Educational Attainment (Population 25 and over)			
Percent with less than 9th grade	15.3	5.2	7.2
Percent high school graduate or higher	70.1	80.1	81.5
Percent with a Bachelor's degree or higher	13.6	18.2	22.4
Household income (Median $)	58,911	64,362	65,981
Poverty Status (Percent of population below poverty line)	17.5	11.2	14.0
Owner Occupied Housing (Percent)	75.6	68.1	65.9
Value Owner-occupied Housing (Median $)	107,800	190,300	174,900
Civilian Labor Force Unemployed (% 16 yrs and over)	3.7	7.3	6.1
Occupation (Percent)			
Management, professional, and related	25.90	N	31.00
Service	14.60	N	17.10
Sales and office	24.20	N	28.20
Farming, fishing, and forestry	0.70	N	0.20
Construction, extraction, and maintenance	14.50	N	12.70
Production, transportation, and material moving	20.10	N	10.80
Industry and Class of Worker (Percent)			
Agriculture, forestry, fishing and hunting	9.0	5.8	1.6
Arts, entertainment, recreation, accommodation, food service	6.7	5.1	11.0
Percent government workers	15.0	28.6	11.8
Self-employed workers	7.0	8.2	6.4

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

Texas

Communities in Texas that rely on amberjack recreationally are in the five coastal counties of Brazoria, Galveston, Harris, Matagorda and Cameron. Amberjack is an important species for charter fishing in Galveston and Freeport. Many of the charter services include photos of amberjack catches on their website and note that this is a key species fished year round (www.texassaltwaterfishingguide.com/ or www.matagordabay.com/). Port Isabel, Port Bolivar and Freeport are noted as being primarily involved in fishing while Galveston and Houston are tangentially involved (Impact Assessment, Inc. 2005b).

Table 1.8.5. Census Demographics 2007 Estimates for Texas Counties (Source: U.S. Census Bureau 2009).

Factor	Brazoria Co	Galveston Co	Harris Co	Matagorda Co	Cameron Co
Total population	292,613	283,361	3,918,326	37,039	385,274
Population Density (Persons per sq. mi.)*	216.7	750.5	2,309.9	33.6	434.7
Median Age	33.7	36.2	32.7	36.8	29
Percent under 5 years of age	8.1	7.3	8.8	7.4	11.1
Percent 65 years and older	9.1	10.8	7.8	13.8	11.3
Ethnicity or Race (Percent/one or more races)					
White	77.7	77.6	61.0	76.7	89.6
Black or African American	11.3	14.8	18.9	11.9	0.6
American Indian and Alaskan Native	1.0	1.4	0.8	1.4	0.3
Asian	4.6	3.0	5.9	2.3	0.7
Hispanic or Latino (any race)	25.9	21.0	38.4	36.2	86.0
Non-Hispanic (White alone)	57.6	60.4	36.6	48.3	12.6
Educational Attainment (Population 25 and over)					
Percent with less than 9th grade	7.4	5.9	12.2	12.9	25.1
Percent high school graduate or higher	83.8	85.5	77.1	74.4	62.5
Percent with a Bachelor's degree or higher	25.1	25.7	27.4	15.0	15.0
Household income (Median $)	62,569	55,995	51,718	41,911	30,190
Poverty Status (Percent Pop below poverty line)	10.3	13.1	16.0	21.4	35.0
Owner Occupied Housing (Percent)	74.8	67.0	58.7	70.9	68.6
Value Owner-occupied Housing (Median $)	134,700	137,000	131,500	77,400	71,900
Civilian Labor Force Unemployed (% 16 yrs and over)	3.0	3.8	4.4	5.9	6.5
Occupation (Percent)					
Management, professional, and related	36.5	37.3	32.8	28.1	26.5
Service	13.7	17.2	16.1	16.7	22.1
Sales and office	23.4	23.3	25.2	20.3	28.0
Farming, fishing, and forestry	0.4	0.3	0.1	2.4	0.8
Construction, extraction, and maintenance	13.2	10.5	12.5	16.2	10.4
Production, transportation, and material moving	12.8	11.5	13.3	16.3	12.2
Industry and Class of Worker (Percent)					
Agriculture, forestry, fishing and hunting	2.8	1.5	2.7	11.2	2.0
Arts, entertainment, recreation, accomm, food services	6.4	10.4	8.0	7.8	9.2
Percent government workers	14.2	19.5	10.6	15.6	21.3
Self-employed workers	5.8	6.1	7.1	9.8	8.7

Vulnerability

Recent research has identified counties along the Gulf Coast that may be vulnerable to a variety of coastal hazards through the use of what has been called the Social Vulnerability Index (SoVI). The Index was created by the Hazards Research Lab at the University of South Carolina to understand how places that are susceptible to coastal hazards might also exhibit vulnerabilities to social change or disruptions (http://webra.cas.sc.edu/hvri/products/sovi.aspx#). These vulnerabilities may come in the form of high unemployment, high poverty rates, low education and other demographic characteristics. In fact, the SoVI is an index that consists of 32 different variables combined into one comprehensive index to measure social vulnerability (Figure 1.6.1).

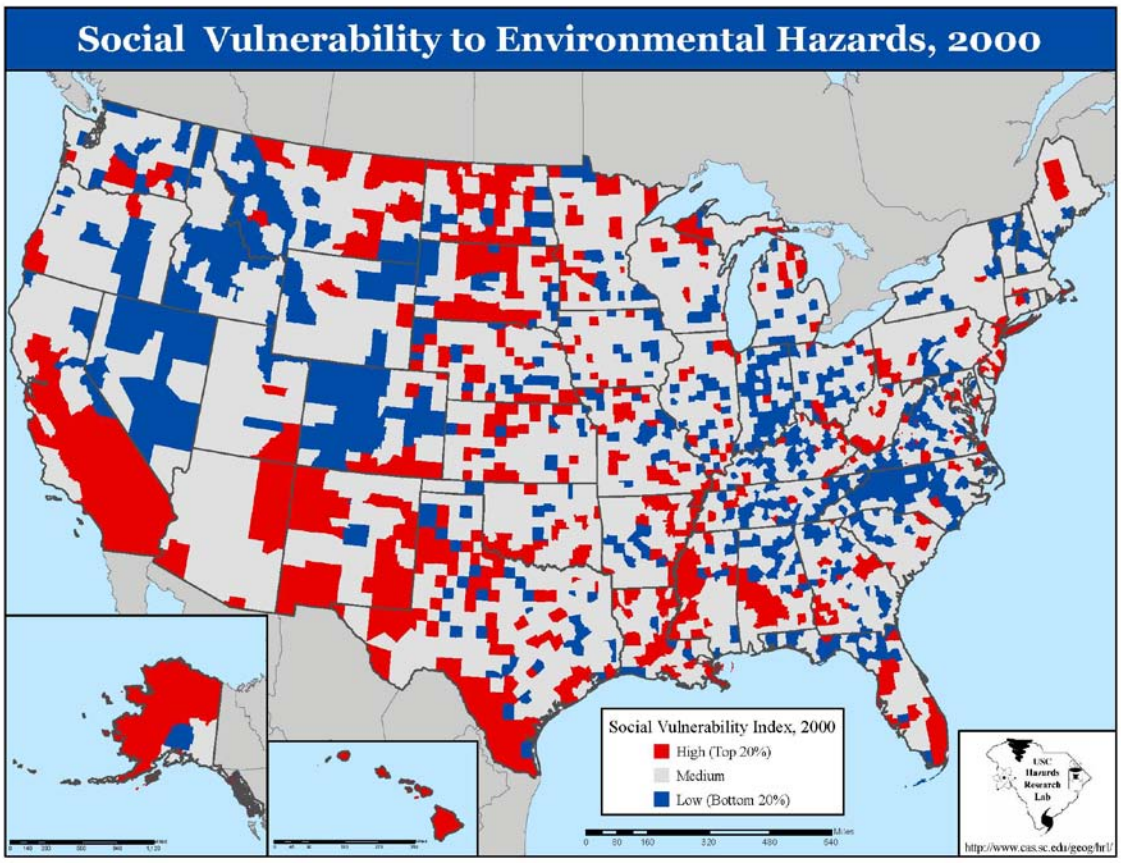

Figure 1.8.1. The Social Vulnerability Index applied to all US Counties (Source http://webra.cas.sc.edu/hvri/products/sovi.aspx#).

Those counties from the demographic tables above which were categorized as having either high or medium social vulnerability using the SoVI are: Harris, Cameron and Matagorda Counties, Texas; Plaquemine Parish, Louisiana; and Mobile County, Alabama. Although the SoVI was created to understand social vulnerability to coastal environmental hazards, it can also be interpreted as a general measure of vulnerability to other social disruptions, such as adverse regulatory change or manmade hazards, i.e., the Deepwater Horizon MC252 oil spill. This does not mean that there will be adverse affects, only that there may be a potential for adverse affects under the right circumstances. Fishing communities in these counties may have more difficulty adjusting to regulatory changes if those impacts affect employment or other critical social capital.

1.9 Description of Administrative Environment

Federal Fishery Management

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

Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

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 publically open Council meetings, with some exceptions for discussing internal administrative matters. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the NOAA's Office of 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 Magnuson-Stevens Act. 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."

State Fishery Management

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

2.0 MANAGEMENT ALTERNATIVES

Proposed Action. Establishment of a Seasonal Closure for Greater Amberjack in the Recreational Fishing Sector

Alternative 1. No Action – do not establish a recreational seasonal closure. The recreational fishing season would begin January 1 and end December 31, or whenever the recreational quota is projected to be reached.
Alternative 2. Establish a recreational seasonal closure March 1 through May 31.
Alternative 3. Establish a recreational seasonal closure May 1 through June 30.
Preferred Alternative 4. Establish a recreational seasonal closure June 1 through July 31.

Discussion and Rationale: Amendment 30A to the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico established annual catch limits and accountability measures for greater amberjack in the Gulf of Mexico (GMFMC 2008). The overall total allowable catch was set at 1.871 million pounds (mp) and the recreational quota (73%) was set at 1.368 mp. Accountability measures were established that close the commercial or recreational sector when landings reach or are projected to reach the applicable quota, and adjust the next year's quota to account for any overage that occurred. Currently, the fishing season begins January 1 each year and ends December 31, or when a quota closure is necessary.

In 2009, the recreational quota was projected to be met and the recreational sector closed on October 24, 2009. Projections were based on Marine Recreational Fishing Statistical Survey (MRFSS) data through August 2009. Landings data are also available from the head boat surveys and Texas Parks and Wildlife Department surveys; however, MRFSS data count for 92% of recreational landings.

The overage for 2009 was 124,817 pounds whole weight. After adjusting the 2010 recreational quota to account for this overage, that quota is expected to be met in late October, although a decrease in effort due to the Deepwater Horizon MC252 oil spill may extend the season. Fisherman requested the Gulf of Mexico Fishery Management Council and NOAA Fisheries Service consider establishing a recreational seasonal closure so fishing can continue during fall when several large fishing tournaments, including the Destin Fishing Rodeo, take place.

If the quota does not change for 2011 (i.e., no overage in 2010), landings are projected to reach the quota by August 26, 2011 (**Alternative 1)**. Each of the alternatives for a seasonal recreational closure is predicted to increase the number of fishing days relative to **Alternative 1** while constraining landings below the quota until the end of the year (Table 2.0.1). However, natural variation in recruitment and regional availability could change the catchability of the stock. For example, if a large year-class enters the fishery, landings may exceed projections and a quota closure may still be required. In fact, as the stock rebuilds, catch rates would be expected to increase, leading to the quota filling more quickly over time.

It is unclear how climate change would affect reef fishes, and likely would affect species differently. Global warming can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Climate change may significantly impact Gulf reef fish species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. Actions in this amendment are expected to reduce effort and thereby decrease fishing mortality; thus these actions may partially mitigate the negative impacts of global climate change on reef fish species.

Table 2.0.1. Projected recreational landings (pounds whole weight) and season lengths (days) for greater amberjack in the Gulf of Mexico under various alternative seasons in 2011 based on a quota of 1.368 mp under each alternative.

Alternative	Closed season	Mean landings (pounds)	Days Open	Mean estimated pounds under the quota
1	Aug 27-Dec 31	1,366,325 ± 672,645	238 ± 56	1,675
2	Mar 1-May 31	1,184,097 ± 609,355	273 ± 136	183,903
3	May 1-June 30	923,246 ± 526,348	304 ± 42	444,754
4	Jun 1-Jul 31	1,001,006 ± 524,129	304 ± 79	366,994

Source: NOAA Fisheries Service, Southeast Regional Office.

Note these projections apply only to the recreational fishery, and assume landings in 2011 will proceed on pace with landings in 2009, and as expanded beyond the Oct 24, 2009 quota closure using historical averages (2000-2008). Open days would be reduced if the quota is projected to be met and the recreational sector is closed early.

Alternative 1, no action, would maintain the current fishing season of January 1 – December 31 with no seasonal recreational closure. However, if the quota was projected to be reached before the end of the year, NOAA Fisheries Service would close the recreational sector early. If the quota remains at 1.368 mp for 2011 and no overage needs to be repaid from the previous year, landings are estimated to reach the quota by August 26, 2011. In this case, the recreational sector would be closed for the last four months of the year. Any overage from 2010 would require payback in 2011 and would result in an even earlier closure. In 2009, the overage was 124,817 pounds, resulting in a decrease of the 2010 quota by 9% to 1,243,184 pounds whole weight. If a similar reduction were necessary in 2011, the estimated closure date would be earlier, possibly in July.

The biological impacts of **Alternative 1** would be the same as are currently felt from this component of the fishery. Landings would be expected to reach and possibly exceed the quota, potentially jeopardizing the rebuilding plan. Bycatch of greater amberjack and discards are thought to be low during a closed season because the fisherman can avoid targeting schools of greater amberjack. The finfish most commonly caught with greater amberjack are: gray triggerfish, red snapper, vermilion snapper, gag, and red grouper (GMFMC 2008). Whereas, on artificial structures in the northern Gulf of Mexico red snapper, gray triggerfish, and greater amberjack were commonly caught in the same areas (Ingram and Patterson 2001). If greater amberjack closed early there would be social impacts which would stem from the early closure as fishermen would be forced to switch to other species. The overall impacts from no action could be considered as having an adverse effect in comparison to

other alternatives because the number of species allowed for harvest would be fewer for the remainder of the year at a time when recreational fishers are facing other closures. **Alternative 1** might affect the administrative environment the most in that quota closures would probably be necessary each year.

