8/22/14

Recreational Red Snapper Sector Separation

Public Hearing Draft for Amendment 40
to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico

Including Draft Environmental Impact Statement, Fishery Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

August 2014

This is a publication of the Gulf of Mexico Fishery Management Council Pursuant to National Oceanic and Atmospheric Administration Award No. NA10NMF4410011.

This page intentionally blank

Gulf of Mexico Reef Fish Amendment 40
Draft Environmental Impact Statement (DEIS) Cover Sheet

Red Snapper Amendment 40 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, including a Draft Environmental Impact Statement (DEIS), Fishery Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Act Analysis.

Abstract:
This DEIS is prepared pursuant to the National Environmental Policy Act to assess the environmental impacts associated with a regulatory action. The DEIS analyzes the impacts of a reasonable range of alternatives intended to establish a federal for-hire:other recreational red snapper allocation. The purpose of this action is to define distinct private angling and federal for-hire components of the recreational red snapper fishery and allocate red snapper resources between the components of the recreational sector to increase the stability for the for-hire component, provide a basis for increased flexibility in future management of the recreational sector, and minimize the chance for recreational quota overruns which could jeopardize the rebuilding of the red snapper stock.

Responsible Agencies:

National Marine Fisheries Service
(Lead Agency)
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
727-824-5305
727-824-5308 (fax)
http://sero.nmfs.noaa.gov
Contact: Peter Hood
peter.hood@noaa.gov

Gulf of Mexico Fishery Management Council
2203 North Lois Avenue, Suite 1100
Tampa, Florida 33607
813-348-1630
813-348-1711 (fax)
http://www.gulfcouncil.org
Contact: Assane Diagne
assane.diagne@gulfcouncil.org

Type of Action

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

Filing Dates with EPA
Notice of intent (NOI) to prepare EIS published: December 24, 2013
Draft environmental impact statement (DEIS) filed with EPA: August 29, 2014
DEIS comment period ended: October 20, 2014
EPA comments on DEIS:

DEIS TABLE OF CONTENTS

Cover Sheet……..i
Executive Summary……ix
Purpose and Need 15
Management Alternatives 17
Affected Environment..... 31
Environmental Consequences..... 71
List of Preparers..... 119
List of Agencies, Organizations and Persons to whom a Copy of the EIS was sent..... 120
Index……137
Appendix D……..176

ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
AM	accountability measure
CEA	Cumulative Effects Analysis
Council	Gulf of Mexico Fishery Management Council
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EIS	Environmental Impact Statement
EJ	environmental justice
ESA	Endangered Species Act
FMP	Fishery Management Plan
Gulf	Gulf of Mexico
HAPC	habitat areas of particular concern
IFQ	individual fishing quota
IRFA	Initial Regulatory Flexibility Analysis
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
mp	million pounds
MRIP	Marine Recreational Information Program
MRFSS	Marine Recreational Fisheries Statistics Survey
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OY	optimum yield
RIR	Regulatory Impact Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office of NMFS
SFA	Sustainable Fisheries Act
SRHS	Southeast Region Headboat Survey
SSC	Scientific and Statistical Committee
TAC	total allowable catch
TL	total length
VEC	valued environmental components
ww	whole weight

TABLE OF CONTENTS

DEIS TABLE OF CONTENTS ii
Abbreviations Used in this Document iii
List of Tables vi
List of Figures viii
Executive Summary ix
Chapter 1. Introduction 1
1.1 Background 1
1.2 Purpose and Need 15
1.3 History of Management 15
Chapter 2. Management Alternatives 17
2.1 Action 1 – Establishment of Private Angling and Federal For-hire Components 17
2.2 Action 2 – Allocation of the Recreational Red Snapper Quota between the Components of the Recreational Sector 21
2.3 Action 3 – Recreational season closure provisions 29
Chapter 3. Affected Environment 31
3.1 Description of the Red Snapper Component of the Reef Fish Fishery 31
3.2 Description of the Physical Environment 39
3.3 Description of the Biological Environment 41
3.4 Description of the Social Environment 52
3.4.1 Fishing Communities 55
3.4.2 Environmental Justice Considerations 61
3.5 Description of the Economic Environment 63
3.5.1 Commercial Sector 63
3.5.2 Recreational Sector 63
3.6 Description of the Administrative Environment 69
3.6.1 Federal Fishery Management 69
3.6.2 State Fishery Management 70
Chapter 4. Environmental Consequences 71
4.1 Action 1 – Establishment of Private Angling and Federal For-hire Components 71
4.1.1 Direct and Indirect Effects on the Physical Environment 71
4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment 72
4.1.3 Direct and Indirect Effects on the Social Environment 73

4.1.4 Direct and Indirect Effects on the Economic Environment 75
4.1.5 Direct and Indirect Effects on the Administrative Environment 79
4.2 Action 2 – Allocation of the Recreational Red Snapper Quota between the Components of the Recreational Sector 80
4.2.1 Direct and Indirect Effects on the Physical Environment 80
4.2.2 Direct and Indirect Effects on the Biological/Ecological Environment 81
4.2.3 Direct and Indirect Effects on the Social Environment 81
4.2.4 Direct and Indirect Effects on the Economic Environment 83
4.2.5 Direct and Indirect Effects on the Administrative Environment 84
4.3 Action 3 – Recreational Season Closure Provisions 86
4.3.1 Direct and Indirect Effects on the Physical Environment 86
4.3.2 Direct and Indirect Effects on the Biological/Ecological Environment 86
4.3.3 Direct and Indirect Effects on the Social Environment 86
4.3.4 Direct and Indirect Effects on the Economic Environment 87
4.3.5 Direct and Indirect Effects on the Administrative Environment 88
4.4 Cumulative Effects Analysis (CEA) 89
Chapter 5. Regulatory Impact Review 117
Chapter 6. Regulatory Flexibility Act Analysis 118
Chapter 7. List of Preparers 119
Chapter 8. List of Agencies, Organizations, and Persons to whom a Copy of the EIS was sent 120
Chapter 9. References 121
Chapter 10. Index 137
Appendix A. Other Applicable Law 139
Appendix B. Bycatch Practicability Analysis 145
Appendix C. Summary of Habitat Utilization by Life History Stage for Species in the Reef Fish FMP 173
Appendix D. Alternatives considered but rejected 176
Appendix E. Summaries of Public Comments Received 184
Appendix F. Fishery Allocation Policy 187
Appendix G. Current Federal Regulations for Gulf of Mexico Recreational Red Snapper Management 190

LIST OF TABLES

Table 1.1.1. Number of state-permitted for-hire vessels in the Gulf (by state) – 2000 to 2012. .. 4

Table 1.1.2. Number of federal for-hire permits – by state (2008 – 2013). 4

Table 1.1.3. Annual red snapper recreational angler-trips by state (1986 – 2013). 7

Table 1.1.4. Annual red snapper recreational angler-trips for two modes (1986-2013). 9

Table 2.1. Recreational red snapper landings for headboats, charter boats and private anglers in the Gulf of Mexico. Landings in pounds whole weight. Charter, headboat, and total for-hire landings have not been adjusted to account for state-licensed guideboat landings. 23

Table 2.2. Red snapper landings for the federal for-hire and private angling components in pounds whole weight and percentage of the total recreational landings. For-hire landings summarized here were reduced by 7% and those landings were added to the private-angling component's landings to account for landings by state guide boats. 24

Table 2.3. Red snapper allocations for the federal for-hire and private angling components in percentage of the recreational quota and in pounds. The pounds allocated are based on a recreational quota of 5.39 mp. 25