Although **Alternative 1** may appear to result in less adverse economic effects to certain fishing participants than some of the seasonal closure alternatives, it has several downsides. First, predictions of the exact date for quota closure are still imperfect, so anglers and for-hire operators would not be provided with a clear planning horizon for fishing and booking of for-hire trips. Cancellations of trips, or not accommodating customer booking orders, due to quota closures could be burdensome particularly on for-hire operators. Second, a quota closure cultivates a fertile ground for the development of a derby mentality. With the knowledge that a quota closure could occur anytime, or at least towards the later part of the fishing year, as it did in 2009, fishermen could be pushed to fish hard early in the year. This could only increase the probability of an early fishery closure, resulting in even greater adverse economic effects on the recreational sector. Third, a quota closure would, in effect, block out some parts of the holiday season occurring towards the end of the year. This season may be highly profitable to some for-hire operators, or a highly preferred fishing season for some anglers. If that were the case, a quota closure might not only result in fishing stoppage but would also affect the more profitable for-hire trips or higher valued angler trips. These for-hire operators and anglers would have to search for other highly profitable or higher valued season to compensate for their potential losses. This would involve additional costs as well as take some time to develop. There is, of course, some possibility a similar situation of a highly profitable or highly valued season being affected by any of the seasonal closure alternatives.

In **Alternative 2,** the closure would coincide with the peak spawning time for greater amberjack. Greater amberjack have been documented to spawn in the Gulf of Mexico as early as January, but peak during the spring months. Studies in the northern Gulf of Mexico (Murie and Parkyn 2008; Wells and Rooker 2002) and the Keys (Harris et al. 2004) found highest levels of spawning females in March-April; therefore, a March 1 through May 31 closure would provide protection for reproductive individuals. The added protection during spawning could have long term benefits if the greater amberjack stock recovers more quickly. Further, a seasonal closure during these months is estimated to allow the recreational sector to remain open for the rest of the year and increase the total number of open days versus **Alternative 1** (Table 2.0.1). In addition, the commercial sector has a seasonal closure each year March 1 – May 31. **Alternative 2** would establish a seasonal closure for the recreational sector during this same time frame. A closure of both sectors at the same time would ease the burden on law enforcement. This alternative would result in closed seasons for multiple species of fish at the same time because shallow-water grouper fishing is prohibited during February and March. However, some fishermen have stated that other species, such as sharks or red drum, are common during this time and could be targeted instead.

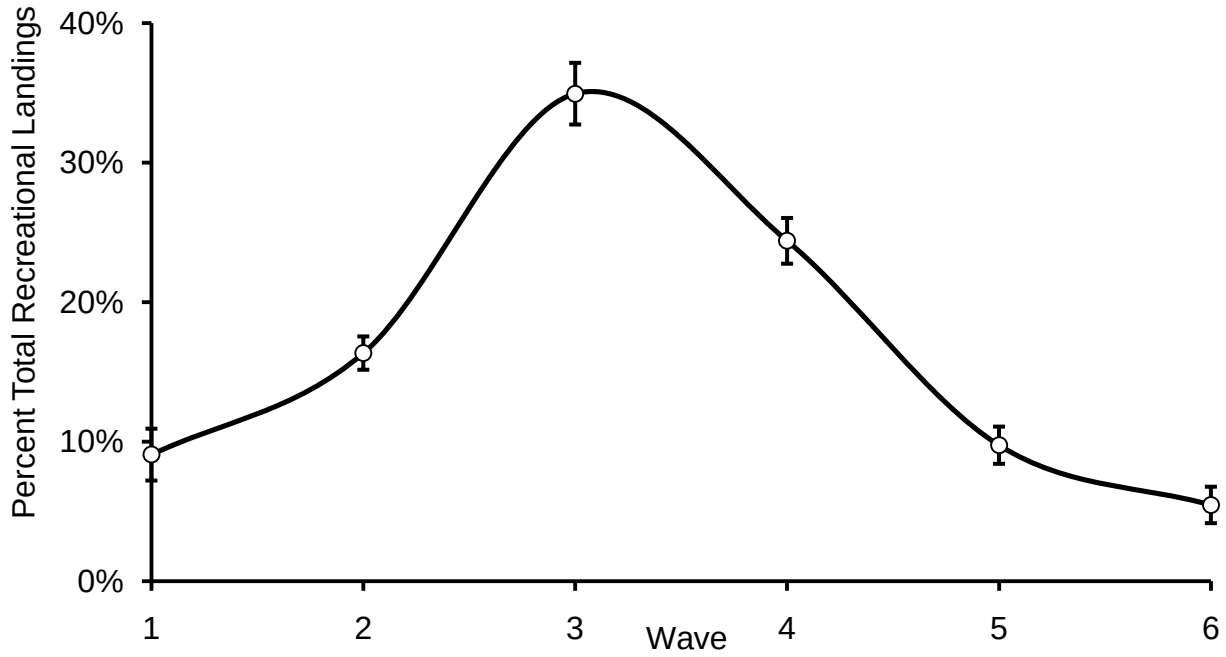

Figure 2.0.1. Recreational landings data for 2000-2008 by wave. Each wave represents two months (e.g., wave 1 = January-February). Bars represent standard error. Sources: MRFSS, Headboat Survey, and Texas Parks and Wildlife Department.

Many private anglers and for-hire vessel owners have indicated to the Council they would prefer not to have recreational closures for many reef fish species at the same time. Currently, the shallow-water grouper component of the fishery is closed February 1 – March 31. The red snapper season begins June 1 and closes September 30, or whenever the quota is projected to be reached. A closure during May and June (**Alternative 3**) would coincide with the beginning of the open season for red snapper while avoiding the closed season for grouper. The timing would also allow fishing for greater amberjack during much of the summer. This alternative is expected to constrain landings within the quota as well as increase the number of open days relative to **Alternative 1**.

A seasonal recreational closure of greater amberjack June 1 – July 31 (**Preferred Alternative 4**) would coincide with the open recreational seasons for other managed reef fish, including the major portion of the red snapper recreational season. **Preferred Alternative 4** is estimated to increase the number of open days versus **Alternative 1** while still constraining landings within the quota (Table 2.0.1). However, some private recreational anglers would prefer to keep fishing open during summer when families with children like to fish. An additional concern of Texas anglers is disruption of the annual Deep Sea Roundup Tournament held the weekend after July 4.

Some members of the fishing community would like a seasonal closure during the winter, when recreational fishermen would be least affected (see additional options in Appendix A). However, these months have the lowest landings (Figure 2.0.1) and would result in a lower average number of days open than the alternatives being considered. On the other hand, a one-month closure in spring or summer could still constrain landings within the quota, but effort could easily shift to before or after the closed period. If such an effort shift occurs, the quota would be more likely to be met

before the end of the year. A quota closure before the end of the year would reduce the number of open days, thereby negating the benefit of the seasonal closure. In addition, any overage would be deducted from the next year's quota, increasing the chance of the recreational sector closing early the following year.

Any addition of a seasonal closure (**Alternatives 2-4**) would create impacts on the administrative environment because seasonal closures would require bulletins and other reminders to the fishing community. However, the reduced chance of quota closures would ease the administrative burden of rule-making and notice for those closures. Both seasonal and quota closures increase the burden on law enforcement.

Alternatives 2, 3 and **Preferred Alternative 4** will most likely not alter the bycatch of greater amberjack relative to the No Action alternative. The finfish most commonly caught with greater amberjack are: gray triggerfish, red snapper, vermilion snapper, gag, and red grouper (GMFMC 2008) and on artificial structures in the northern Gulf red snapper, gray triggerfish, and greater amberjack are commonly caught in the same areas (Ingram and Patterson 2001). Closing the recreational greater amberjack season while recreational red snapper, grouper, and other species are open has the potential to result in an increased greater amberjack bycatch and discard rate. However, greater amberjack tend to have different habitat preferences and tend to school around large artificial or natural structures and prefer to bite large live bait. Due to these differences, fishers are better able to target greater amberjack or avoid them when the recreational fishing season is closed.

Alternative 2 would close recreational greater amberjack during the month of March which coincides with the closure of the shallow-water grouper species which is closed from February 1 to March 31. **Alternative 2** has the potential to decrease bycatch of most reef species and discards, with the exception of gray triggerfish which would be open. **Alternative 3** would close the greater amberjack recreational season during the month of June when red snapper and grouper recreational seasons are open and thus has the potential to result in an increase in bycatch and discards of greater amberjack. **Preferred Alternative 4** will close recreational greater amberjack during the current recreational red snapper season and will also have the potential to result in an increase in bycatch and discards. However, **Alternative 2, 3,** and **Preferred Alternative 4** are not anticipated to result in an increase in bycatch and discards due to the habitat preferences and bait type between greater amberjack, red snapper, gag, red grouper, and gray triggerfish.

Species incidentally encountered by the directed greater amberjack fishery include sea turtles and sea birds. The Gulf commercial reef fish fishery is listed as a Category III fishery under the Marine Mammal Protection Act, (June 25, 2010; 75 FR 36318). 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% 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 risk of serious injury or mortality to marine mammals resulting from the recreational fishery, which uses similar gear, is also expected estimated to be low, although interactions with dolphins and sea turtles are known to occur.

Management measures in **Alternatives 2, 3**, and **Preferred Alternative 4**, which would revise the greater amberjack fishing season, are expected to have short-term beneficial social impacts for the recreational fisheries, primarily the charter sector. The intended regulatory measures would increase the length of the greater amberjack season, as reduced fishing pressure during the closure would

allow quota to be fished later in the year. At this time it is impossible to examine the intensity of recreational fishing activity at the community level for a specific species. However, it is likely that those communities that have a higher rank in terms of charter activity in Table 1.6.1 along with recreational fishing infrastructure and have a dynamic commercial fishery for greater amberjack will also have a dynamic recreational greater amberjack fishery. Visits to charter services websites in these communities suggests that greater amberjack is a key target species, although not as prized as other reef fish or coastal and highly migratory species. However, greater amberjack is fished year round and is a highly sought after species and prized for its fighting ability.

While it is difficult to assess how the communities in the previous Table 1.6.1 would benefit or be adversely affected from actions contained within this amendment, with additional revenues that might accrue to the charter or headboat sector as the result of an extended season that may occur with **Alternatives 2, 3** and **Preferred Alternative 4**, overall economic impacts to these communities should be beneficial. However, this would depend upon changes in fishing behavior which are not easily predicted. While any seasonal closure would often stimulate increased fishing pressure on either side of the closure, how much fishing pressure may be placed upon a species in question is always unknown. If during the closure, substitute species are readily available, fishing pressure either prior to or after the closure may not increase substantially. If substitute species are not readily available, increased fishing pressure might occur on one or both sides of the closure which could force an earlier than anticipated closure. Since there is some support from the recreational sector for extending the season with a closure, there may be substitute species available and the overall impact may be beneficial if either **Alternative 2, 3** or **Preferred Alternative 4** are chosen. Of course, each alternative will have differing impacts as the date of the closure will affect fishing behavior based upon seasonal fishing trends and fishing tournaments scheduled throughout the year. As mentioned above, with no action in **Alternative 1** an early closure of the fishery would have an impact on fall fishing tournaments and reduce the overall number days for fishing compared to other alternatives. **Alternative 2** would coincide with the commercial closure for amberjack and closures for other species which may place constraints on some fishing operations if the combined closures reduce interest in fishing overall. While **Alternative 2** provides a smaller number of increased fishing days, it has a wide range of variability around the projected number of open days and has an estimated underage that is less than **Alternative 3** and **Preferred Alternative 4**. The projected estimate of fishing days is greatest with **Alternative 3** and **Preferred Alternative 4** which would also conflict with some tournaments, although, tournament dates could be adjusted to accommodate the closure. The advantage of a seasonal closure over a quota closure is the ability to plan for a known versus an unknown date.

With an extended fishing year through a seasonal closure in either **Alternative 2, 3** or **Preferred Alternative 4**, those communities listed in Table 1.6.1 should see favorable impacts as all but two communities are listed as either primarily involved or secondarily involved in fishing. The impacts would also depend upon the timing and length of the closure and the anticipated savings in terms of greater amberjack that remain to be fished after the closure. The projected number of fishing days is approximately the same with **Alternative 3** and **Preferred Alternative 4,** which should have beneficial impacts for both the private and for-hire sectors.

None of the seasonal closure alternatives would necessarily eliminate quota closures. The accountability measures adopted for the recreational sector for greater amberjack would still apply. These accountability measures involve quota closures and reduction in the succeeding year's quota should an overage occur. A seasonal closure early in the year, such as the March 1 - May 31 closure

(**Alternative 2**) is possibly more susceptible to a quota closure than one towards the middle of the year, such as June 1 - July 31 closure (**Preferred Alternative 4**). An early seasonal closure would provide the fishing participants ample time to fish as hard as they can, knowing that a quota closure would still apply. In such eventuality, the recreational fishery could be economically worse off under two closures, one planned (seasonal closure) and the other unplanned (quota closure).

For purposes of quantitatively estimating the economic effects of the various alternatives, **Alternative 1** is considered the benchmark with the assumption that under this alternative the quota closure would commence on August 27. **Alternatives 2-4** would result in more economic losses to the anglers relative to **Alternative 1**. Among the seasonal closure alternatives, **Alternative 2** would result in the lowest adverse economic effects on anglers, followed in order by **Preferred Alternative 4** and **Alternative 3**. With respect to economic effects on charterboats, **Preferred Alternative 4** would result in lower adverse economic effects than any of the alternatives, including **Alternative 1**. Among the seasonal closure alternatives, **Preferred Alternative 4** would result in the least adverse economic effects, followed in order by **Alternative 3** and **Alternative 2**. For headboats, **Alternatives 2-4** would result in more economic losses relative to **Alternative 1**. Among the seasonal closure alternatives, **Alternative 3** would result in the lowest economic losses, followed in order by **Alternative 2** and **Preferred Alternative 4**. Overall, **Preferred Alternative 4** would have the lowest adverse economic effects than any of the seasonal closure alternatives. **Preferred Alternative 4** would be best for charterboats, second best for anglers, and worst for headboats.

Because this action will affect the fishing season next year, it is anticipated that the Deepwater Horizon MC252 event will not have an immediate impact in conjunction with this revision to the fishing season next year. Several fishing tournaments this fishing season have been canceled or moved to other dates as a result of the oil spill. However, it is anticipated that the Deepwater Horizon MC 252 oil spill or other coastal hazards may have future impacts upon fisheries and fishing communities but those impacts are unknown at this time.

3.0 REGULATORY IMPACT REVIEW

3.1 Introduction

The NOAA Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866 and provides some information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the probable impacts that management alternatives in this amendment to the Reef Fish FMP would have on the recreational sector of the greater amberjack fishery.

3.2 Problems and Objectives

The problems and objectives of this amendment are discussed in Section 1.2. In summary, this amendment addresses the problems associated with the quota closure of recreational greater amberjack harvest in 2009 and subsequent implementation of accountability measures, particularly the reduction in the recreational quota for 2010 because of harvest overages in 2009. The seasonal closures proposed in this amendment are intended to eliminate or reduce the frequency of quota closures in order to provide the recreational fishery participants' maximum benefits from as many fishing days as possible, yet remain within the quota.

3.3 Description of the Fishery

A description of the greater amberjack stock is provided in Section 1.2. Additional details on the recreational fishery for greater amberjack are provided in Amendment 30A to the Reef Fish FMP, and are incorporated herein by reference. The following information is a description of the economic environment of the greater amberjack fishery, with particular emphasis on the recreational sector as this is the sector specifically addressed in this amendment.

The Gulf recreational fishery is comprised of the private sector and for-hire sector. The private sector includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire sector is composed of the charterboat and headboat (also called partyboat) sectors. Charterboats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person (head). The type of service, from a vessel- or passenger-size perspective, affects the flexibility to search different fishing locations during the course of a trip and target different species since larger concentrations of fish are required to satisfy larger groups of anglers.

3.3.1 Landings

The recreational sector has been the dominant sector in the Gulf greater amberjack fishery, with the current recreational quota accounting for 73% of the TAC. Table 3.3.1.1 presents the monthly recreational and commercial landings of greater amberjack in 2009. Clearly, recreational landings in each state in the Gulf were substantially higher than commercial landings. There are, however, months when commercial landings exceeded recreational landings in some states. In January and February, for example, commercial landings of greater amberjack in Alabama and Texas exceeded recreational landings. In Florida, which has dominated all other states in greater amberjack landings, commercial landings of greater amberjack exceeded recreational landings in the months of October, November, and December. This was mainly due to the closure of the recreational greater amberjack fishery in those months.

Table 3.3.1.1. Monthly recreational and commercial landings (lbs) of greater amberjack, by state, 2009.

	AL		FL		LA		MS		TX	
	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm
Jan	431	869	45,345	38,443	51,461	13,992	-	-	653	3,958
Feb	397	813	39,907	59,920	46,314	12,083	-	-	463	8,088
Mar	1,881	-	12,516	12,186	16,192	-	-	-	1,141	-
Apr	2,836	64	14,149	353	15,986	-	-	-	2,441	-
May	11,588	-	289,815	4,492	19,477	-	4,533	-	3,544	-
Jun	14,419	3,408	282,890	33,660	23,011	11,565	4,387	25	3,354	26,386
Jul	19,191	8,264	137,086	41,787	91,577	18,946	-	2	3,328	42,644
Aug	18,711	8,158	137,063	27,379	86,879	44,875	-	-	3,016	28,759
Sep	7,432	1,112	26,925	23,727	8,381	22,020	-	151	2,788	14,117
Oct	6,699	1,606	28,026	30,690	5,146	18,240	-	108	1,280	9,368
Nov	-	-	-	11,288	-	830	-	-	2	35
Dec	156	-	-	1,663	-	1,155	-	-	2	-

Source: SEFSC ACL datasets (2000-2008), MRFSS; TPWD; HBS (2009); supplied by SERO-LAPP/DM.

Within the recreational sector of the greater amberjack fishery, the for-hire segment landed a higher number of greater amberjack than the private mode in Alabama, Florida, and Texas, at least in 2009 (Table 3.3.1.2). In 2009, only the private mode anglers landed greater amberjack in Mississippi; private mode anglers in Louisiana landed a higher number of greater amberjack than the for-hire mode. Even in states where the for-hire segment was dominant, there were months when landings by private mode anglers exceeded those of the for-hire segment. In Florida, for example, the private mode anglers landed more than the for-hire mode anglers in May and June.

Table 3.3.1.2. Monthly recreational landings (lbs) of greater amberjack, by state and mode, 2009.

	AL		FL		LA		MS		TX	
	For-hire	Private Anglers	For-hire	Private Anglers	For-hire	Private Anglers	For-hire	Private Anglers	For-hire	Private Anglers
Jan	431	-	28,394	16,951	604	50,857		-	653	-
Feb	397	-	24,596	15,311	378	45,936		-	463	-
Mar	1,881	-	12,516	-	3,470	12,722		-	990	151
Apr	2,836	-	14,149	-	3,675	12,311		-	2,295	146
May	5,490	6,098	110,577	179,238	19,477	-		4,533	3,082	461
Jun	8,517	5,902	109,433	173,457	23,011	-		4,387	2,908	446
Jul	10,192	8,999	103,375	33,711	52,162	39,415		-	2,850	478
Aug	9,712	8,999	103,352	33,711	47,464	39,415		-	2,538	478
Sep	4,991	2,441	18,510	8,415	8,381	-		-	2,676	112
Oct	4,177	2,522	19,330	8,696	5,146	-		-	1,164	116
Nov	-	-	-	-	-	-		-	-	2
Dec	156	-	-	-	-	-		-	-	2

Source: SEFSC ACL datasets (2000-2008), MRFSS; TPWD; HBS (2009), supplied by SERO-LAPP/DM.

Florida has dominated all other states in the recreational landings of greater amberjack (Table 3.3.1.3). On average (2005-2009), Florida accounted for 60.5% of all recreational landings of greater amberjack, followed by Louisiana at 22.5%, Alabama at 13.7%, Texas at 3.0%, and Mississippi at 0.3%. Recreational landings of greater amberjack in Florida increased over the years, at least since 2006. On the other hand, Alabama (except in 2009) and Texas saw declines in landings of greater amberjack through the years. Recreational landings of greater amberjack in Louisiana were variable over the years 2005-2009. Mississippi recorded landings of greater amberjack only in 2008 and 2009.

Table 3.3.1.3. Recreational landings (lbs) and percent distribution of greater amberjack, by month, 2005-2009.

	Landings (pounds)					Percent Distribution				
	AL	FLW	LA	MS	TX	AL	FLW	LA	MS	TX
2005	409,408	763,063	175,751	-	46,378	29.4	54.7	12.6	0.0	3.3
2006	185,233	570,365	527,778	-	44,439	14.0	43.0	39.7	0.0	3.3
2007	126,663	610,076	101,313	-	36,746	14.5	69.7	11.6	0.0	4.2
2008	61,375	783,021	282,714	12,796	28,708	5.3	67.0	24.2	1.1	2.5
2009	83,742	1,013,721	364,420	8,920	22,013	5.6	67.9	24.4	0.6	1.5
Avg	173,284	748,049	290,395	4,343	35,657	13.7	60.5	22.5	0.3	3.0

Source: SEFSC ACL datasets (2000-2008), MRFSS; TPWD; HBS (2009), supplied by SERO-LAPP/DM.

Total recreational landings of greater amberjack, by month, from 2005 through 2009 are presented in Table 3.3.1.4. Peak landings generally occurred in the months of May through August. Although landings in the first and last quarters of the year were relatively low, landings in the first quarter were slightly higher than those in the last quarter, at least on average. This is true regardless of whether averaging is done over 2005-2009 or 2005-2008, the latter of which would not include the 2009 closure.

Table 3.3.1.4. Recreational landings (lbs) and percent distribution of greater amberjack, by month, 2005-2009.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Landings (pounds)											
2005	132,994	118,997	91,478	90,330	287,927	273,403	159,282	159,590	36,842	38,870	2,708	2,183
2006	22,496	22,091	94,176	88,160	280,292	274,970	141,481	140,655	80,022	84,316	49,898	49,258
2007	52,932	48,866	91,669	88,447	124,108	115,717	106,790	95,865	53,286	56,616	19,798	20,703
2008	35,506	34,394	68,736	68,257	141,487	142,116	205,327	196,863	66,954	70,204	68,294	70,472
2009	97,890	87,081	31,751	35,433	328,931	328,034	251,171	245,658	45,543	41,168	1	157
Avg	68,364	62,286	75,562	74,125	232,549	226,848	172,810	167,726	56,529	58,235	28,140	28,555
	Percent Distribution											
2005	9.5	8.5	6.6	6.5	20.6	19.6	11.4	11.4	2.6	2.8	0.2	0.2
2006	1.7	1.7	7.1	6.6	21.1	20.7	10.7	10.6	6.0	6.3	3.8	3.7
2007	6.1	5.6	10.5	10.1	14.2	13.2	12.2	11.0	6.1	6.5	2.3	2.4
2008	3.0	2.9	5.9	5.8	12.1	12.2	17.6	16.8	5.7	6.0	5.8	6.0
2009	6.6	5.8	2.1	2.4	22.0	22.0	16.8	16.5	3.1	2.8	0.0	0.0
Avg	5.4	4.9	6.4	6.3	18.0	17.5	13.7	13.3	4.7	4.9	2.4	2.5

Source: SEFSC ACL datasets (2000-2008), MRFSS; TPWD; HBS (2009), supplied by SERO-LAPP/DM.

3.3.2 Recreational Effort

In 2008, approximately 3.2 million in-state anglers (anglers who fished within their state of residence) took 24 million trips (inclusive of visitor trips) in the Gulf. These totals do not include activity occurring solely in Texas (all modes) or in the headboat sector (all Gulf states). Resident anglers accounted for 73% of total anglers in Louisiana, 61% of total anglers in Mississippi, 57% of total anglers in Alabama, and 47% of total anglers in west Florida. Of the total number of fishing trips taken in the Gulf region, 71% were taken in west Florida, 18% were taken in Louisiana, 7% were taken in Alabama, and 4% were taken in Mississippi.

Recreational effort derived from the MRFSS database can be characterized in terms of the number of trips as follows:

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

A target trip may be considered an angler's revealed preference for a certain species, and thus may carry more relevant information when assessing the economic effects of regulations on the subject species than the other two measures of recreational effort. Given the subject nature of this amendment, the following discussion focuses on target trips for greater amberjack.

On average, greater amberjack target trips accounted for 3.7% of the target trips for reef fish, and in turn, target trips for reef fish accounted for 5.8% of total angler trips in the Gulf (Table 3.3.2.1). Greater amberjack target trips fell from 64,845 in 2005 to 50,649 in 2009. Even if 2009 were excluded due to the fishery closure, target trips for greater amberjack still experienced a decline from the 2005 level. On the other hand, reef fish target trips rose from 2005 to 2009, although the peak occurred in 2008.

Table 3.3.2.1. Target trips for greater amberjack and reef fish, 2005-2009.

	Greater Amberjack Target Trips		Reef Fish Target Trips	
	Trips	Percent[1]	Trips	Percent[2]
2005	64,865	5.5	1,185,932	5.4
2006	48,833	4.4	1,114,318	4.7
2007	32,274	2.1	1,501,313	6.2
2008	44,315	2.9	1,551,659	6.4
2009	50,649	3.7	1,376,775	6.2
Average	48,187	3.7	1,345,999	5.8

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.
[1]Percent to reef fish target trips.
[2]Percent to total angler trips.

Most of the target trips for greater amberjack occurred in west Florida (65.2%), and the rest mostly shared by Louisiana (18.6%) and Alabama (15.4%), with Mississippi recording target trips only in 2009 (Table 3.3.2.2). Target trips for greater amberjack peaked in 2005 for Alabama and Louisiana and declined through the years, significantly for Alabama and slightly for Louisiana. Florida's peak target trips for greater amberjack occurred in 2009 despite the fishery closure (Gulf-wide) commencing on October 24, 2009. The target trips in Mississippi were only recorded from the private mode.

Table 3.3.2.2. Greater amberjack target trips and percent distribution, by state, 2005-2009.

	Greater Amberjack **Target** Trips				Percent Distribution			
	AL	FLW	LA	MS	AL	FLW	LA	MS
2005	21,434	34,664	8,767	0	33.0	53.4	13.5	0.0
2006	9,708	24,772	14,353	0	19.9	50.7	29.4	0.0
2007	2,772	24,840	4,663	0	8.6	77.0	14.4	0.0
2008	4,265	30,743	9,306	0	9.6	69.4	21.0	0.0
2009	3,028	38,327	7,448	1,846	6.0	75.7	14.7	3.6
Average	8,241	30,669	8,907	369	15.4	65.2	18.6	0.7

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

On average, approximately 67.2% of target trips for greater amberjack were taken by anglers in private boats and the rest, in charterboats (Table 3.3.2.3). No greater amberjack target trips were reported to have been taken by the shore mode anglers. For both the charter and private modes, target trips for greater amberjack declined from their peaks in 2005 for the private mode and 2006 for the charter mode. The decline, however, was not linear as some years showed increases in target trips relative to the previous years. Charter mode target trips for greater amberjack rose in 2006 relative to 2005, declined the next two years, and increased in 2009. For the private mode, target trips for greater amberjack declined in 2006 relative to 2005 and again in 2007 relative to 2006, but increased in 2008 and 2009. Nonetheless, target trips for both the charter and private modes in 2009 were lower than their respective peaks in earlier years.

Table 3.3.2.3. Greater amberjack target trips and percent distribution, by mode, 2005-2009.

	Greater Amberjack **Target** Trips			Percent Distribution		
	Shore	Charter	Private	Shore	Charter	Private
2005	0	14,296	50,569	0.0	22.0	78.0
2006	0	23,579	25,253	0.0	48.3	51.7
2007	0	15,779	16,495	0.0	48.9	51.1
2008	0	8,049	36,266	0.0	18.2	81.8
2009	0	13,406	37,242	0.0	26.5	73.5
Average	0	15,022	33,165	0.0	32.8	67.2

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

The monthly distribution of greater amberjack target trips appears to be relatively stable over the years, with March through August being the top months (Table 3.3.2.4). In general, the second quarter of the year has drawn the largest number of target trips and the last quarter, the least number of target trips for greater amberjack.

Table 3.3.2.4. Greater amberjack target trips and percent distribution, by month, 2005-2009.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Greater Amberjack **Target** Trips											
2005	7,119	6,430	4,958	4,799	7,687	7,439	12,832	12,832	21	21	358	370
2006	919	831	1,687	1,632	11,376	11,009	4,811	4,811	1,150	1,189	4,631	4,786
2007	1,866	1,686	5,551	5,371	3,586	3,471	3,602	3,602	97	100	1,644	1,699
2008	1,971	1,843	6,711	6,495	6,496	6,286	5,261	5,261	1,114	1,152	849	877
2009	3,306	2,987	2,944	2,849	11,513	11,142	4,371	4,371	1,745	1,804	1,779	1,839
Avg	3,036	2,755	4,370	4,229	8,132	7,869	6,175	6,175	826	853	1,852	1,914
	Percent Distribution											
2005	11.0	9.9	7.6	7.4	11.9	11.5	19.8	19.8	0.0	0.0	0.6	0.6
2006	1.9	1.7	3.5	3.3	23.3	22.5	9.9	9.9	2.4	2.4	9.5	9.8
2007	5.8	5.2	17.2	16.6	11.1	10.8	11.2	11.2	0.3	0.3	5.1	5.3
2008	4.4	4.2	15.1	14.7	14.7	14.2	11.9	11.9	2.5	2.6	1.9	2.0
2009	6.5	5.9	5.8	5.6	22.7	22.0	8.6	8.6	3.4	3.6	3.5	3.6
Avg	5.9	5.4	9.9	9.5	16.7	16.2	12.3	12.3	1.7	1.8	4.1	4.2

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

Similar analysis of recreational effort is not possible for the headboat sector because headboat data are not collected at the angler level. Estimates of effort in the headboat sector are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. The stationary bottom nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are bottom or reef fish trips by intent. In a study of the for-hire fishery in the Gulf, Sutton et al. (1999) found that the mean percentage of time spent targeting greater amberjack for the entire year for all party boat operators in the Gulf of Mexico was 5.10%.