Table 2.4a. Red snapper allocations for the federal for-hire and private angling components in percentage and estimated 2014 season lengths. 27

Table 2.4b. Projections of landings (pounds) during and outside of the federal season for each Gulf State, used for setting the 2014 recreational red snapper fishing season 27

Table 3.1.1. Recreational red snapper landings in 2012 by state and mode. 31

Table 3.1.2. Red snapper landings and overage/underage by sector, 1986-2013. 33

Table 3.1.3. Red snapper recreational landings vs. allocation 35

Table 3.3.1. Species of the Reef Fish FMP grouped by family. 44

Table 3.4.1.1. Percentage of total recreational red snapper landings by state for 2011 and 2012. 55

Table 3.4.1.2. Average community rank by total number of charter permits by community* and population. 56

Table 3.5.2.1.1. Red snapper recreational target trips, by mode, 2011-2013*..... 64

Table 3.5.2.1.2. Headboat angler days. 65

Source: HBS..... 65

Table 3.5.2.4.1. Summary of red snapper target trips (2011-2013 average) and associated business activity (thousand 2013 dollars). 68

Table 4.1.3.1. Comparison of fishing opportunities (Alternative 1) allowed among recreational vessels in state and federal waters, in states with consistent and inconsistent regulations for red snapper. 74

Table 4.2.3.1. Ranking of allocation for each of the components established in Action 1..... 83

Table 4.4.1. Number of Gulf of Mexico reef fish commercial (landing at least one pound of reef fish), for-hire, and historical captain permits by year. 97

Table 4.4.2. Number of Gulf of Mexico reef fish commercial trips catching at least one pound of reef fish and the number of offshore angler trips for the charter and private angling components of the reef fish recreational sector for the years 2008-1012. 97

Table 4.4.3. The cause and effect relationship of fishing and regulatory actions for red snapper within the time period of the CEA. 104

Table 4.4.4. VECs considered, consolidated, or not included for further evaluation. 106

LIST OF FIGURES

Figure 1.1.1. Relationship between the number of state recreational saltwater licenses (sold to residents and non-residents) and federal for-hire permits for all Gulf States. 5

Figure 1.1.2. Red snapper recreational landings by private vessels (including state-licensed for-hire vessels) and federally permitted for-hire vessels (charters and headboats combined). 6

Figure 1.1.3. Number of red snapper recreational angler trips and quotas (1986-2013), Gulf-wide. 8

Figure 1.1.4. Number of red snapper angler trips taken on private and for-hire (all charter boats and headboats) vessels. 10

Figure 1.1.5. Gulf-wide: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 11

Figure 1.1.6. Florida: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 12

Figure 1.1.7. Alabama: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 12

Figure 1.1.8. Mississippi: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 13

Figure 1.1.9. Louisiana: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 13

Figure 1.1.10. Texas: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) 14

Table 2.1. Recreational red snapper landings for headboats, charter boats and private anglers in the Gulf of Mexico. 23

Table 2.2. Red snapper landings for the federal for-hire and private angling component 24

Table 2.3. Red snapper allocations for the federal for-hire and private angling component 25

Figure 3.2.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature 40

Figure 3.3.1. Fishery closure at the height of the Deepwater Horizon MC252 oil spill. 51

Figure 3.4.1. Length of recreational red snapper fishing season, with date of changes in bag limit 52

Figure 3.4.2. Recreational landings (solid line) and quotas (dotted line) in millions of pounds whole weight. 53

Figure 3.4.3. Length of recreational red snapper season in days (red line, right axis) and landings divided by average weight of fish and number of days in the season (blue line, left axis), providing the average number of red snapper landed per day (1996-2012). 54

Figure 3.4.1.1. Distribution of federal for-hire permits, including historical captain permits in Gulf States, by community. 61

EXECUTIVE SUMMARY

The Gulf of Mexico (Gulf) red snapper stock is overfished and currently under a rebuilding plan. As the stock has recovered, both commercial and recreational quotas have been allowed to increase per the rebuilding plan. The commercial sector has been managed under an individual fishing quota (IFQ) program since 2007 and landings have stayed below the commercial quota as each IFQ allocation holder is strictly monitored to ensure they do not land more fish than pounds allocated to them through the program. The recreational sector, which has experienced quota overages and shorter seasons recently, is managed under a quota, bag and size limits, and closed seasons. The recreational season length is determined through projections that rely on previous years' landings information. Even though the recreational quota has increased in recent years, the season length has decreased, in part because the average size of the fish harvested has increased (i.e., it takes fewer fish to fill the quota). Additionally, inconsistent state regulations have made harvest projections more difficult. To minimize the chances of the recreational sector exceeding its quota, the Gulf of Mexico Fishery Mangement Council (Council) asked the National Marine Fisheries Service (NMFS) to put in place an annual catch target (ACT) as an accountability measure for the 2014 fishing season. The ACT, which is what the recreational season length is based on, is reduced from the quota and reduces the chance the quota will be exceeded. The Council has also developed a framework action that would put in place an ACT for 2015 and beyond as well as put in place an overage adjustment to mitigate the effects should landings exceed the quota.

The reef fish recreational sector in the Gulf includes a private vessel component and a for-hire component and red snapper is a species within the reef fish fishery management unit. The for-hire component includes charter vessels and headboats where anglers pay the vessel operator to be taken on a fishing trip. The key distinction between charter vessels and headboats is how the fee is determined. On a charter vessel trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler. Those for-hire vessels with federal reef fish for-hire permits are allowed to fish for reef fish species like red snapper in federal waters, and those without federal permits are restricted to fishing for red snapper in state waters. Anglers on private vessels can fish for red snapper in both federal and state waters when red snapper fishing is open in those waters. Current recreational management measures such as season length, daily bag limits, and size limits are typically applied to the recreational sector as a whole, without making a distinction between the private and for-hire components.

Since 2004, there has been a moratorium on the issuance of new federal reef fish for-hire permits. This means that participation in the federal for-hire component is capped; no additional federal permits are available. This also means that access to these vessels is limited to the recreational anglers that can fit on these permitted vessels. On the other hand, there is no limiting factor to the number of anglers fishing from private recreational vessels which may target reef fish species; it is an open entry fishery. There is also no limit to the number of state-issued permits for guideboats. These state-permitted for-hire vessels may land federally managed species in state waters only; they may not take paying passengers on trips to land

federally managed species from federal waters. Over time, the number of private recreational vessels has increased, while the number of vessels with federal for-hire permits has decreased. This has resulted over time in private vessel landings representing a greater proportion of the recreational quota as a whole.

With overall angler effort increasing, the moratorium on federal for-hire permits has limited growth in the for-hire industry and, in turn, anglers' access to vessels. An evaluation of effort by fishing mode suggests that private recreational anglers now account for an increasing share of the red snapper-related effort in the Gulf. While private angling represented on average 33% of the red snapper angler-trips for the time interval between 1986 and 1990, the private vessels accounted for an average of 46% of angler-trips between 2005 and 2009. By 2011, 55% of the red snapper angler-trips in the Gulf were taken by anglers fishing from private vessels. A part of this shift is attributable to changes in state regulations where state waters are open when federal waters are closed. For 2014, in addition to the nine-day federal season, Texas waters were open for 356 days, Louisiana for 277 days, Florida for 43 days, and Mississippi and Alabama for 12 days. Charter vessels and headboats with a reef fish for-hire permit are not allowed to fish in state waters for red snapper if federal waters are closed.

The purpose of this action is to define distinct private angling and federal for-hire components of the recreational red snapper fishery and allocate red snapper resources between these recreational components. Establishing separate components would provide a basis for flexible management approaches tailored to each component and reduce the likelihood for recreational quota overruns which could jeopardize the rebuilding of the red snapper stock. The need for the proposed action is to prevent overfishing while achieving the optimum yield, particularly with respect to recreational opportunities, while rebuilding the red snapper stock.

This amendment contains three actions with a total of total of 15 alternatives (Table 1).

Table 1: Summary of Actions considered in Reef fish Amendment 40

Action 1: Establishment of Distinct Components with the Recreational Sector
Alternative 1: No Action - Maintain the recreational sector as one unit
Preferred Alternative 2: Establish **mandatory sector separation**. Federal For-hire component includes all for-hire operators with federal for-hire reef fish permits; Private angling component includes Private Anglers and State permitted for-hire operators
Alternative 3: Establish **voluntary sector separation**. Only federally permitted for-hire operators who elected to join are included in the Federal For-hire component; Private Anglers, State permitted for-hire operators and remaining federally permitted for-hire operators are included in the Private angling component. A **fully transferable endorsemen**t to the federal reef fish for-hire permit is issued to members of the federal for-hire component.
Alternative 4: Establish **voluntary sector separation**. Only federally permitted for-hire operators who elected to join are included in the Federal For-hire component; Private

Anglers, State permitted for-hire operators and remaining federally permitted for-hire operators are included in the Private angling component. A **non-transferable endorsemen**t to the federal reef fish for-hire permit is issued to members of the federal for-hire component
Action 2: Allocation of the Red Snapper Quota between the Components
Alternative 1: No Action - Do not Allocate the recreational quota between the federal for-hire and private angling components
Alternatives 2-9: Allocate the recreational red snapper quota between the federal for-hire and private angling components based on historical landings during various time intervals. **Alternative 7 is preferred.**
Action 3: Recreational Closure Provisions
Alternative 1: No Action - Maintain the current red snapper season closure provisions for the recreational sector.
Preferred Alternative 2: Establish **separate red snapper season closure provisions** for the federal for-hire and private angling components.

Action 1 – Establishment of Private Angling and Federal For-hire Components
Action 1 would consider the establishment of a federal for-hire and private angling components within the recreational sector. Alternatives include: no action (**Alternative 1**) where the recreational sector would not be divided into two components; **Preferred Alternative 2** would establish the two components where all federally permitted for-hire vessels would be added to the federal for-hire component; and **Alternatives 3 and 4** would establish the two components where federal for-hire operatators may opt into the federal for-hire component. **Alternatives 3 and 4** differ in that the endorsement used to identify which for-hire vessels are in the for-hire component are fully transferable under **Alternative 3** and not transferable under **Alternative 4**. **Alternatives 3 and 4** also have options for the frequency that vessel operators may choose to opt in or out of the for-hire component of just once (**option a**), every year (**option b**), every 3 years (**option c**), and every 5 years (**option d**).

With respect to the physical and biological/ecological environments, the effects of this action regardless of the alternative selected as preferred would likely be minimal. Effects are tied to fishing effort where greater effort results in greater gear interactions with the physical environment or more removals and discards of targeted species in the biological/ecological environment. Whether the recreational sector is maintained as one component (**Alternative 1**, no action) or divided into two components (**Preferred Alternative 2** and **Alternatives 3-4**), the recreational quota would not change and so overall fishing effort is likely to remain the same. Under **Preferred Alternative 2** and **Alternatives 3-4**, there could be a shift in fishing effort compared to **Alternative 1** of the private angling component to state waters under conditions of incompatable state/federal fishing regulations (state waters open while federal waters are closed). This could increase the effects of fishing on the physical and biological/ecological environments in state waters and conversely reduce the effects in federal waters. Under **Alternatives 3 and 4**,

this effect would be greater than under **Preferred Alternative 2** conditional on the number of for-hire operators who decide to opt out of the for-hire component.

Under **Alternative 1**, the issues of differential access to fishing opportunities and declining access and representation by the federal for-hire fleet would continue in the social environment. This is an issue of subtractability, where additional fishing by anglers in states with more generous regulations than federal regulations reduces the amount of fish available to be harvested by each angler in the sector as a whole. This is primarily a problem for the red snapper recreational season which must be closed when the recreational quota is reached. Anglers fishing from private vessels in states that provide additional fishing opportunities beyond the federal regulations would enjoy the greatest amount of fishing opportunities, compared to all other Gulf recreational anglers. Nevertheless, red snapper are not uniformly distributed in all depths and habitats, and these opportunities depend on the presence of red snapper in state waters.

Preferred Alternative 2 and **Alternatives 3-4** would establish two distinct components within the recreational sector for the purpose of partitioning access to the recreational red snapper quota. The social effects of establishing a federal for-hire and private angling component would be expected to correspond with recreational participants' sentiments about the action taken. The actual effects resulting from establishing separate components are unknown, but would be indirect and result from how stakeholders or state marine resource departments respond to a federal decision to create separate components of federally permitted and non-federally permitted vessels, and from any subsequent management measures developed and applied to each component. Social benefits would be expected for the federal for-hire component if the separation of the sectors allows the for-hire fleet to stem the trend of decreasing access to red snapper. For-hire vessels and the communities where these vessels are homeported would be expected to benefit as a result of increased stability of access to red snapper. However, these benefits could be decreased should the amount of red snapper harvested in state waters outside the federal season increase, and result in the entire red snapper quota being caught in state waters.

By requiring participation, **Preferred Alternative 2** provides less flexibility to federal for-hire operators than **Alternatives 3** and **4**. For federal for-hire operators who oppose establishing separate components, and those who will remain undecided until the specifics of how fishing opportunities will be distributed is determined, **Alternatives 3** and **4** allow these participants to decide in which component they prefer to operate. For the individual for-hire operator, positive effects would be expected by allowing them to decide which component is best for their business. The options under **Alternatives 3** and **4** would be expected to reflect this tradeoff in benefits between flexibility for individual operators, and the functioning of the component as a whole. The greater the frequency federal for-hire operators have to switch between components could possibly provide increased benefits to the operator that may correspond with unintended consequences for the rest of the component, through some amount of instability of membership. Thus, for the federal for-hire component as a whole, **Options a** would be expected to be most beneficial for the federal for-hire component, followed by **Options d** and **Options c**. Considering the potential desire for flexibility of individual operators, these options would be ordered in reverse. Allowing federal for-hire operators to switch between components every

year (**Options b**) would not be expected to be beneficial for individual federal for-hire operators or the component as a group, and would instead be expected to correspond with confusion among operators and their angler passengers.

In the economic environment, **Alternative 1** would continue to treat the recreational sector as a single entity for the management of red snapper. Therefore, **Alternative 1** would not be expected to result in any direct economic effects on recreational fishermen, for-hire operations, or associated shore-side businesses. However, maintaining the current management structure of the recreational sector may impede the implementation of management measures that would result in additional economic benefits to the federal for-hire and/or private angling components. **Preferred Alternative 2** would depart from the current structure of the recreational sector and establish distinct federal for-hire and private angling components for recreational red snapper management. The establishment of separate federal for-hire and private angling components is expected to provide opportunities to design and implement within each component flexible management approaches tailored to the specificities of each component, thereby potentially resulting in increases in economic value. For each component, the magnitude of potential economic benefits that could result from this action would primarily rest on the type and quality of the management instruments implemented post sector separation.