The distribution of headboat angler days by geographic area is presented in Table 3.3.2.5. For purposes of data collection, the headboat data collection program divides the Gulf into several areas. In Table 3.3.2.5, FLW refers to areas in Florida from the Dry Tortugas to the Florida Middle Grounds, FL-AL covers the rest of west Florida and Alabama, LA refers to the entire coastline of Louisiana, and TX includes areas in Texas from Sabine Pass-Freeport south to Port Isabel. No Mississippi vessels have been included in the headboat data program. On average, the Dry Tortugas to the Florida Middle Grounds accounted for 36.2% of total headboat angler days in the Gulf, followed by northwest Florida to Alabama (32.7%), Texas (29.5%), and Louisiana (1.5%).

Table 3.3.2.5. Headboat angler days and percent distribution, by state, 2005-2009.

	Angler Days				Percent Distribution			
	FLW	FL-AL	LA	TX	FLW	FL-AL	LA	TX
2005	77,436	52,797	0	59,857	40.7	27.8	0.0	31.5
2006	57,703	66,346	5,005	70,789	28.9	33.2	2.5	35.4
2007	68,883	67,997	3,076	63,210	33.9	33.5	1.5	31.1
2008	68,058	62,118	2,945	41,188	39.0	35.6	1.7	23.6
2009	76,815	65,623	3,268	50,737	39.1	33.4	1.7	25.8
Average	69,779	62,976	2,859	57,156	36.3	32.7	1.5	29.5

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

The seasonal distribution of headboat angler days in the Gulf closely mimics that of the private and charter target trips for greater amberjack, with March through August being the top months (Table 3.3.2.6). Also, the third quarter registered the largest number of headboat angler days and the last quarter, the least.

Table 3.3.2.6. Headboat angler days and percent distribution, by month, 2005-2009.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Headboat Angler Days											
2005	7,301	9,106	15,540	17,923	25,979	29,511	28,529	20,703	10,588	12,184	6,472	6,254
2006	6,809	8,845	15,727	17,038	24,507	29,030	33,329	21,155	16,489	14,698	7,378	4,838
2007	6,907	8,265	17,886	19,400	21,666	32,325	34,378	24,245	13,897	11,305	6,462	6,430
2008	3,066	7,391	13,678	17,199	19,547	30,997	33,537	19,088	6,303	9,942	5,587	7,974
2009	7,611	8,525	14,444	15,513	17,089	36,749	38,955	25,060	9,201	9,745	6,889	6,662
Avg	6,339	8,426	15,455	17,415	21,758	31,722	33,746	22,050	11,296	11,575	6,558	6,432
	Percent Distribution											
2005	3.8	4.8	8.2	9.4	13.7	15.5	15.0	10.9	5.6	6.4	3.4	3.3
2006	3.4	4.4	7.9	8.5	12.3	14.5	16.7	10.6	8.3	7.4	3.7	2.4
2007	3.4	4.1	8.8	9.5	10.7	15.9	16.9	11.9	6.8	5.6	3.2	3.2
2008	1.8	4.2	7.8	9.9	11.2	17.8	19.2	11.0	3.6	5.7	3.2	4.6
2009	3.9	4.3	7.4	7.9	8.7	18.7	19.8	12.8	4.7	5.0	3.5	3.4
Avg	3.3	4.4	8.0	9.1	11.3	16.5	17.5	11.4	5.8	6.0	3.4	3.4

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

There is no routine federal data collection of recreational fishing activities in Texas, except for headboats. A recreational creel survey conducted by the Texas Parks and Wildlife Department (TPWD) is the major source of information on private and charter fishing activities in Texas. The TPWD recreational data is generally presented in two waves covering the entire year – May 15 through November 20 and November 21 through May 14. For this analysis, angler trips in these two waves were allocated equally to each month, with adjustments for the number of days in a month. Results are presented in Table 3.3.2.7 for private angler trips and Table 3.3.2.8 for charter angler trips.

For each of the private and charter modes, more angler trips occurred in May through November than in any other months. It should be noted that the 2009 totals are lower than in previous years due to incomplete data. As with headboat angler trips, target intent by species is not included in the Texas data base. However, Sutton et al. (1999) reported that in 1997, the mean percentage of time spent targeting amberjack for the entire year for all charter operators in Texas was 3.5%.

Table 3.3.2.7. Texas private angler trips and percent distribution, by month, 2005-2009.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Private Angler Trips											
2005	1,162	1,050	1,162	1,125	2,592	3,516	3,634	3,634	3,516	3,634	2,719	1,162
2006	1,388	1,254	1,388	1,343	2,864	3,791	3,917	3,917	3,791	3,917	2,975	1,388
2007	1,112	1,004	1,112	1,076	2,702	3,755	3,880	3,880	3,755	3,880	2,862	1,112
2008	1,198	1,121	1,198	1,159	2,674	3,629	3,750	3,750	3,629	3,750	2,805	1,198
2009	1,087	982	1,087	1,052	788	400	413	413	400	413	617	1,087
Avg	1,189	1,082	1,189	1,151	2,324	3,018	3,119	3,119	3,018	3,119	2,396	1,189
	Percent Distribution											
2005	4.0	3.6	4.0	3.9	9.0	12.2	12.6	12.6	12.2	12.6	9.4	4.0
2006	4.3	3.9	4.3	4.2	9.0	11.9	12.3	12.3	11.9	12.3	9.3	4.3
2007	3.7	3.3	3.7	3.6	9.0	12.5	12.9	12.9	12.5	12.9	9.5	3.7
2008	4.0	3.8	4.0	3.9	9.0	12.2	12.6	12.6	12.2	12.6	9.4	4.0
2009	12.4	11.2	12.4	12.0	9.0	4.6	4.7	4.7	4.6	4.7	7.1	12.4
Avg	5.7	5.2	5.7	5.5	9.0	10.6	11.0	11.0	10.6	11.0	8.9	5.7

Source: Texas Parks and Wildlife Department Creel Survey.

Table 3.3.2.8. Texas charter angler trips and percent distribution, by month, 2005-2009.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Charter Angler Trips											
2005	100	90	100	97	320	474	489	489	474	489	348	100
2006	121	109	121	117	396	589	609	609	589	609	432	121
2007	119	107	119	115	401	600	620	620	600	620	438	119
2008	96	90	96	93	358	544	562	562	544	562	394	96
2009	101	91	101	97	76	42	44	44	42	44	61	101
Avg	107	97	107	104	310	450	465	465	450	465	334	107
	Percent Distribution											
2005	2.8	2.5	2.8	2.7	9.0	13.3	13.7	13.7	13.3	13.7	9.7	2.8
2006	2.7	2.5	2.7	2.6	9.0	13.3	13.8	13.8	13.3	13.8	9.8	2.7
2007	2.6	2.4	2.6	2.6	9.0	13.4	13.8	13.8	13.4	13.8	9.8	2.6
2008	2.4	2.3	2.4	2.3	9.0	13.6	14.1	14.1	13.6	14.1	9.8	2.4
2009	11.9	10.8	11.9	11.5	9.0	5.0	5.2	5.2	5.0	5.2	7.2	11.9
Avg	4.5	4.1	4.5	4.4	9.0	11.7	12.1	12.1	11.7	12.1	9.3	4.5

Source: Texas Parks and Wildlife Department Creel Survey.

3.3.3 For-hire Vessel Permits

For-hire vessels are required to have a charter/headboat permit to harvest or possess reef fish (and coastal migratory pelagic) species in the Gulf EEZ. This sector is currently under a license limitation program, where a new permit has not been issued since the program's inception in June, 2006.

In 2009, 1,422 unique for-hire vessels were permitted to operate in the Gulf reef fish fishery (Table 3.3.3.1). Florida, with 877 vessels, was the foremost homeport state of these vessels, followed by Texas (232), Alabama (140), Louisiana (101), and Mississippi (54). There were 18 vessels with

homeports in states outside the Gulf. For each state, half or more than half of vessels were 21 to 40 feet in length. More than 80% of the vessels had 6 or less passenger capacity (also known as "six-pack"). This total included 49 vessels that did not report information on passenger capacity. The for-hire permit does not distinguish between whether the vessel operates as a charterboat or headboat, but in all likelihood six-pack vessels are charterboats. Some of the higher passenger category vessels could very well be headboats. Seventy-nine vessels were included in the headboat survey program in 2009, of which 43 were located in Florida, 22 in Texas, 10 in Alabama, and 4 in Louisiana.

Table 3.3.3.1. Number of vessels with federal Gulf reef fish charter/headboat permit, vessel length, and passenger capacity, by homeport state, 2009.

	AL	FL	LA	MS	TX	OTHERS	TOTAL
	Number of Vessels						
	140	877	101	54	232	18	1,422
Feet	Number of Vessels, by Length Category (Feet)						
20 or less	8	50	1	3	11	0	73
21-40	70	600	85	37	160	10	962
41-60	43	181	11	11	43	3	292
61-80	18	42	4	3	15	4	86
>80	1	4	0	0	3	1	9
Persons	Number of Vessels, by Passenger Capacity (Persons)						
6 or less	99	732	93	45	204	13	1,186
7-20	10	50	2	2	4	1	69
21-40	19	39	5	6	1	0	70
41-60	8	25	1	1	10	0	45
>60	4	31	0	0	13	4	52

Source: Southeast Permits Database, NOAA Fisheries, SERO.

3.3.4 Economic Values and Economic Impacts

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus (CS). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips. Haab et al. (2009) estimated that the CS ("willingness to pay") per fish for snapper in the Southeastern U.S. is $11.46 (2010 dollars). While this estimate is not specific to greater amberjack, their study did include the amberjack genus as part of the snapper group (Carter 2010, personal communication).

While anglers receive economic value as measured by the consumer surplus associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus (PS) is the

measure of the economic value these operations receive. Producer surplus is the difference between the revenue a business receives for a good or service, such as a charter or headboat trip, and the cost the business incurs to provide that good or service. Estimates of the PS associated with for-hire trips are not available. However, proxy values in the form of net operating revenues (NOR) were generated each for the charter and headboat operations. The estimated NOR values are $145.63 (2010 dollars) per charter angler trip and $49.05 (2010 dollars) per headboat angler trip (Carter, 2010, personal communication).

The foregoing estimates of economic value should not be confused with economic impacts associated with recreational fishing expenditures. While expenditures for a specific good or service may represent a proxy or lower bound of value (a person would not logically pay more for something than it was worth to them), they do not represent the net value (benefits minus cost), nor the change in value associated with a change in the fishing experience.

In 2008, all recreational fishing activities in the Gulf generated the following economic impacts: $5.65 billion in sales and $3.3 billion in value added in Florida; $3.3 billion in sales and $1.7 billion in value added in Texas; $2.3 billion in sales and $1.2 billion in value added in Louisiana; $455 million in sales and $235 million in value added in Alabama; and, $383 million in sales and $149 million in value added in Mississippi. It should be noted that output and value added impacts are not additive. The expenditures associated with marine recreational angling and the economic activities these expenditures generated supported 54,589 jobs in west Florida, 25,590 jobs in Louisiana, 25,544 jobs in Texas, 4,719 jobs in Alabama, and 2,930 jobs in Mississippi (NMFS, 2010).

Estimates of the economic impacts of the greater amberjack recreational fishery in the Gulf were derived using average output (sales) and job (FTE) impact coefficients for recreational angling across all fisheries (species), as derived by an economic add-on to the MRFSS, and described and utilized in NMFS (2010). Estimates of the average expenditures by recreational anglers are provided in NMFS (2010) and are incorporated herein by reference. Target trips for greater amberjack were selected as the measure of effort for estimating the resulting economic impacts. Although not provided here, estimates of the economic impacts associated with greater amberjack catch trips can be calculated based on the ratio of catch trips to target trips because the average output impact and jobs per trip cannot be differentiated by trip intent. Greater amberjack target trips in Texas were derived as Texas total angler trips multiplied by 3.5%, which is the mean percentage of time targeting amberjack for the entire twelve-month period for all charter operators in Texas. This percentage was assumed to hold for the private angler trips.

Estimates of the average greater amberjack target effort (2005-2009) and associated economic impacts are presented in Table 3.3.4.1. These estimates do not include economic impacts associated with headboat target trips. The headboat sector in the Southeast is not covered in the MRFSS, so estimation of the appropriate economic impact coefficients for the head boat sector was not conducted in the development of NMFS (2009). A word of caution is in order with respect to the numbers in the “Total” column. These numbers are a simple summation of impacts in individual states. Potentially different numbers may result if the analysis were conducted on the entire Gulf as one region, because it would capture interrelations among the various states in the Gulf.

A total of 49,224 target trips for greater amberjack in the Gulf resulted in an estimate of economic impacts of approximately $7.6 million in output (sales) and $4.3 million in value added (income). These activities supported a total of 79 FTE jobs. Charter trips contributed the greatest portion of

these impacts, accounting for approximately 74% of the total output impacts, or 75% of the total value added impacts. The fact that the private mode had more than twice the number of trips than the charter mode and yet was associated with less economic impacts is due to higher expenditures per for-hire trip compared to private trips. Florida accounted for more than half the total economic impacts, followed in order by Louisiana, Alabama, Texas, and Mississippi. It should be recalled that Mississippi anglers only reported target trips in the private mode.

Table 3.3.4.1. Greater amberjack target trips (2005-2009 average) and associated economic impacts (2008 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
	Shore Mode					
Target Trips	0	0	0	0	0	0
Output Impact	$0	$0	$0	$0		$0
Value Added Impact	$0	$0	$0	$0		$0
Jobs	0	0	0	0		0
	Private/Rental Mode					
Target Trips	6,879	20,573	5,353	369	907	34,081
Output Impact	$400,230	$934,042	$436,530	$10,523	$152,796	$1,934,121
Value Added Impact	$219,117	$555,417	$214,700	$5,043	$81,653	$1,075,930
Jobs	4	9	4	0	1	19
	Charter Mode					
Target Trips	1,371	10,096	3,555	0	121	15,143
Output Impact	$713,813	$3,170,211	$1,692,364	$0	$45,397	$5,621,785
Value Added Impact	$392,930	$1,879,609	$960,921	$0	$25,305	$3,258,765
Jobs	10	33	18	0	0	60
	All Modes					
Target Trips	8,250	30,669	8,908	369	1,028	49,224
Output Impact	$1,114,043	$4,104,253	$2,128,894	$10,523	$198,193	$7,555,906
Value Added Impact	$612,047	$2,435,025	$1,175,622	$5,043	$106,957	$4,334,695
Jobs	14	42	22	0	2	79

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

3.4 Effects of Management Alternatives

3.4.1 Analysis of Costs and Benefits

The procedure for calculating the economic effects of these alternatives on the recreational sector, from the standpoint of costs and benefits to the nation, involves estimating the expected changes in consumer surplus (CS) to anglers and net operating revenues (NOR) to for-hire vessels. Consumer surplus is the amount of money that an angler would be willing-to-pay for a fishing trip over and above the cost of the trip. Net operating revenue is total revenue less operating costs, such as fuel, ice, bait, and other supplies. This procedure follows the method employed in the regulatory amendment to change the TAC for red snapper (GMFMC 2010). It also draws upon the general method used in the economic analysis for the red snapper fishery closure in the Gulf of Mexico (NMFS 2008). See Appendix A for more detailed description of the procedure.