Alternatives 3 and **4** would also establish red snapper federal for-hire and private angling components. However, as opposed to **Preferred Alternative 2,** which would include all federally-permitted for-hire operators in the federal for-hire component, **Alternatives 3** and **4** would only include those operators who elect to join the federal for-hire component. Therefore, the private angling component that would be established by **Alternatives 3** or **4** would include all other for-hire operators and private recreational anglers. The economic effects expected to result from **Alternatives 3** and **4** would be comparable to the effects expected from **Preferred Alternative 2** but would be reduced if some federal for-hire operators do not participate in the federal for-hire component. The larger the number of federally-permitted operators who elect to opt out, the greater the expected reduction in potential economic benefits that may occur. However, compared to **Preferred Alternative 2**, **Alternatives 3** and **4** would grant added flexibility to individual for-hire operators to determine their participation and/or switch their membership from one component to the other. This added flexibility could potentially result in increased positive economic effects because operators would be able to select and adjust as needed the component deemed to be most beneficial to their business. With respect to the options considered under **Alternatives 3** and **4**, the more flexible the participation decision option, the better it may be for the vessel. Thus, the ranking (best to worst) of the options from the vessel perspective would be as ordered: **Option a**-**Option b**-**Option c**-**Option d**. As may be obvious from the discussion in the previous paragraph, from the management perspective, the ranking order of these options would be reversed.

The establishment of two components to the red snapper recreational sector would have direct effects on the administrative environment through additional rulemaking. Because **Alternative 1**, the no-action alternative, would not require rulemaking, it would have no effect on the administrative environment. The act of establishing the two components under **Preferred Alternative 2** and **Alternatives 3-4** is a one-time event, and thus these alternatives would have an equivalent burden to this environment though the minor direct administrative impacts

associated with the rulemaking to implement the new components. **Alternatives 3** and **4** would allow owners of federally permitted for-hire vessels to opt into the federal for-hire component. This would require an additional administrative burden above what would be required by **Preferred Alternative 2** to develop and issue an endorsement to track who has decided to operate within the federal for-hire component or within the private recreational angler component. **Alternatives 3** and **4** also have four options for the frequency owners of federally permitted for-hire vessels can decide to opt out of the federal for-hire component. **Option a** would have the least administrative burden because the option would only present itself at the beginning of the program. **Options b-d** allow owners to opt out at different time frames. **Option b** would have the greatest burden as owners would be able to make this determination annually, while **Option d** would have the least burden of these three options because owners would only be able to make this decision every five years. **Option c**, every three years, would have effects intermediate to **Options b** and **d**. Finally, **Alternative 3** adds an extra level of administrative complexity (added burden) by allowing the federal for-hire component endorsements to be fully transferable.

Action 2 – Allocation of the Recreational Red Snapper Quota between the Components of the Recreational Sector

Action 2 would set the allocation between the federal for-hire and private angling components. The Council selected Action 1, Alternative 2 as preferred, which establishes a mandatory sector separation. As a result, they removed two actions that would have adjusted the allocation for vessels opting out of the federal-for hire component as allowed for under Action 1, Alternatives 3 and 4. These actions and alternatives may be viewed in Appendix D.

Action 2 considers a variety of allocations between the federal for-hire and private angling components and the allocations would be applied to both the recreational quota and recreational ACT. These alternatives are:

- **Alternative 1**: Maintain the current structure of the recreational sector.
- **Alternative 2**: Allocation based on average landings between 1986 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 50.1% and 49.9%, respectively.
- **Alternative 3**: Allocation based on average landings between 1991 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 48.2% and 51.8%, respectively.
- **Alternative 4**: Allocation based on average landings between 1996 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 45.9% and 54.1%, respectively.
- **Alternative 5**: Allocation based on average landings between 2001 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 41.9% and 58.1%, respectively.
- **Alternative 6**: Allocation based on average landings between 2006 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 37.8% and 62.2%, respectively.
- **Preferred Alternative 7**: Allocation based on 50% of the average percentages landed by each component between 1986 and 2013 (2010 excluded) and 50% of the average percentages landed by each component between 2006 and 2013 (2010 excluded).

Resulting federal for-hire and private angling allocations would be 44.0% and 56.0%, respectively.

- **Alternative 8:** Allocation based on percentages of the quota landed by each component between 2011 and 2013. Resulting federal for-hire and private angling allocations would be 29.1% and 70.9%, respectively.
- **Alternative 9**: Allocation based on average landings between 1986 and 2003. Resulting federal for-hire and private angling allocations would be 54.3% and 45.7%, respectively.

Regarding the physical and biological/ecological environments, the effects of this action regardless of the alternative selected as preferred would likely be minimal. Effects are tied to fishing effort where greater effort results in greater gear interactions with the physical environment or more removals and discards of targeted species in the biological/ecological environment. **Alternative 1**, no action, would not change the current fishing conditions. Thus no change in fishing effort is expected to occur in the short term because no new fishing regulations would be implemented; therefore, habitat-gear interactions would remain unchanged. However, should no action be taken, then the trend of an increasing private angling share of the harvest may continue in the long term. Based on bag limit analyses, the private angling component seems to be less efficient in harvesting red snapper. Therefore, any increase in the private-angling allocation would be expected to require more effort to catch fish compared to the for-hire sector. In addition, this increase in effort would likely occur in state waters unless state and federal regulations become more compatible. Thus **Alternatives 1 and 8** (70.9% private angler and based on current conditions), particularly for state waters, would likely have the greatest adverse effects, followed by **Alternative 6** (62.2%), **Alternative 5** (58.1%), **Preferred Alternative 7** (56.0%), **Alternative 4** (54.1%), **Alternative 3** (51.8%), **Alternative 2** (49.9%), and **Alternative 9** (45.7%).

Although no additional effects would be expected from **Alternative 1** on the social environment as the recreational red snapper quota would continue to be managed as a single quota**,** the increasing issues of differential access to fishing opportunities and declining access and representation by the federal for-hire fleet would continue. This is also an issue of subtractability, where additional fishing by anglers in states with more generous regulations than federal regulations reduces the amount of fish available to be harvested by each angler in the sector as a whole. This is primarily a problem for the shortening duration of the red snapper recreational season which must be closed when the recreational quota is reached. Under **Alternative 1**, anglers fishing from private vessels in states that provide additional fishing opportunities beyond the federal regulations would continue to enjoy the greatest amount of fishing opportunities, compared to all other Gulf recreational anglers. The allocations proposed in **Alternatives 2-9** are based on historical landings of different time series. The magnitude of any social effects would relate to the extent by which each component's average landings for an alternative's time series is greater or lesser than that component's current landings (represented by **Alternative 1**). The components' average landings correspond inversely with each other, such that the larger the proportion allocated to one component, the smaller the proportion that is, in turn, the allocation for the other component. The magnitude of the effects would in part reflect changes in effort subsequent to the implementation of an allocation, but changes in effort are not likely attributable to this action. Additionally, evaluating potential effects is further complicated because this action considers only the proportions of a quota, and the quota is likely

to change. Effects would be expected from changes in access to fishing opportunities resulting from quota changes. Depending on the alternative selected, a component's assigned portion of the quota may vary widely from its landings in any given year. Also, the proportions provided in **Alternatives 2-9** demonstrate the relationship between the components in terms of the allocation: the greater the quota portion assigned to one component, which would be expected to provide greater benefits as more fish are allowed to be caught, also corresponds to less fish being apportioned to another component. This means that positive and negative effects will result relative to how each apportioned quota is sufficient to satisfy fishing opportunities relative to status quo fishing effort and behavior.