Analysis of the expected changes in CS was done relative to the no action alternative. Analysis of the expected changes in NOR was first conducted in absolute levels, but later presented as changes relative to the no action alternative. This was done to provide some insights into the level of economic effects of each alternative, inclusive the no action alternative.

The CS and NOR effects were estimated for each of the years 2005 through 2009 and averaged over the five-year period. Any of the five years may be used for analysis of the effects of each alternative, but the five-year average may be considered a better measure as it would reduce the influence of extraordinary events in any given year. Hence, the following discussions are based on average (2005-2009) economic effects. Although it could be argued that 2009 should be excluded from the analysis due to the fishery closure that occurred in that year, results using the 2005-2008 average were not substantially different from the results based on the 2005-2009 average, nor was the ranking of alternatives affected, so 2009 data were included in the results presented here. The general assumption adopted here is that the 2005-2009 harvest and effort levels would continue into the future. See Appendix B for estimates of single year and 2005-2008 average effects.

The economic effects of the following four alternatives are analyzed in this section and in Section 3.4.2:

Alternative 1. No Action – do not establish a recreational seasonal closure. The recreational fishing season would begin January 1 and end December 31, or whenever the recreational quota is projected to be reached.
Alternative 2. Establish a recreational seasonal closure March 1 through May 31.
Alternative 3. Establish a recreational seasonal closure May 1 through June 30.
Preferred Alternative 4. Establish a recreational seasonal closure June 1 through July 31.

Under the **Alternative 1** (no action), the recreational quota for greater amberjack would be expected to be fully harvested. On the other hand, each of the seasonal closure alternatives is estimated to result in under-harvest of the quota. In view of this, each seasonal closure alternative is expected to result in CS losses relative to **Alternative 1** (Table 3.4.1.1). This condition, however, may not happen if anglers shift their effort to the open season but still remain within the quota. But even if this happens, the ranking of alternatives on seasonal closures, as discussed below, would unlikely change.

Among the alternatives for seasonal closures, **Alternative 2** would result in the lowest reductions in CS (-$101,514), followed by **Preferred Alternative 4** (-$202,579), and lastly by **Alternative 3** (-$245,502). **Alternative 2** would be the least costly seasonal closure for all states. Needless to say, CS losses would be proportional to the various states' landings of greater amberjack, with Florida accounting for the most losses and Mississippi, the least.

To some extent, a fish-based analysis, as done here, would bias the results in favor of the no action alternative, given the assumption that the quota would be fully taken under the no action alternative and not in any of the seasonal closure alternatives. However, an examination of the affected target trips would tend to support the estimated relative ranking of the various alternatives. There appears to be a close correlation between landings and target trips, as may be gleaned from comparing the average percent distribution of landings with the average percent distribution of target trips (Table 3.4.1.2). The first and last quarters of the year have been associated with relatively low landings and target trips; on the other hand, the second quarter and particularly the third quarter have seen relatively higher landings and target trips. This partly explains the relatively higher CS losses under **Alternative 3** or **Alternative 4** (**Preferred**). **Alternative 2** would include part of the first quarter and part of the second quarter, resulting in lower CS losses than either **Alternative 3** or **Alternative 4** (**Preferred**). Since the months included in **Alternative 2** registered higher landings and target trips than those under the no action alternative, **Alternative 2** would still result in larger CS losses.

Table 3.4.1.1. Average (2005-2009) losses in consumer surplus relative to the no action alternative (Alternative 1), by state, in 2010 dollars. Note: Shaded cells indicate the best alternative by area, including all areas.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	0	0	0	0	0	0
Alt. 2	13,937	61,379	22,848	344	3,006	101,514
Alt. 3	33,706	148,441	55,255	831	7,269	245,502
Alt. 4	27,813	122,488	45,595	686	5,998	202,579

Table 3.4.1.2. Average (2005-2009) percent distributions of greater amberjack landings and target trips, by month. *Target trips are based on MRFSS only.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Percent Distribution of Landings											
2005	5.4	4.9	6.4	6.3	18.0	17.5	13.7	13.3	4.7	4.9	2.4	2.5
	Percent Distribution of Target Trips*											
2007	5.9	5.4	9.9	9.5	16.7	16.2	12.3	12.3	1.7	1.8	4.1	4.2

The ranking of alternatives with respect to their NOR effects on charter vessels, as presented in Table 3.4.1.3, materially differs from that with respect to CS effects on anglers. Among the alternatives, inclusive of the no action alternative, **Alternative 4** (**Preferred**) would result in the lowest total NOR losses of $374,600, followed by **Alternative 1** (-$427,126), **Alternative 3** (-$679,143) and lastly **Alternative 2** (-$943,188). Unlike the CS effects on anglers, one seasonal closure alternative (**Alternative 4 (Preferred)**) would be economically better than the quota closure

under the no action alternative. This conclusion is solely based on the magnitude of NOR losses for the charter vessels and on the timing of the quota closure under **Alternative 1**.

The effects on charter vessels would be borne mainly by Florida charter vessels which are expected since Florida has dominated the other states in greater amberjack fishery in the Gulf. Florida charter vessels would incur the lowest NOR losses under **Alternative 4** (**Preferred**) and largest, under **Alternative 2**. A similar situation would result for Alabama charter vessels, but an entirely different scenario would occur for charter vessels in the two other states. Louisiana charter vessels would incur the smallest NOR losses under **Alternative 1** and largest under **Alternative 4** (**Preferred**). Texas charter vessels would have the smallest NOR losses under **Alternative 2** and largest under Alternative 4. Thus, **Alternative 4** (**Preferred**) would be best Florida and Alabama charter vessels but worst for Louisiana and Texas charter vessels.

Alternative 4 (**Preferred**), with a June-July seasonal closure, is a rather interesting case. It would virtually split the year into two open seasons with five open months each. On average, June and July accounted for approximately 31% of total recreational landings of greater amberjack. Unless landings more than double in the first five months, a portion of the recreational quota would still be available for the second five months. These two closed months would also coincide with the recreational red snapper open season, thus providing economic relief to some charter vessels particularly those in north Florida and Alabama. See Section 3.4.4 for additional discussions along this line.

Table 3.4.1.3. Average (2005-2009) losses in net operating revenues of charter vessels, by state, in 2010 dollars. Note: Shaded cells indicate the best alternative by area, including all areas.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	11,354	383,238	29,278	0	3,257	427,126
Alt. 2	69,038	728,371	145,121	0	657	943,188
Alt. 3	42,769	480,377	151,735	0	4,262	679,143
Alt. 4	8,921	200,859	155,441	0	9,379	374,600

In terms of NOR effects on headboats, the overall ranking of alternatives, as presented in Table 3.4.1.4, differs from that of the NOR effects on charter vessels or CS effects on anglers. **Alternative 1** may be ranked first (-$103,939), followed in order by **Alternative 3** (-$133,783), **Alternative 2** (-$136,653), and lastly **Alternative 4** (**Preferred**) (-$163,771). This means that none of the seasonal closure alternatives would result in lower NOR losses to headboats than the no action alternative. Under a quota closure, however, the likelihood of a closure commencing at an earlier date would increase over time. Given this condition, a seasonal closure under **Alternative 3**, which is the next best alternative, could possibly result in a better economic scenario for headboats.

The state-by-state delineation of headboat data does not exactly match with state boundaries, but for this analysis it is assumed that Florida dominated the other states in the headboat fishery for greater amberjack. Thus, Florida would be expected to bear most of the NOR losses under any of the alternatives, and the general ranking of alternatives would follow the ranking of alternatives for Florida. Worthy of note with the results is that, in contrast to anglers and charter vessels, Texas headboats would bear a good amount of NOR losses. Among **Alternatives 2-4**, **Alternative 3** would be best for FLW headboats while **Alternative 2** would be best for headboats in other areas. But considering the dominance of Florida, **Alternative 3** would be best overall among the seasonal closure alternatives.

Table 3.4.1.4. Average (2005-2009) losses in net operating revenues of headboats, by state, in 2010 dollars. Note: Shaded cells indicate the best alternative by area, including all areas.

	FLW	FL-AL	LA	MS	TX	TOTAL
Alt. 1	42,435	31,120	1,952	0	28,431	103,939
Alt. 2	60,355	39,861	924	0	35,513	136,653
Alt. 3	34,862	51,839	2,386	0	44,696	133,783
Alt. 4	36,728	67,109	3,211	0	56,723	163,771

For overall comparison of all seasonal closure alternatives, a summary of the CS and NOR effects is presented in Table 3.4.1.5. Herein, expected changes in CS and NOR are expressed relative to the no action alternative (**Alternative 1**). Positive numbers indicate the subject alternative would result in greater losses than the no action alternative, whereas negative numbers indicate reduced losses. The shaded cells indicate the best seasonal closure alternative by sector.

Among the seasonal closure alternatives, **Alternative 2** would be best for anglers (private and for-hire), **Alternative 4** (**Preferred**) for charter vessels, and **Alternative 3** for headboats. Summing the effects across all sectors, **Alternative 4** (**Preferred**) would be expected to result in the smallest decrease in CS and NOR relative to **Alternative 1**. The worst alternatives would be **Alternative 3** for anglers, **Alternative 2** for charter vessels, and **Alternative 4** (**Preferred**) for headboats. Overall, the worst alternative would be **Alternative 2**.

The situation depicted in Table 3.4.1.5 presents two interesting cases. First, **Alternative 4** (**Preferred**) is best for charter vessels but worst for headboats; **Alternative 3** is best for headboats but worst for anglers. Second, what is best for anglers is worst for the entire fishery; what is best for charter vessels is best for the entire fishery; and, what is best for headboats falls between the best and worst cases for the entire fishery.

Table 3.4.1.5. Summary of total CS, charter NOR, and headboat NOR losses, in 2010 dollars.

	CS	NOR_CHARTER	NOR_HEADBOATS	TOTAL
Alt. 1	0	0	0	0
Alt. 2	101,514	516,062	32,713	650,288
Alt. 3	245,502	252,017	29,844	527,362
Alt. 4	202,579	-52,526	59,832	209,885

Note: All CS and NOR values are expressed relative to **Alternative 1**. Positive (negative) numbers indicate CS or NOR losses (gains) above those of **Alternative 1**. Shaded cells indicate the best alternative by sector, including all sectors.

3.4.2 Analysis of Economic Impacts

The procedure for estimating the economic impacts of the various alternatives on the recreational sector involves tracing the changes in regional or state economic activities from angler expenditures to the supporting industries that directly or indirectly conduct business related to recreational fishing. Economic impacts or activities are generally characterized in the form of FTE jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value added impacts (difference between the value of goods and the cost of materials or supplies). Income

and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values.

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

Table 3.4.2.1 presents summary estimates of changes in regional (state) economic activities from changes in angler target trips under the various closure alternatives, inclusive of the no action alternative. See Appendix B for estimates of economic impacts by state. As before, the no action alternative assumes a closure date commencing on August 27. Although the model used here includes the shore mode, no economic impacts are expected from this sector due to the absence of target trips for greater amberjack by shore mode anglers. Thus, the shore mode and the headboat (as noted earlier) activities are not included in the estimated economic impacts. The numbers in the table are interpreted as reductions in economic activities due to the various closure alternatives.

Among the seasonal closure alternatives (**Alternatives 2-4**), **Alternative 2** would result in the least reductions in economic activities to the private/rental mode. This alternative is estimated to affect 9,825 private/rental mode target trips, resulting in reductions of $507,375 in output, $288,083 in value added, and 5 FTE jobs. The next best alternative for the private/rental mode would be **Alternative 3**, which would affect 10,439 target trips that would reduce output by $534,944, value added by $305,025, and FTE jobs by 5. **Alternative 4** (**Preferred**), which is the worst for the private/rental mode, would reduce target trips by 10,318 that, in turn, would reduce output by $568,224, value added by $316,222, and FTE jobs by 6. Note that **Alternative 3** would affect more trips than **Alternative 4** (**Preferred**), but would result in smaller economic impacts in terms of output, value added, and FTE jobs. This reflects the difference in output and value added effects per trip by state. See Appendix B for the economic impacts by state.

For the charter mode, **Alternative 4** (**Preferred**) would be the best alternative among the seasonal closure alternatives. This alternative would reduce target trips by 2,571, resulting in reductions of $996,734 in output, $576,012 in value added, and 10 FTE jobs. The next best alternative is **Alternative 3**, which would affect 4,664 target trips that would reduce output by approximately $1.7 million, value added by approximately $986,166, and 18 FTE jobs. **Alternative 2** would affect 6,478 target trips, with associated reductions of approximately $2.3 million in output, $1.3 million in value added, and 24 FTE jobs. The fact that the private/rental mode would experience larger reductions in target trips and yet lower economic impacts than the charter mode is due to higher expenditures per for-hire trip compared to private trips.

Overall, **Alternative 4** (**Preferred**) would result in the least reductions in economic activities among the seasonal closure alternatives. This alternative would affect 12,889 target trips and reduce output by about $1.6 million, value added by $892,234, and 16 FTE jobs. **Alternative 3** would result in the second lowest economic impacts by affecting 15,103 trips and reducing output by about $2.2 million, value added by about $1.3 million, and 23 FTE jobs. **Alternative 2** would affect 16,303

target trips and reduce output by about $2.8 million, value added by about $1.6 million and 30 FTE jobs. The overall ranking of alternatives according to the magnitude of economic impacts closely mimics that of the cost/benefit analysis. Among the seasonal closure alternatives, **Alternative 4** (**Preferred**) would result in the least adverse economic impacts.

Table 3.4.2.1. Summary estimates of reductions in economic activities due to the various closure alternatives, 2008 dollars except trips and jobs.

	ALT. 1	ALT. 2	ALT. 3	ALT. 4
	Private/Rental Mode			
Trips	3,947	9,825	10,439	10,318
Output Impacts	$198,305	$507,375	$534,944	$568,224
Value added impacts	$111,492	$288,083	$305,025	$316,222
Jobs	2	5	5	6
	Charter Mode			
Trips	2,729	6,478	4,664	2,571
Output Impacts	$906,898	$2,293,950	$1,695,906	$996,734
Value added impacts	$533,293	$1,337,625	$986,166	$576,012
Jobs	9	24	18	10
	All Modes			
Trips	6,676	16,303	15,103	12,889
Output Impacts	$1,105,203	$2,801,324	$2,230,850	$1,564,958
Value added impacts	$644,784	$1,625,708	$1,291,191	$892,234
Jobs	11	30	23	16

3.4.3 Summary and Additional Considerations

Based on cost/benefit analysis, which is the more appropriate approach in comparing the various alternatives, **Alternative 4** (**Preferred**), which closes the recreational greater amberjack fishery from June 1st through July 31st, would result in the least adverse economic effects on the recreational sector among the seasonal closure alternatives. The economic impacts analysis supports this general conclusion. This alternative would be best for the charter sector, worst for the headboat sector, and second worst (or best) for anglers.

One major factor not explicitly considered in the quantitative analysis of economic effects is shifts in fishing effort. The analysis assumed that the 2005-2009 effort and its temporal distribution would not change in the future. An increase in effort, particularly a substantial one, offers the potential to render ineffective the seasonal closure or make the situation worse under the no action alternative.
As partly alluded to earlier, the June 1 - July 31 closure under **Alternative 4** (**Preferred**) would occur when the recreational fishery for red snapper is open. This situation would provide some economic relief to those affected by the greater amberjack fishery closure, if they were not already fishing for red snapper. But if that were so, additional effort directed at red snapper would exert more pressure on the red snapper stock, potentially resulting in an even shorter season for the recreational red snapper fishery. It is also possible that those affected by the greater amberjack fishery closure were already fishing for red snapper. If they shift their “lost” effort to red snapper, the season for red snapper could also be shortened. The economic trade-off of this condition cannot be estimated at this time.

With the exception of the economic effects on charter vessels, the no action alternative (**Alternative 1**) was estimated to result in lower adverse economic effects relative to average 2005-2009 conditions than any of the seasonal closure alternatives. In principle, there are several downsides to this alternative. First, predictions of the exact date for quota closure are still imperfect, so anglers and for-hire operators would not be provided with a clear planning horizon for fishing and booking of for-hire trips. Cancellations of trips, or not accommodating customer booking orders, due to quota closures could be burdensome particularly on for-hire operators. Second, a quota closure cultivates a fertile ground for the development of a derby mentality. With the knowledge that a quota closure could occur anytime, or at least towards the later part of the fishing year, as it did in 2009, fishermen would be induced to fish hard early in the year. This could only increase the probability of an early fishery closure, resulting in even greater adverse economic effects on the recreational sector. Third, a quota closure would, in effect, block out some parts of the holiday season occurring towards the end of the year. This season may be highly profitable to some for-hire operators or a highly preferred fishing season for some anglers. If that were the case, a quota closure might not only result in fishing stoppage but would also affect the more profitable for-hire trips or higher valued angler trips. These for-hire operators and anglers would have to search for other highly profitable or higher valued season to compensate for their potential losses. But this would involve additional costs as well as take some time to develop. There is, of course, some possibility a similar situation of a highly profitable or highly valued season being affected by any of the seasonal closure alternatives.

None of the seasonal closure alternatives would necessarily eliminate quota closures. The accountability measures adopted for the recreational fishery for greater amberjack would still apply. These accountability measures involve quota closures and reduction in the succeeding year's quota should an overage occur. A seasonal closure early in the year, such as the March 1 - May 31 closure (**Alternative 2**) is possibly more susceptible to a quota closure than one towards the middle of the year. An early seasonal closure would provide the fishing participants ample time to fish as hard as they can, knowing that a quota closure would still apply. In such eventuality, the recreational fishery could be economically worse off under two closures, one planned (seasonal closure) and the other unplanned (quota closure).

There exist other factors that are rather exogenous but could have implications on the current regulatory amendment addressing the recreational greater amberjack fishery. For one, the current rebuilding plan for greater amberjack contains a provision to increase the TAC in 2011. This could happen if the upcoming stock assessment for greater amberjack concluded the stock is on track in its rebuilding trajectory. If the TAC were to increase, a quota closure of the fishery under the no action alternative may not happen; hence, a seasonal closure would result in otherwise avoidable negative economic effects. Second, the national and regional economies are still not fully recovered. If these economies continued to remain at low levels, the demand for recreational fishing trips, particularly offshore trips like those for greater amberjack, could stay depressed. If the demand for angler trips were depressed, a quota closure under the no action alternative would unlikely occur. Again, a seasonal closure would result in an otherwise avoidable reduction in economic benefits from fishing for greater amberjack. On the other hand, if these economies fully recovered, demand for recreational fishing trips might increase as to result in early quota closures. In this case, a seasonal closure might be a better alternative. Third, the Deepwater Horizon MC252 oil spill could affect harvests of greater amberjacks, although the magnitude of effects cannot be determined with great accuracy. The oil spill has already affected some segments of the recreational fishery for greater

amberjack. If it spreads throughout most of the areas frequented by recreational anglers and for-hire vessels, a quota closure or seasonal closure would not matter in the short run, because there would be at best minimal fishing for greater amberjack. On the other hand, if the oil spill were to affect only some, but otherwise important, areas for greater amberjack fishing, a relatively large amount of the quota may not be harvested, at least in the short run. Adoption of a seasonal closure could potentially bring about an otherwise avoidable reduction in economic benefits.

3.5 Public and Private Costs of Regulations

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

Council costs of document preparation,
meetings, public hearings, and information
dissemination……....$25,000

NMFS administrative costs of document
preparation, meetings, and review ……...$20,000

TOTAL……..……...$45,000

The Council and Federal costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds were expended directly for this specific action. There are no permit requirements proposed in this regulatory amendment. To the extent that there are no quota closures proposed in this regulatory amendment or other regulatory measures, no additional enforcement activity is anticipated. In addition, under a fixed budget, any additional enforcement activity due to the adoption of this regulatory amendment would require a redirection of current resources to enforce the new measures.

3.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: (1) An annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

Based on the analysis that the economic effects of the preferred alternative (**Alternative 4**) would be significantly less than $100 million a year, this action has been determined to not be economically significant for purposes of E.O. 12866.

4.0 REGULATORY FLEXIBILITY ACT ANALYSIS

4.1 Introduction

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

With certain exceptions, the RFA requires agencies to conduct an IRFA for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the RIR, the IRFA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.

4.2 Statement of the Need for, Objective of, and Legal Basis for the Rule

A discussion of the reasons why action by the agency is being considered is provided in Section 1.3. In summary, the purpose of this proposed rule is to address the problems associated with the quota closure of recreational greater amberjack harvest in 2009 and subsequent implementation of accountability measures, particularly the reduction in the recreational quota for 2010 because of harvest overages in 2009. The proposed seasonal closure is intended to eliminate or reduce the frequency of quota closures in order to provide the recreational fishery participants maximum benefits from as many fishing days as possible, yet remain within the quota. The Magnuson-Stevens Act, as amended, provides the statutory basis for this proposed rule.

4.3 Description and Estimate of the Number of Small Entities to Which the Proposed Action Would Apply

The proposed rule is expected to directly affect for-hire fishing vessels that harvest greater amberjack in the Gulf of Mexico. The for-hire fleet is comprised of charterboats, which charge a fee on a vessel basis, and headboats, which charge a fee on an individual angler (head) basis. A Gulf reef fish for-hire permit is required to harvest greater amberjack in the Gulf of Mexico. In 2009,

there were 1,422 unique for-hire vessels that were permitted to operate in the Gulf reef fish fishery. These vessels were distributed as follows: 140 vessels in Alabama, 877 vessels in Florida, 101 vessels in Louisiana, 54 vessels in Mississippi, and 232 vessels in Texas. The for-hire permit does not distinguish between headboats and charter boats, but in 2009 the headboat survey program included 79 headboats. The majority of headboats were located in Florida (43), followed by Texas (22), Alabama (10), and Louisiana (4). It cannot be determined with available data how many of the for-hire vessels permitted to operate in the reef fish fishery harvest greater amberjack, so all permitted vessels are assumed to comprise the universe of potentially affected vessels. The average charterboat is estimated to earn approximately $88,000 (2008 dollars) in annual revenues, while the average headboat is estimated to earn approximately $461,000 (2008 dollars).

The Small Business Administration has established size criteria for all major industry sectors in the U.S. including fish harvesters. A for-hire business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $7.0 million (NAICS code 713990, recreational industries). Based on the average revenue estimates provided above, all for-hire vessels expected to be directly affected by this proposed rule are determined for the purpose of this analysis to be small business entities.

4.4 Description of the Projected Reporting, Record-Keeping and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which Will be Subject to the Requirement and the Type of Professional Skills Necessary for the Preparation of the Report or Records

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

4.5 Identification of all Relevant Federal Rules Which May Duplicate, Overlap or Conflict with the Proposed Rule

No duplicative, overlapping, or conflicting federal rules have been identified for this proposed action.

4.6 Significance of Economic Impacts on a Substantial Number of Small Entities

Substantial number criterion

This proposed rule is expected to directly affect all for-hire vessels that harvest greater amberjack. In 2009, there were 1,422 active Gulf reef fish for-hire permits. It cannot be determined with available data how many of the for-hire vessels permitted to operate in the Gulf reef fish fishery harvest greater amberjack, so all permitted for-hire vessels are assumed to comprise the universe of potentially affected vessels.

Significant economic impacts

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

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

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

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

The proposed rule would establish a June 1 - July 31 seasonal closure of the recreational greater amberjack fishery. On the other hand, the no action alternative would likely result in quota closure commencing on August 27. Relative to the no action alternative, the proposed action is expected to result in an increase in charterboat profits by $52,526 and a decrease in headboat profits by $59,832, or a net decrease in for-hire profits of $7,306. This net amount is deemed small, particularly when spread over all 1,422 for-hire vessels.

Based on the resulting net effects on profits, it is concluded that the proposed rule would not have a significant economic impact on a substantial number of small entities.

4.7 Description of Significant Alternatives to the Proposed Action and Discussion of How the Alternatives Attempt to Minimize Economic Impacts on Small Entities

The proposed action would establish a June 1 - July 31 seasonal closure of the recreational greater amberjack fishery. Four alternatives, including the proposed action, were considered in this amendment. The first alternative to the proposed action is the no action alternative. This alternative resulted in quota closure and overages in 2009, prompting a reduction in the next year's quota. The recreational sector subsequently requested the Council to consider a seasonal closure to minimize the adverse effects of the quota closure. The second alternative to the proposed action would establish a March 1-May 31 seasonal closure. This alternative is expected to result in larger adverse economic effects than the proposed action. While this alternative would result in less adverse effects on headboats, the adverse economic effects on charterboats would be substantially larger than those under the proposed action. The third alternative to the proposed action would establish a May 1-June 30 seasonal closure. This third alternative has been estimated to result in larger adverse economic effects than the proposed action. Similar to the second alternative to the proposed action, this third alternative would result in less adverse economic effects on headboats but substantially larger adverse economic effects than the proposed action.

5.0 OTHER APPLICABLE LAWS

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the Exclusive Economic Zone (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.

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.

Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972, 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 CFR 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.

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

Data Quality Act (DQA)

The 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 DQA directs the Office of Management and Budget (OMB) to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal

agencies." Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: (1) ensure information quality and develop a pre-dissemination review process; (2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and (3) report periodically to OMB on the number and nature of complaints received.

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

Endangered Species Act (ESA)

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. The ESA requires NMFS, when proposing a fishery action that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions may affect but are "not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, including a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or adversely modify designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives. NOAA Fisheries Service, as part of the Secretarial review process, would make a determination regarding the potential impacts of the proposed actions.

Essential Fish Habitat (EFH)

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

Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, 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 amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries, and studies of pinniped-fishery interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. 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.

Paperwork Reduction Act (PRA)

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

Executive Orders

E.O. 12630: Takings

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

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. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations would have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it a) has an annual effect on the economy of $100 million or more or adversely affects in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments and communities; b) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; c) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or d) raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. NMFS has preliminarily determined that this action would not meet the economic significance threshold of any criteria.

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

This Executive Order requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Impacts of commercial and recreational fishing on subsistence fishing are a concern in fisheries management; however, there are no such implications from the action proposed in this amendment.

Although it is anticipated that the impacts of this amendment may affect communities with environmental justice concerns, because the impacts should be beneficial and the regulatory impacts should not discriminate against any group, this action should not trigger any environmental justice concerns. In reviewing the thresholds for both poverty and minorities among all coastal counties involved, Escambia County in Florida is the only location with fishing communities affected by this action where thresholds are exceeded (Poverty threshold exceeded by .08%). Furthermore, with a longer fishing season, the impacts to subsistence fishermen would likely be beneficial. Because recreational amberjack fishing is prosecuted mainly offshore, most subsistence fishing would take place on board private, charter or headboat vessels. Overall impacts should be beneficial if the season is extended.

E.0. 12962: Recreational Fisheries

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

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

E.O. 13089: Coral Reef Protection

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

Regulations are already in place to limit or reduce habitat impacts within the Flower Garden Banks National Marine Sanctuary. Additionally, NMFS approved and implemented Generic Amendment 3 for EFH, which established additional Habitat Areas of Particular Concern and gear restrictions to protect corals throughout the Gulf of Mexico. There are no implications to coral reefs by the actions proposed in this amendment.

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

E.O. 13158: Marine Protected Areas

This Executive Order requires federal agencies to consider whether their proposed action(s) would 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 marine protected areas, habitat areas of particular concern, and gear-restricted areas in the eastern and northwestern Gulf. The existing and proposed areas in these actions are entirely within federal waters of the Gulf of Mexico. They do not affect any areas reserved by federal, state, territorial, tribal or local jurisdictions.