For the economic environment, **Alternative 1** would not allocate the recreational red snapper quota between the federal for-hire and the private angling components. If the Council decides to establish distinct federal for-hire and private angling components (Action 1), **Alternative 1** would not be compatible with this decision and would impede the consideration, design and implementation of management measures tailored to the specific needs of each component. Relative to the percentage of the recreational red snapper quota harvested by the federal for-hire component in 2013, all remaining alternatives would increase the estimated percentage allocated to the federal for-hire component and accordingly decrease the percentage allocated to the private angling sector because percentages of the red snapper recreational quota harvested by the private angling component have been increasing in more recent years. For **Alternatives 2-9**, allocations based on longer time series (including more of the earlier years of the dataset) would be more favorable to the federal for-hire component because of the uneven growth rates observed in the estimated percentages harvested by each component. The economic effects expected to result from alternative allocations between components are typically evaluated based on consumer and producer surplus changes relative to a baseline allocation. Consumer and producer surplus changes are computed by multiplying estimated changes in the number of trips expected to result from the allocation considered and average consumer surplus per angler trip and producer surplus to for-hire operators, respectively. The allocation of greater percentages of the recreational quota to the federal for-hire component would be expected to result in greater increases in for-hire trips and associated increases in consumer and producer surplus. However, the magnitude of the increase in for-hire trips would be dependent on the given allocation. It also follows that the allocation of greater proportions of the recreational quota to the private angling component would be expected to result in increases in private angler trips and in corresponding increases in consumer surplus. Inferences about changes in economic efficiency are not made here because it cannot be assumed that the resource allocation within each component is efficient.

The setting of allocations for the two recreational components (federal for-hire and private angling), is an administrative action and would have effects on the administrative environment through additional rulemaking and monitoring. Because **Alternative 1**, the no-action alternative, would not require rulemaking, it would have no effect on the administrative environment. The act of allocating between the two components would affect the administrative environment by requiring rulemaking to set the allocations and monitoring of landings to ensure the different components do not exceed their respective quotas. Because each alternative would require the same administrative actions to set up the component quotas, the effects of **Alternatives 2-8** (including **Preferred Alternative 7**) would likely be similar. Although **Alternatives 2-8** would

increase the administrative burden, the effects are likely to be minimal. Setting the allocations would be a onetime event unless NMFS and the Council decide to change those allocations at a later date. Monitoring of the recreational harvest by the two components already occurs through various state and federal sampling programs.

Action 3 – Recreational season closure provisions

Action 3 considers how the recreational season closure provision would be implemented given the two components. No action (**Alternative 1**) would maintain the current recreational red snapper season closure provisions where the recreational red snapper ACT would be used to determine the recreational red snapper season length. **Preferred Alternative 2** would establish separate red snapper season closure provisions for the federal for-hire and private angling components. The component red snapper ACTs would be used to determine the respective components federal red snapper season length. The ACTs, reduced from the respective annual catch limits (ACLs), are considered an accountability measures and reduce the probability that a component would exceed its ACL. Note that this action is restricted to two alternatives. Because the Council sees sector separation as a first step being able to tailor management measures for each component in future actions, the Council limited the scope of Action 3 to season closure provisions based on a June 1 season opening to reduce confusion in the recreational sector while long-term, component-specific measures are developed.

Adjusting the red snapper closure provisions would have no direct effects on the physical or biological/ecological environments regardless of whether **Alternative 1** or **Preferred Alternative 2** is selected. This is because this action just codifies how the closure is set, not the quota, ACT, or projected season length. The quota, ACT, and season length would be set in a separate framework action or plan amendment and analyzed accordingly with regard to how fishing practices are affected. However, if incompatible regulations for state and federal waters continue, the shift in private angling effort would continue in state waters. This could be exacerbated under **Preferred Alternative 2** should the season length in federal waters for the private angling component be further reduced.

Additional effects on the social environment are not expected from **Alternative 1**, as the recreational harvest of red snapper must be prohibited for the duration of the year once the quota is reached or projected to be reached. Even if separate components are established (Action 1) and fishing opportunities apportioned among the components (Action 2), the participants in both components are prohibited from further retaining red snapper once the recreational quota is reached or projected to be reached. **Preferred Alternative 2** would establish separate season closures for the components of the recreational sector. In theory, this would result in positive effects for both components, as neither would lose fishing opportunities as a result of a quota overage by the other component. However, should the recreational quota be met, recreational fishing for red snapper would need to be closed. Thus, if separate quotas and closures are established for each component, it is possible that one component with remaining quota could be shut down, should it be determined that the Gulf-wide recreational quota was met following the season closure of the other component. This issue could potentially be mitigated through the adoption of component-specific management and accountability measures. However, without attending measures, it is not likely that selecting **Preferred Alternative 2** would be sufficient to

ensure that each component is provided with the necessary season to harvest its share of the quota.

Although **Alternative 1** is compatible with the establishment of separate components within the recreational sector, it would significantly restrict the range of management measures that could be considered by the Council, resulting in significant reductions in the potential economic effects that could be expected from the implementation of sector separation. **Preferred Alternative 2** would depart from the status quo closure provision and establish separate closure provisions for the federal for-hire and private angling components. Each component would be closed when its red snapper allocation is projected to be met. Compared to **Alternative 1**, **Preferred Alternative 2** would therefore be expected to result in positive economic effects because, as opposed to the status quo, it would not impede the materialization of potential economic benefits expected to result from sector separation.

Closing a fishing season based on a quota is administrative action. Because **Alternative 1**, the no-action alternative, would not require additional rulemaking, it would not change the effects of such an action on the administrative environment. The act of closing two components rather than one sector under **Preferred Alternative 2** could require two season notices rather than one notice, thus adding some administrative burden. However, closing fishing seasons is a routine administrative action, so any additional effects from **Preferred Alternative 2** should be minimal.

Cumulative effects

A cumulative effects analysis identified six valued environmental components. These were: habitat; managed resources (red snapper and other reef fish species); vessel owners, captain and crew (commercial and for-hire); anglers; infrastructure; and administration. The cumulative effects of allocating recreational red snapper between the for-hire and private-angling components on the biophysical environment is likely neutral because it should not have much effect on overall fishing effort. For the socioeconomic environment, depending on the component, some effects would likely be positive and some negative depending on who the allocation favors. However, short-term negative impacts on the fisheries' socioeconomic environment may occur due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized within the recreational sector by using combinations of bag limits, size limits, and closed seasons and that these measures can be tailored to meet the needs of each sector component. Note that by the actions considered in this amendment, impacts of future recreational management measures may be further minimized by directly addressing issues specific for the federal for-hire and private angling components. Also note the commercial sector is managed through individual fishing quota programs, size limits, and season-area closures would not likely be effected by the proposed action.

CHAPTER 1. INTRODUCTION

1.1 Background

The Gulf of Mexico (Gulf) red snapper stock is overfished and currently under a rebuilding plan. As the stock has recovered, both commercial and recreational quotas have been allowed to increase per the rebuilding plan. The commercial sector has been managed under an individual fishing quota (IFQ) program since 2007 and landings have stayed below the commercial quota as each IFQ allocation holder is strictly monitored to ensure they do not land more fish than pounds allocated to them through the program. The recreational sector, which has experienced quota overages and shorter seasons recently, is managed under a quota, bag and size limits, and closed seasons. The recreational season length is determined through projections that rely on previous years' landings information. Even though the recreational quota has increased in recent years, the season length has decreased, in part because the average size of the fish harvested has increased (i.e., it takes fewer fish to fill the quota). Additionally, inconsistent state regulations have made harvest projections more difficult. To minimize the chances of the recreational sector exceeding its quota, the Gulf of Mexico Fishery Mangement Council (Council) asked the National Marine Fisheries Service (NMFS) to put in place an annual catch target (ACT) as an accountability measure for the 2014 fishing season. The ACT, which is what the recreational season length is based on, is reduced from the quota and reduces the chance the quota will be exceeded. The Council has also developed a framework action that would put in place an ACT for 2015 and beyond as well as put in place an overage adjustment to mitigate the effects should landings exceed the quota.