6.0 LIST OF PREPARERS

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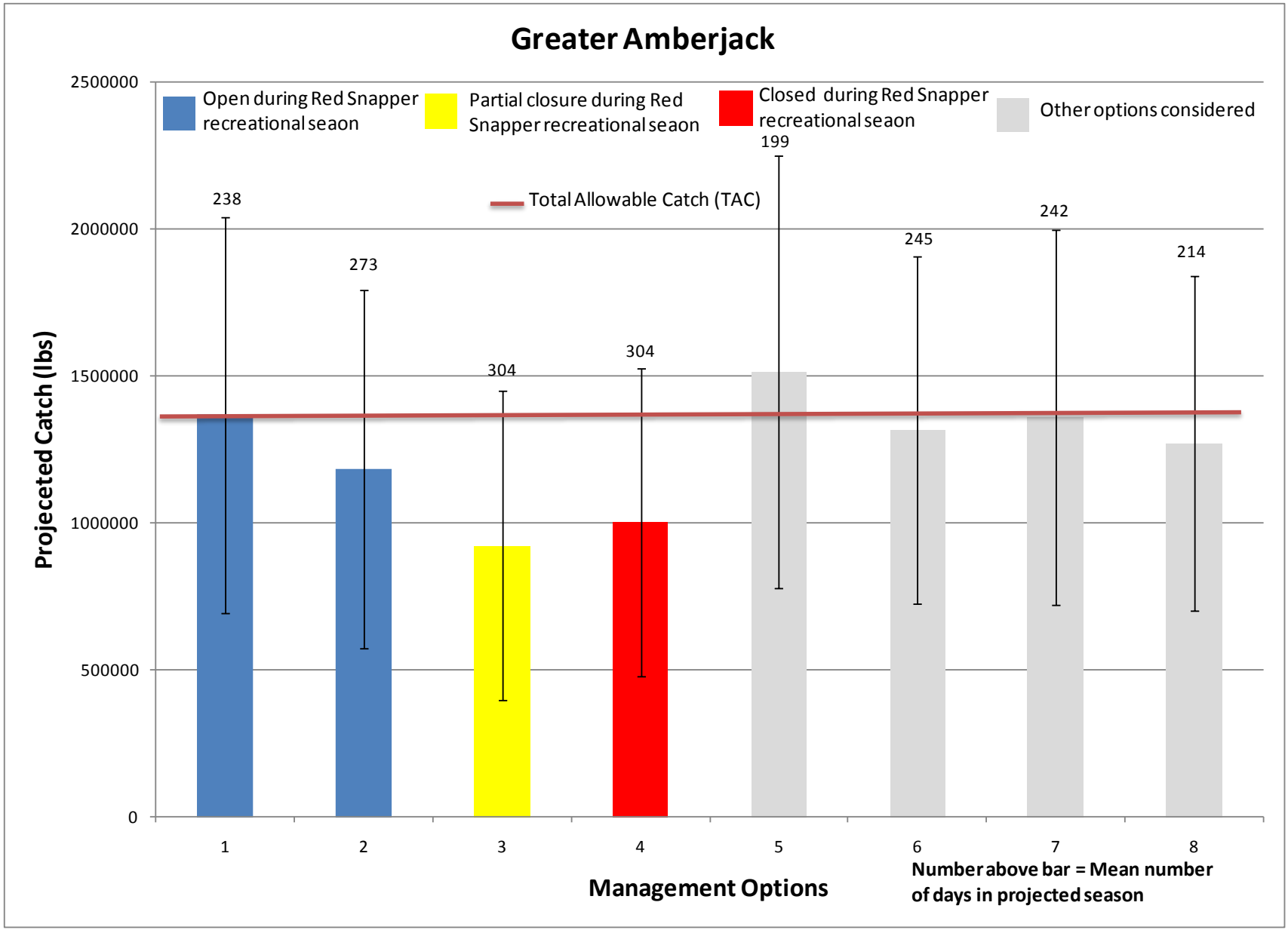
APPENDIX A – OPTIONS FOR ALTERNATIVE GREATER AMBERJACK CLOSED SEASONS

Recreational Quota for 2011 (provided no increase in TAC 1,368,000 pounds whole weight (ww)). Options for alternative greater amberjack closed seasons, projected landings with 80% upper and lower confidence limits, and projected total days open with upper and lower confidence limits. LCL=lower confidence limit and UCL=upper confidence limit. Source: SEFSC ACL Datasets, MRFSS, HBS, and TPWD.

		Landings (ww) pounds				
Options	**Closed Season**	**LCL (days open)**	**Mean (days open)**	**UCL (days open)**	**Date of quota closure if landings ~ UCL**	**Comments**
1	Aug 27-Dec 31	693,680 (294)	**1,366,325 (238)**	2,038,970 (182)	Jul 2-Dec 31	NO ACTION
2	Mar 1-May 31	574,742 (365)	**1,184,097 (273)**	1,793,452 (137)	Aug 18-Dec 31	Closed during peak spawning; parallel to commercial closure
3	May 1-Jun 30	396,898 (346)	**923,246 (304)**	1,449,594 (262)	Nov 20-Dec 31	Partial closure parallel to commercial season; partial closure red snapper season
4	Jun 1-Jul 31	476,877 (365)	**1,001,006 (304)**	1,525,135 (225)	Oct 14-Dec 31	Closed when recreational red snapper is open
	Additional options					
5	Mar 1-Apr 30	776,734 (268)	**1,513,027 (199)**	2,249,320 (130)	Jul 11-Dec 31	Closure during peak spawning (may exceed quota)
6	Jan 1-Feb 28, Nov 1-Dec 31	726,655 (340)	**1,316,675 (245)**	1,906,695 (150)	Jul 29-Dec 31	Winter closure (4 months)
7	Jan 1-Jan 31, Oct 1-Dec 31	720,317 (318)	**1,358,020 (242)**	1,995,723 (166)	Jul 17-Dec 31	Winter closure (4 months)
8	Jan 1-Feb 28, Oct 1-Dec 31	702,308 (278)	**1,270,939 (214)**	1,839,570 (150)	Jul 29-Dec 31	Winter closure (5 months)


Greater Amberjack
Open during Red Snapper recreational seaon
Partial closure during Red Snapper recreational seaon
Closed during Red Snapper recreational seaon
Other options considered
Total Allowable Catch (TAC)
Projeceted Catch (lbs)
2500000
2000000
1500000
1000000
500000
0
238
273
304
304
199
245
242
214
1
2
3
4
5
6
7
8
Management Options
Number above bar = Mean number of days in projected season

APPENDIX B – PROCEDURE FOR ESTIMATING THE ECONOMIC EFFECTS OF SEASONAL CLOSURES IN THE RECREATIONAL GREATER AMBERJACK FISHERY

1.0 Introduction

This appendix describes the general approach used in assessing the economic effects of the various alternatives for seasonal closure of the recreational greater amberjack fishery in the Gulf. The focus of this appendix is the analysis of economic effects from the standpoint of costs and benefits to the nation. There are four alternatives, including the no action alternative, considered by the Council. The no action alternative would impose a fishery closure upon reaching the current recreational quota of 1,368,000 pounds whole weight. With this alternative, the quota is expected to be reached on August 27. The following are the four alternatives:

Alternative 1: No action: expected closure -- August 27 to December 31.
Alternative 2: Seasonal closure -- March 1 to June 30.
Alternative 3: Seasonal closure -- May 1 to June 30.
Preferred Alternative 4: Seasonal closure -- June 1 to July 31.

2.0 Approach

The procedure for estimating the economic effects of these alternatives on the recreational sector involves measuring the expected changes in consumer surplus (CS) to anglers and net operating revenues (NOR) to for-hire vessels. Consumer surplus is the amount of money that an angler would be willing-to-pay for a fishing trip over and above the cost of the trip. Net operating revenue is total revenue less operating costs, such as fuel, ice, bait, and other supplies. This procedure follows the method employed in the regulatory amendment to change the TAC for red snapper (GMFMC 2010). It also draws upon the general method used in the economic analysis for the red snapper fishery closure in the Gulf of Mexico (NMFS 2008).

The change in CS was calculated as:

$$\Delta CS = (FISH_0 - FISH_A) \ \mathbf{x} \ (CS_F)$$

where ΔCS is the change in CS, $(FISH_0 - FISH_A)$ is the change in number of fish caught, and CS_F is the consumer surplus per fish. The change in the number of fish caught is the difference between the number of fish expected to be caught under the no action alternative and that under the seasonal closure alternative. The consumer surplus per fish was assumed constant across all alternatives, states, and year.

The change in NOR was calculated as:

$$\Delta NOR = (TLOST_A) \ \mathbf{x} \ (NOR_0)$$

where ΔNOR is the forgone NOR per alternative, $TLOST_A$ is the number of trips lost under each alternative, and NOR_0 is the NOR per angler trip. The number of trips lost is the number of target trips for greater amberjack occurring in the closed period. The forgone NOR was

computed for each year and state, under an assumption that NOR per angler trip was constant for each year and state across all alternatives.

3.0 Data

Data for the years 2005-2009 were used in estimating the economic effects of this amendment. In estimating the changes in CS, two major pieces of information were required, namely, the CS per fish and the number of fish forgone under each alternative. For the CS per fish, a value of $11.46 (2010 dollars) per fish, based on Haab et al. (2009) and supplied by the Science Center (Carter 2010, personal communication), was used for the current purpose. The change in CS was computed for each year and allocated to each state, using the proportion of each state's recreational harvest of greater amberjack.

Alternative 1 (no action) was considered as a reference point, so the number of fish forgone under this alternative was set to zero. This conforms to the expectation that the total recreational quota for greater amberjack would be fully taken under the no action alternative. For the other alternatives, the number of fish projected to be forgone (not harvested) was derived by converting the estimated mean pounds under the quota for each alternative (see Table 2.0.1 of Section 2.0) to numbers of fish using the mean weight of greater amberjack. Listed below are the forgone fish under each alternative.

Alternative 1: none
Alternative 2: 8,859
Alternative 3: 21,424
Alternative 4: 17,678

Two major pieces of information were required for estimating the forgone NOR under each alternative, namely, NOR per for-hire angler trip and number of trips occurring during the closed period. A NOR value of $145.63 (2010 dollars) per charter angler trip, based on Liese and Carter (forthcoming) and supplied by the Science Center (Carter, 2010, personal communication) was used in calculating the forgone NOR in the charter sector. A NOR value of $49.05 per headboat angler trip, based on Sutton et al. (1999) and supplied by the Science Center (Carter 2010, personal communication), was used in calculating the forgone NOR in the headboat sector.

In determining the number of charter angler trips occurring in the closed periods, the data used were target trips from the MRFSS program for Alabama, Florida, Louisiana, and Mississippi and angler effort from the TPWD recreational creel survey for Texas. For the MRFSS data, the proportions of trips occurring in the closed periods, as supplied by the Science Center (Carter 2010, personal communication), were applied to the total number of target trips, as estimated using the method described in Holiman (1996). The TPWD recreational survey is generally conducted in two waves – May 15 through November 20 and November 21 through May 14. Effort data from these two waves were aggregated to form the total angler trips per year. Subsequently, the proportions of angler trips occurring in the closed periods, as supplied by the Science Center (Carter, 2010, personal communication) were multiplied into the total angler trips. The resulting numbers were then multiplied by 3.5%, which is the mean percentage of time targeting amberjack for the entire twelve-month period for all charter operators in Texas

(Sutton et al. (1999), to arrive at the estimated angler trips for greater amberjack. Results are reported in Tables B.1 and B.2.

Table B.1. Number of charter angler trips for greater amberjack occurring during the closed period, by state.

	AL	FLW	LA	MS	TX	TOTAL
	2005					
Alt. 1	100	772	0	0	23	896
Alt. 2	1,102	5,249	278	0	4	6,633
Alt. 3	200	2,470	834	0	16	3,521
Alt. 4	200	1,081	556	0	71	1,908
	2006					
Alt. 1	0	5,079	1,005	0	27	6,111
Alt. 2	560	4,176	3,016	0	10	7,762
Alt. 3	560	4,402	2,848	0	33	7,843
Alt. 4	0	1,241	2,681	0	64	3,986
	2007					
Alt. 1	290	5,329	0	0	20	5,638
Alt. 2	72	6,513	382	0	4	6,971
Alt. 3	72	1,184	1,527	0	58	2,842
Alt. 4	0	0	2,100	0	85	2,186
	2008					
Alt. 1	0	1,703	0	0	34	1,738
Alt. 2	635	3,300	0	0	4	3,940
Alt. 3	635	745	0	0	33	1,413
Alt. 4	106	1,278	0	0	83	1,467
	2009					
Alt. 1	0	275	0	0	7	282
Alt. 2	0	5,769	1,307	0	1	7,077
Alt. 3	0	7,692	0	0	7	7,699
Alt. 4	0	3,296	0	0	18	3,314

Source: TPWD creel survey, MRFSS database, NOAA Fisheries, NMFS, SERO.

Table B.2. Average (2005-2009) number of charter angler trips for greater amberjack occurring during the closed period, by state.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	78	2,632	201	0	22	2,933
Alt. 2	474	5,002	997	0	5	6,477
Alt. 3	294	3,299	1,042	0	29	4,663
Alt. 4	61	1,379	1,067	0	64	2,572

Source: TPWD creel survey, MRFSS database, NOAA Fisheries, NMFS, SERO.

Information from the Southeast Region Headboat Survey of NMFS was used to generate headboat angler days by month for areas around the Gulf. To derive headboat angler days by state, we aggregated the areas from the Dry Tortugas to the Florida Middle Grounds as west Florida (FLW), the rest of the areas in west Florida through Alabama as Florida-Alabama (FL-AL), and the areas from Sabine Pass –Freeport south to Port Isabel as Texas (TX). Only one area category covers the entire Louisiana coast (LA), and no headboats were surveyed in Mississippi (MS). Estimated headboat angler days were multiplied by 5.10%, which is the mean percentage of time targeting amberjack for the entire twelve-month period for all headboat operators in the Gulf (Sutton et al. 1999), to generate the headboat angler days targeting greater amberjack. And from this last estimate, angler days occurring during the closed periods were aggregated to form the headboat angler days targeting greater amberjack that occurred during the closed periods. Results are tabulated in Tables B.3 and B.4.

Table B.3. Number of headboat angler days for greater amberjack occurring during the closed period, by state.

	FLW	FL-AL	LA	MS	TX	TOTAL
	2005					
Alt. 1	941	572	0	0	570	2,083
Alt. 2	1,358	823	0	0	851	3,032
Alt. 3	795	951	0	0	1,084	2,830
Alt. 4	822	948	0	0	1,190	2,960
	2006					
Alt. 1	715	789	101	0	888	2,492
Alt. 2	1,058	886	44	0	933	2,921
Alt. 3	540	1,088	75	0	1,027	2,730
Alt. 4	532	1,324	78	0	1,246	3,180
	2007					
Alt. 1	860	681	69	0	652	2,262
Alt. 2	1,210	932	0	0	865	3,007
Alt. 3	691	1,072	31	0	959	2,754
Alt. 4	738	1,397	62	0	1,205	3,402
	2008					
Alt. 1	863	543	8	0	357	1,771
Alt. 2	1,261	810	26	0	475	2,572
Alt. 3	771	1,082	66	0	659	2,578
Alt. 4	778	1,493	90	0	930	3,291
	2009					
Alt. 1	948	586	21	0	432	1,987
Alt. 2	1,266	612	24	0	498	2,399
Alt. 3	757	1,090	71	0	827	2,746
Alt. 4	874	1,679	97	0	1,211	3,861

Table B.4. Average (2005-2009) number of headboat angler days occurring during the closed period, by state.

	FLW	FL-AL	LA	MS	TX	TOTAL
Alt. 1	865	634	40	0	580	2,119
Alt. 2	1,230	813	19	0	724	2,786
Alt. 3	711	1,057	49	0	911	2,727
Alt. 4	749	1,368	65	0	1,156	3,339

4.0 Economic Effects

Table B.5 presents the changes in CS, by year, under each alternative relative to the no action alternative (**Alternative 1**) while Table B.6 contains a five-year average of the CS changes. All alternatives would result in losses in CS, because each alternative would result in fewer fish caught than the no action alternative. To take into account the fishery closure in 2009, the 2005-2008 average was also calculated and presented in Table B.7.

Tables B.8, B.9, and B.10 present the charter NOR values that would be forgone under each alternative, respectively, for yearly, five-year average (2005-2009), and four-year average (2005-2008) effects. That is, the NOR values under each alternative are the expected NOR losses to the charter sector. Since the analysis is trip-based as opposed to fish-based, the no action alternative would result in forgone NOR as with the other alternatives. The effects can be normalized by setting to zero the values for **Alternative 1** and the values for the other alternatives as changes relative to **Alternative 1**, but this is deemed unnecessary for the present purpose.

The corresponding annual, five-year average (2005-2009), and four-year average (2005-2008) forgone NOR values for the headboat sector are presented, respectively, in Tables B.11, B.12, and B.13. Again, it is deemed unnecessary to normalize the effects relative to **Alternative 1**.

Table B.5. Losses in consumer surplus relative to the no action alternative (Alternative 1), by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
	2005					
Alt. 1	0	0	0	0	0	0
Alt. 2	29,801	55,544	12,793	0	3,376	101,514
Alt. 3	72,071	134,328	30,939	0	8,164	245,502
Alt. 4	59,470	110,842	25,530	0	6,737	202,579
	2006					
Alt. 1	0	0	0	0	0	0
Alt. 2	14,161	43,605	40,349	0	3,397	101,514
Alt. 3	34,248	105,456	97,582	0	8,216	245,502
Alt. 4	28,260	87,018	80,521	0	6,780	202,579
	2007					
Alt. 1	0	0	0	0	0	0
Alt. 2	14,698	70,795	11,757	0	4,264	101,514
Alt. 3	35,547	171,211	28,432	0	10,312	245,502
Alt. 4	29,332	141,277	23,461	0	8,509	202,579
	2008					
Alt. 1	0	0	0	0	0	0
Alt. 2	5,331	68,018	24,558	1,112	2,494	101,514
Alt. 3	12,894	164,497	59,392	2,688	6,031	245,502
Alt. 4	10,639	135,736	49,008	2,218	4,977	202,579
	2009					
Alt. 1	0	0	0	0	0	0
Alt. 2	5,695	68,934	24,781	607	1,497	101,514
Alt. 3	13,772	166,712	59,931	1,467	3,620	245,502
Alt. 4	11,364	137,564	49,453	1,210	2,987	202,579

Table B.6. Average (2005-2009) losses in consumer surplus relative to the no action alternative (Alternative 1), by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	0	0	0	0	0	0
Alt. 2	13,937	61,379	22,848	344	3,006	101,514
Alt. 3	33,706	148,441	55,255	831	7,269	245,502
Alt. 4	27,813	122,488	45,595	686	5,998	202,579

Table B.7. Average (2005-2008) losses in consumer surplus relative to the no action alternative (Alternative 1), by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	0	0	0	0	0	0
Alt. 2	15,998	59,491	22,364	278	3,383	101,514
Alt. 3	38,690	143,873	54,086	672	8,181	245,502
Alt. 4	31,925	118,718	44,630	555	6,751	202,579

Table B.8. Losses in net operating revenues of charter vessels, by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
	2005					
Alt. 1	14,594	112,419	0	0	3,418	130,431
Alt. 2	160,536	764,447	40,485	0	551	966,019
Alt. 3	29,188	359,740	121,455	0	2,315	512,699
Alt. 4	29,188	157,386	80,970	0	10,364	277,908
	2006					
Alt. 1	0	739,622	146,391	0	3,975	889,988
Alt. 2	81,615	608,134	439,172	0	1,427	1,130,347
Alt. 3	81,615	641,006	414,773	0	4,790	1,142,184
Alt. 4	0	180,797	390,375	0	9,376	580,548
	2007					
Alt. 1	42,174	776,077	0	0	2,853	821,105
Alt. 2	10,544	948,539	55,611	0	519	1,015,213
Alt. 3	10,544	172,462	222,445	0	8,430	413,880
Alt. 4	0	0	305,862	0	12,450	318,312
	2008					
Alt. 1	0	248,064	0	0	4,986	253,050
Alt. 2	92,496	480,624	0	0	650	573,770
Alt. 3	92,496	108,528	0	0	4,770	205,793
Alt. 4	15,416	186,048	0	0	12,141	213,605
	2009					
Alt. 1	0	40,005	0	0	1,053	41,058
Alt. 2	0	840,114	190,338	0	137	1,030,589
Alt. 3	0	1,120,152	0	0	1,007	1,121,159
Alt. 4	0	480,065	0	0	2,563	482,628

Table B.9. Average (2005-2009) losses in net operating revenues of charter vessels, by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	11,354	383,238	29,278	0	3,257	427,126
Alt. 2	69,038	728,371	145,121	0	657	943,188
Alt. 3	42,769	480,377	151,735	0	4,262	679,143
Alt. 4	8,921	200,859	155,441	0	9,379	374,600

Table B.10. Average (2005-2008) losses in net operating revenues of charter vessels, by state, in 2010 dollars.

	AL	FLW	LA	MS	TX	TOTAL
Alt. 1	14,192	469,046	36,598	0	3,808	523,643
Alt. 2	86,298	700,436	133,817	0	787	921,337
Alt. 3	53,461	320,434	189,668	0	5,076	568,639
Alt. 4	11,151	131,058	194,302	0	11,083	347,593

Table B.11. Losses in net operating revenues of headboats, by state, in 2010 dollars.

	FLW	FL-AL	LA	MS	TX	TOTAL
			2005			
Alt. 1	46,152	28,075	0	0	27,938	102,165
Alt. 2	66,624	40,355	0	0	41,718	148,697
Alt. 3	38,979	46,646	0	0	53,185	138,811
Alt. 4	40,307	46,501	0	0	58,381	145,190
			2006			
Alt. 1	35,047	38,709	4,930	0	43,545	122,232
Alt. 2	51,872	43,477	2,171	0	45,748	143,269
Alt. 3	26,499	53,386	3,662	0	50,379	133,925
Alt. 4	26,109	64,945	3,825	0	61,115	155,994
			2007			
Alt. 1	42,176	33,427	3,383	0	31,959	110,946
Alt. 2	59,364	45,703	0	0	42,404	147,471
Alt. 3	33,899	52,600	1,536	0	47,027	135,061
Alt. 4	36,202	68,522	3,042	0	59,094	166,861
			2008			
Alt. 1	42,320	26,633	406	0	17,524	86,884
Alt. 2	61,841	39,747	1,263	0	23,287	126,138
Alt. 3	37,801	53,093	3,232	0	32,313	126,438
Alt. 4	38,161	73,210	4,423	0	45,641	161,435
			2009			
Alt. 1	46,481	28,757	1,041	0	21,191	97,471
Alt. 2	62,076	30,021	1,183	0	24,408	117,688
Alt. 3	37,131	53,471	3,502	0	40,575	134,678
Alt. 4	42,862	82,366	4,765	0	59,384	189,377

Table B.12. Average (2005-2009) losses in net operating revenues of headboats, by state, in 2010 dollars.

	FLW	FL-AL	LA	MS	TX	TOTAL
Alt. 1	42,435	31,120	1,952	0	28,431	103,939
Alt. 2	60,355	39,861	924	0	35,513	136,653
Alt. 3	34,862	51,839	2,386	0	44,696	133,783
Alt. 4	36,728	67,109	3,211	0	56,723	163,771

Table B.13. Average (2005-2008) losses in net operating revenues of headboats, by state, in 2010 dollars.

	FLW	FL-AL	LA	MS	TX	TOTAL
Alt. 1	41,424	31,711	2,180	0	30,241	105,557
Alt. 2	59,925	42,321	859	0	38,289	141,394
Alt. 3	34,294	51,431	2,108	0	45,726	133,559
Alt. 4	35,195	63,295	2,822	0	56,058	157,370

APPENDIX C – PROCEDURE FOR ESTIMATING THE ECONOMIC IMPACTS OF SEASONAL CLOSURES IN THE RECREATIONAL GREATER AMBERJACK FISHERY

1.0 Introduction

This appendix describes the general approach used in estimating the "economic impacts" of the various alternatives for seasonal closure of the recreational greater amberjack fishery in the Gulf. Economic impacts should be distinguished from economic effects estimated through the cost/benefit approach. While economic impacts relate to the changes in regional (state) economic activities, cost/benefit analysis focuses on changes in net benefits to the nation.

There are four alternatives, including the no action alternative, considered by the Council. The no action alternative would impose a fishery closure upon reaching the current recreational quota of 1,368,000 pounds whole weight. With this alternative, the quota is expected to be reached on August 27. The following are the four alternatives:

Alternative 1: No action: expected closure -- August 27 to December 31.
Alternative 2: Seasonal closure -- March 1 to June 30.
Alternative 3: Seasonal closure -- May 1 to June 30.
Preferred Alternative 4: Seasonal closure -- June 1 to July 31.

2.0 Approach

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

The technique used in estimating economic impacts is the so-called input-output analysis. This technique exploits the relations among various sectors/industries, with an industry depending on input from another and supplying its output to another industry. These relations can then track the changes in all industries due to changes in one or more industries. The input-output model used in this amendment was developed for and applied in NMFS (2009 and 2010). This model, however, includes only the private/shore mode and charter mode, and thus does not account for economic impacts in the headboat sector.

3.0 Data

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

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

The number of angler trips affected under each alternative is the same as that used in estimating economic effects via the cost/benefit approach. Considering that the cost/benefits approach is fish-based in estimating effects on anglers, the only additional data needed for the current purpose are the number of affected private angler trips. Table C.1 provides a summary of these trips, focusing only on the 2005-2009 average. For easy reference, Table C.1 also presents the number of affected charter angler trips.

Table C.1. Average (2005-2009) private and charter angler trips occurring during the closed period, by state.

	AL	FLW	LA	MS	TX
	Private Angler Trips				
Alt. 1	1,085	2,231	239	369	23
Alt. 2	1,878	6,939	998	0	10
Alt. 3	2,205	7,403	799	0	32
Alt. 4	1,935	6,444	1,882	0	57
	Charter Angler Trips				
Alt. 1	78	2,429	201	0	21
Alt. 2	474	5,002	997	0	5
Alt. 3	294	3,299	1,042	0	29
Alt. 4	61	1,379	1,067	0	64

Source: TPWD creel survey, MRFSS database, NOAA Fisheries, NMFS, SERO.

4.0 Results

Tables C.2 through C.5 present the economic impacts of the various closure alternatives, including the no action alternative (**Alternative 1**). As noted earlier, these impacts are due to changes in private/rental and charter trips only. The numbers in the "Total" column are summations of impacts for each state. Potentially different numbers may result if the analysis were conducted on the entire Gulf as one region, because it would capture interrelations among the various states in the Gulf. It should also be noted that output impacts and value added impacts are not additive.

Table C.2. Changes in economic activities under Alternative 1, in 2008 dollars except trips and jobs.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
	Shore Mode					
Target Trips	0	0	0	0	0	0
Output Impact	$0	$0	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0	$0	$0
Jobs	0	0	0	0	0	0
	Private/Rental Mode					
Target Trips	1,085	2,231	239	369	23	3,947
Output Impact	$63,127	$101,290	$19,490	$10,523	$3,875	$198,305
Value Added Impact	$34,561	$60,231	$9,586	$5,043	$2,071	$111,492
Jobs	1	1	0	0	0	2
	Charter Mode					
Target Trips	78	2,429	201	0	21	2,729
Output Impact	$40,611	$762,722	$95,686	$0	$7,879	$906,898
Value Added Impact	$22,355	$452,216	$54,331	$0	$4,392	$533,293
Jobs	1	8	1	0	0	9
	All Modes					
Target Trips	1,163	4,660	440	369	44	6,676
Output Impact	$103,738	$864,013	$115,177	$10,523	$11,753	$1,105,203
Value Added Impact	$56,915	$512,447	$63,916	$5,043	$6,462	$644,784
Jobs	1	9	1	0	0	11

Table C.3. Changes in economic activities under Alternative 2, in 2008 dollars except trips and jobs.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
	Shore Mode					
Target Trips	0	0	0	0	0	0
Output Impact	$0	$0	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0	$0	$0
Jobs	0	0	0	0	0	0
	Private/Rental Mode					
Target Trips	1,878	6,939	998	0	10	9,825
Output Impact	$109,265	$315,040	$81,385	$0	$1,685	$507,375
Value Added Impact	$59,820	$187,335	$40,028	$0	$900	$288,083
Jobs	1	3	1	0	0	5
	Charter Mode					
Target Trips	474	5,002	997	0	5	6,478
Output Impact	$246,789	$1,570,661	$474,624	$0	$1,876	$2,293,950
Value Added Impact	$135,849	$931,240	$269,490	$0	$1,046	$1,337,625
Jobs	3	16	5	0	0	24
	All Modes					
Target Trips	2,352	11,941	1,995	0	15	16,303
Output Impact	$356,053	$1,885,701	$556,009	$0	$3,561	$2,801,324
Value Added Impact	$195,669	$1,118,575	$309,519	$0	$1,946	$1,625,708
Jobs	4	19	6	0	0	30

Table C.4. Changes in economic activities under Alternative 3, in 2008 dollars except trips and jobs.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
	Shore Mode					
Target Trips	0	0	0	0	0	0
Output Impact	$0	$0	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0	$0	$0
Jobs	0	0	0	0	0	0
	Private/Rental Mode					
Target Trips	2,205	7,403	799	0	32	10,439
Output Impact	$128,290	$336,106	$65,157	$0	$5,391	$534,944
Value Added Impact	$70,236	$199,861	$32,047	$0	$2,881	$305,025
Jobs	1	3	1	0	0	5
	Charter Mode					
Target Trips	294	3,299	1,042	0	29	4,664
Output Impact	$153,071	$1,035,908	$496,046	$0	$10,880	$1,695,906
Value Added Impact	$84,261	$614,187	$281,654	$0	$6,065	$986,166
Jobs	2	11	5	0	0	18
	All Modes					
Target Trips	2,499	10,702	1,841	0	61	15,103
Output Impact	$281,361	$1,372,014	$561,203	$0	$16,271	$2,230,850
Value Added Impact	$154,497	$814,048	$313,701	$0	$8,946	$1,291,191
Jobs	3	14	6	0	0	23

Table C.5. Changes in economic activities under Alternative 4, in 2008 dollars except trips and jobs.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
	Shore Mode					
Target Trips	0	0	0	0	0	0
Output Impact	$0	$0	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0	$0	$0
Jobs	0	0	0	0	0	0
	Private/Rental Mode					
Target Trips	1,935	6,444	1,882	0	57	10,318
Output Impact	$112,581	$292,566	$153,474	$0	$9,602	$568,224
Value Added Impact	$61,636	$173,971	$75,484	$0	$5,131	$316,222
Jobs	1	3	1	0	0	6
	Charter Mode					
Target Trips	61	1,379	1,067	0	64	2,571
Output Impact	$31,760	$433,015	$507,947	$0	$24,012	$996,734
Value Added Impact	$17,483	$256,733	$288,412	$0	$13,384	$576,012
Jobs	0	4	5	0	0	10
	All Modes					
Target Trips	1,996	7,823	2,949	0	121	12,889
Output Impact	$144,341	$725,582	$661,422	$0	$33,614	$1,564,958
Value Added Impact	$79,118	$430,704	$363,896	$0	$18,516	$892,234
Jobs	2	7	7	0	0	16