The recreational sector in the Gulf includes a private vessel component and a for-hire component. The for-hire component includes charter boats and headboats. Those for-hire vessels with federal reef fish for-hire permits are allowed to fish for red snapper in federal waters, and those without federal permits are restricted to fishing for red snapper in state waters. Current recreational management measures (see above) are typically applied to the recreational sector as a whole, without making a distinction between the private and for-hire components. Because recreational red snapper season lengths have been decreasing, red snapper fishing opportunities for both the for-hire and private angling components have been reduced. Some members of the recreational sector feel that if these two components are separated, then fishery management measures can be tailored for each component to improve for-hire and private angler red snapper fishing opportunities. In this document, sector separation is defined as the partition of a sector into distinct components. Specifically, the separation of the recreational sector would entail the partition of the sector into two distinct components, resulting in a private component (which would include state-permitted for-hire vessels that do not have a federal permit) and a federal for-hire component.

Since 2003, there has been a moratorium on the issuance of new federal reef fish for-hire permits. This means that participation in the federal for-hire component is capped; no additional federal permits are available. This also means that access to these vessels is limited to the recreational anglers that can fit on these permitted vessels. On the other hand, there is no

limiting factor to the number of anglers fishing from private recreational vessels which may target reef fish species; it is an open entry fishery. There is also no limit to the number of state-issued permits for guideboats. These state-permitted for-hire vessels may land federally managed species in state waters only; they may not take paying passengers on trips to land federally managed species from federal waters. Over time, the number of private recreational licensed anglers has increased, while the number of vessels with federal for-hire permits has decreased (Figure 1.1.1). This has resulted over time in private vessel landings representing a greater proportion of the recreational quota as a whole (Figure 1.1.2). This change in vessel demographics is one issue that may be addressed by sector separation. Additionally, landings data for the private recreational component have a higher degree of uncertainty because of differences in how these data are collected. When private recreational landings estimates are combined with for-hire landings data, less effective management measures may be implemented in the recreational sector.

Management actions considering recreational sector separation have been included and subsequently removed from Reef Fish Amendment 32 (GMFMC 2011a) and from the Generic Annual Catch Limits/Accountability Measures (ACL/AM) Amendment (GMFMC 2011b). Analyses of sector separation were presented to the Gulf of Mexico Fishery Management Council (Council) in April and October 2011, and April 2012. At the April 2012 Council meeting, the Council indicated its intent to further discuss issues related to sector separation by initiating a plan amendment. The Council reviewed a scoping document at its June 2012 meeting, which considered sector separation for six reef fish species with existing sector allocations (commercial-recreational). The Council then requested that the sector separation scoping document be combined with the grouper allocation options paper, which was under development at the same time, and that the document only address red snapper and red, gag, and black groupers. At its August 2012 meeting, the Council reviewed the sector allocations document, moving to table further discussion until completion of the 2013 red snapper benchmark assessment.

In January 2013, the Council expressed its intent to resume discussion of red snapper allocation separate from sector separation, resulting in development of a public hearing draft for Red Snapper Allocation (Amendment 28). At the October 2013 meeting, the Council requested sector separation be addressed independently with the intent that this would be the first step towards regulating the different recreational components separately. This request resulted in Amendment 40. In their discussion of this amendment, they determined to limit the scope of the action to just two components of the recreational sector – private angling and federal for-hire (see Appendix D). If the fore-hire component also included state-permitted vessels, this action would be unmanageable because of difficulties in enforcing federal regulations on vessels that are limited to state waters when fishing for reef fish. In addition, the Council determined to limit the scope to just one federal for-hire component as a whole rather than splitting out the federally permitted headboats and charter vessels into their own components. This was done to simplify identifying these vessels (the same permit applies to headboats and charter vessels) as well as allow the Council more flexibility in addressing for-hire management issues in future actions. This management flexibility also applies to developing regulations for the private-angling component.

Gulf of Mexico Fishery Management Council (Council)

- Responsible for conservation and management of fish stocks
- Consists of 17 voting members: 11 appointed by the Secretary of Commerce; 1 representative from each of the 5 Gulf States, the Southeast Regional Administrator of National Marine Fisheries Service (NMFS); and 4 non-voting members
- Responsible for developing fishery management plans and amendments, and recommends actions to NMFS for implementation

National Marine Fisheries Service (NMFS)

- Responsible for preventing overfishing while achieving optimum yield
- Approves, disapproves, or partially approves Council recommendations
- Implements regulations

To contextualize sector separation, this section provides background information on changes within the recreational sector focused around licenses, landings, and effort. Changes in the number of state fishing licenses, state for-hire permits, and federal for-hire permits are summarized, first. Next, information on recreational red snapper landings and effort is provided, including a comparison between annual landings and the quota, and increases in the number of angler trips for the entire recreational sector and by mode. Overall, these data suggest an increase in recreational effort over time as well as the growth in landings made from private vessels compared with for-hire vessels. Additionally, this section uses landings, quota, and effort (angler trips) data for red snapper, only. The ratio of landings over time between for-hire and private vessels varies for other reef fish species.

Permits and licenses

State Saltwater Recreational Fishing Licenses (resident and non-resident)

Between 2000 and 2012, most Gulf States recorded increases in the annual number of saltwater fishing licenses sold (Figure 1.1.1). During this time interval, the largest increase (79.4%) was recorded for the state of Texas. In Alabama, Florida, and Louisiana fishing licenses increased by 11.0%, 7.2%, and 21.6%, respectively. In Mississippi, the only state with a decrease in the number of fishing licenses during this interval, the number of licenses fell by 0.8%. Overall, the number of recreational saltwater fishing licenses in the Gulf increased by 33.3% (Figure 1.1.1). There is no limit on the number of state saltwater fishing licenses which may be sold.

State-Permitted For-Hire Vessels

Between 2000 and 2012, the number of state for-hire permits sold by Gulf States increased by 12% (Table 1.1.1). In 2012, Florida accounted for 62.3 % of the permits, the largest proportion. Alabama, Louisiana, Mississippi, and Texas accounted for 4.2%, 13.3%, 2.5%, and 17.5% of the permits, respectively. There is no limit on the number of state for-hire permits which may be

sold. A large proportion of these state-permitted for hire vessels specialize in trips targeting non-reef fish species including red drum, spotted seatrout, and flounder. State-permitted for-hire vessels, however, are not permitted to harvest red snapper or other federally managed species from federal waters.

Table 1.1.1. Number of state-permitted for-hire vessels in the Gulf (by state) – 2000 to 2012.

Year	State					Total
	Alabama	Florida	Louisiana	Mississippi	Texas	
2000	143	2,957	476	124	1,635	5,335
2001	158	3,193	525	134	1,887	5,897
2002	167	3,303	562	136	1,862	6,030
2003	143	3,406	657	140	1,895	6,241
2004	158	3,355	678	186	903	5,280
2005	150	3,576	695	175	920	5,516
2006	141	3,177	603	146	929	4,996
2007	155	3,556	631	136	996	5,474
2008	197	3,596	664	146	1,095	5,698
2009	180	3,439	661	136	987	5,403
2010	269	3,472	714	152	1,028	5,635
2011	263	3,636	760	155	1,021	5,831
2012	251	3,704	793	151	1,047	5,950
% Change						
2000-12	**75.5**	**25.3**	**66.6**	**21.7**	**- 35.9**	**11.5**

Source: GSMFC, License & Fees for Alabama, Florida, Louisiana, Mississippi, and Texas in Their Marine Waters for the Year (2000-2012).

Federal For-hire Reef Fish Permits

Implemented in 2004, Amendment 20 (GMFMC 2003) established a moratorium on the sale of federal for-hire reef fish permits, effectively limiting the maximum number of permits to 1,693. Although existing permits are transferable, by 2013 the number of federal for-hire reef fish permits had decreased to 1,368, or by 19.2% (Table 1.1.2). In 2013, of the five Gulf States, Florida accounted for 58.8% of the permits, the largest proportion of federal for-hire reef fish permits. Texas (16.2%), Alabama (11.6%), Louisiana (8.9%), and Mississippi (3.4%) account for much smaller proportions of the permits in 2013. The decreasing number of federal for-hire permits is provided alongside the increasing number of saltwater fishing licenses sold to private anglers, in Figure 1.1.1.

Table 1.1.2. Number of federal for-hire permits – by state (2008 – 2013).

Year	State						Total
	Alabama	Florida	Louisiana	Mississippi	Texas	Other	
2008	154	931	110	57	243	24	1,519
2009	150	900	111	52	241	19	1,473
2010	147	865	110	52	237	21	1,432

2011	148	832	123	50	226	17	1,396
2012	155	814	123	48	221	17	1,378
2013	159	804	122	47	221	15	1,368

Source: National Marine Fisheries Service, Southeast Regional Office.

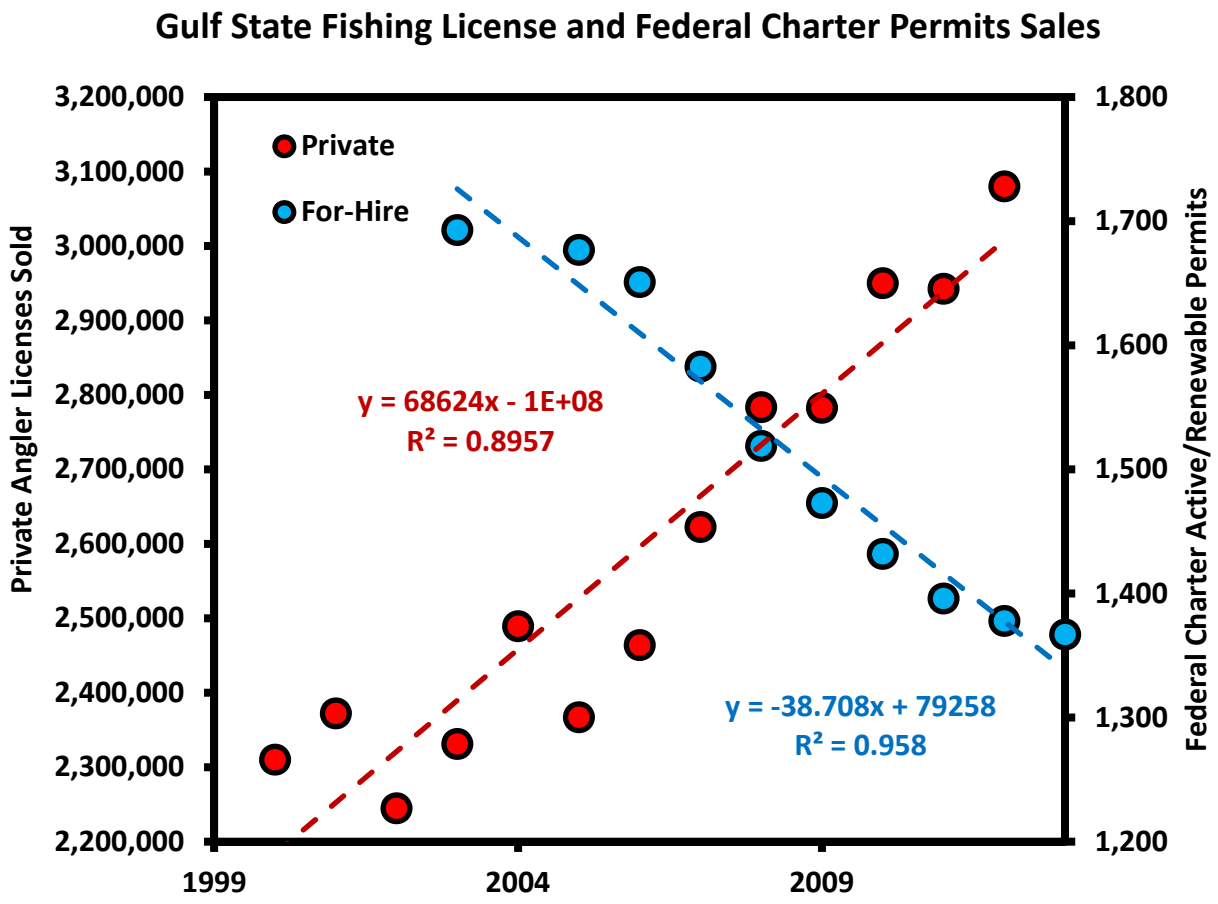

Figure 1.1.1. Relationship between the number of state recreational saltwater licenses (sold to residents and non-residents) and federal for-hire permits for all Gulf States. Source: Gulf Red Snapper Sector Separation Model, National Marine Fisheries Service, Southeast Regional Office (4/2011; data updated 8/7/14).

Figure 1.1.2 provides recreational landings from private vessels and for-hire vessels (1991-2013). For most of the 1990s, over one million more pounds of landings each year were made from for-hire vessels than private vessels, with the gap narrowing during the early 2000s. Since 2007, more red snapper have been landed from private vessels than for-hire vessels, Gulf-wide.

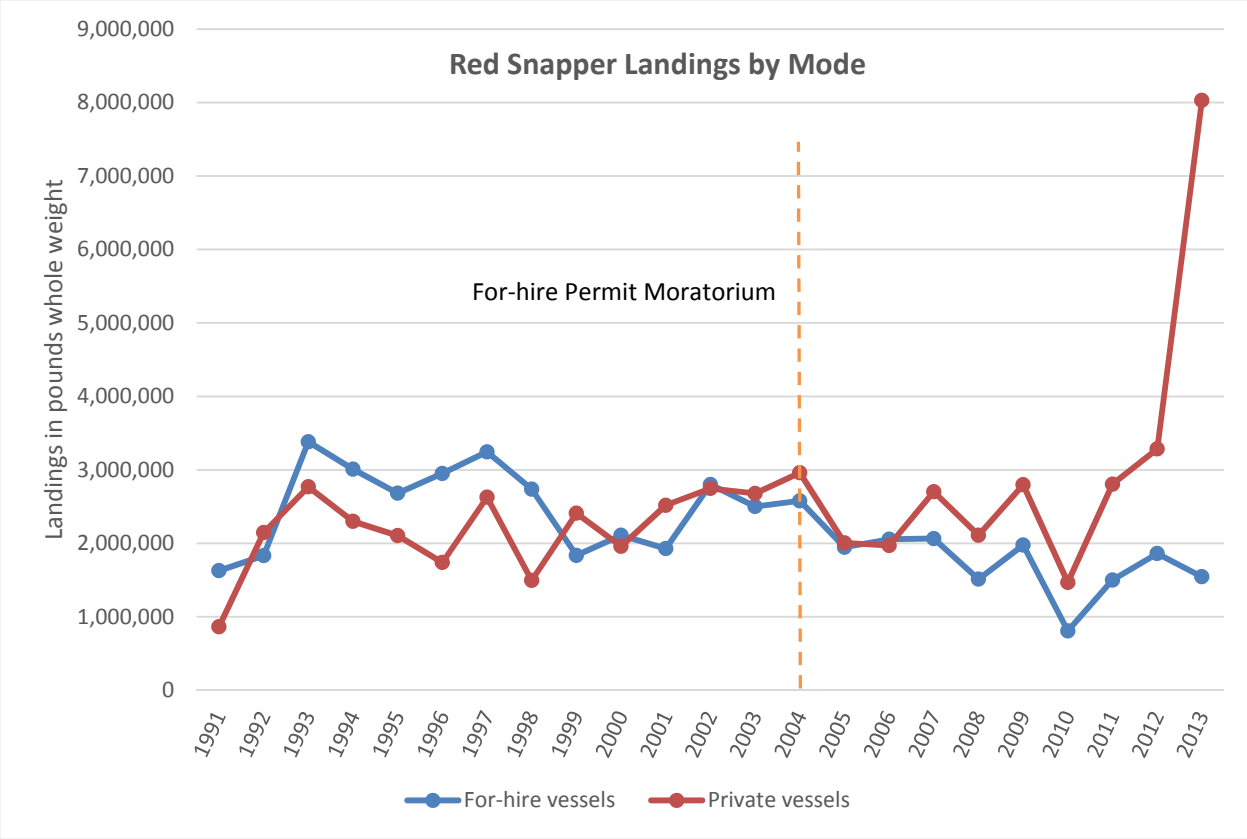

Figure 1.1.2. Red snapper recreational landings by private vessels (including state-licensed for-hire vessels) and federally permitted for-hire vessels (charters and headboats combined). Source: Southeast Fisheries Science Center recreational annual catch limit dataset.

Red snapper effort

Measured by number of angler trips, recreational angler effort steadily increased overall until just the last few years (Figure 1.1.3). An analysis of annual red snapper angler trips in the Gulf based on a series of 5-year averages illustrates an increase in recreational red snapper-related effort, where the average annual number of angler trips increased from 304,291 (1986-1990) to 582,460 (1996-2000), and to 584,298 (2009-2013) (Table 1.1.3).

Table 1.1.3. Annual red snapper recreational angler-trips by state (1986 – 2013).

Year	State					Gulf
	Alabama	Florida	Louisiana	Mississippi	Texas	Trips
1986	31,449	171,637	60,588	8,221	42,203	314,098
1987	31,617	93,205	34,217	5,298	54,215	218,552
1988	42,064	206,117	43,425	13,985	56,143	361,734
1989	64,177	151,333	67,958	9,402	52,115	344,985
1990	85,116	81,972	52,209	13,486	49,302	282,085
1991	83,050	158,946	35,610	20,309	60,497	358,411
1992	123,852	120,303	61,278	52,238	78,097	435,768
1993	169,055	237,993	89,628	65,782	84,239	646,697
1994	143,342	184,805	90,601	50,746	104,911	574,405
1995	157,418	130,210	93,936	26,673	105,905	514,142
1996	138,714	158,274	62,638	26,171	107,500	493,298
1997	181,201	224,175	62,311	52,469	82,041	602,197
1998	131,929	301,408	46,937	27,621	91,734	599,629
1999	196,987	307,565	69,182	14,721	53,726	642,182
2000	148,473	278,982	69,568	12,644	65,331	574,997
2001	191,269	356,548	54,117	26,512	59,871	688,317
2002	211,446	328,965	26,640	40,746	71,866	679,663
2003	219,372	345,840	47,772	36,128	68,225	717,337
2004	158,617	391,044	45,062	14,389	71,411	680,524
2005	114,294	240,628	32,218	16,276	73,614	477,030
2006	88,734	301,779	68,422	12,615	89,043	560,592
2007	125,581	385,560	75,190	4,804	76,048	667,183
2008	64,479	277,517	40,408	9,640	39,279	431,322
2009	110,684	339,640	57,243	8,959	55,283	571,808
2010	29,601	214,893	3,468	5,659	49,174	302,795
2011	168,054	231,282	23,788	22,708	54,601	500,433
2012	119,172	249,265	53,671	13,589	49,976	485,673
2013	295,794	652,418	38,583	22,982	51,001	1,060,778

Source: National Marine Fisheries Service, Southeast Regional Office.

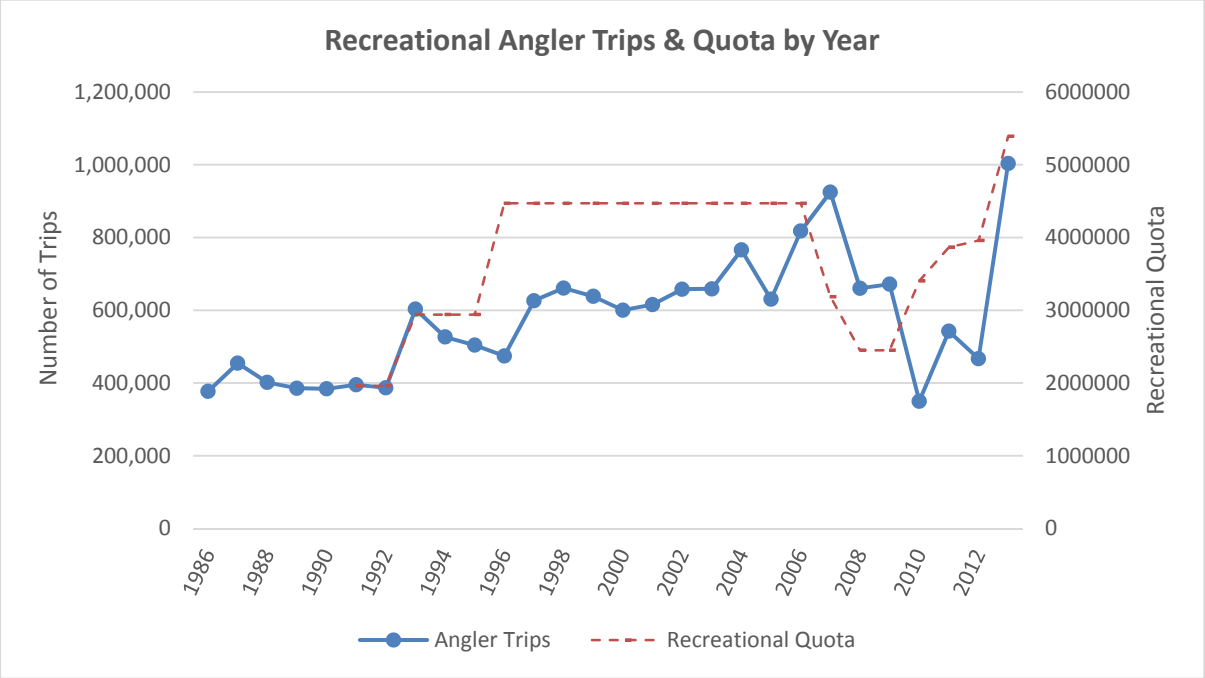

Figure 1.1.3. Number of red snapper recreational angler trips and quotas (1986-2013), Gulf-wide. Recreational allocations began in 1991 and recreational quotas began in 1997. Angler trips for Texas, from 2010-2013, include headboat trips only. Source: National Marine Fisheries Service, Southeast Regional Office.

While overall angler effort has increased, the moratorium on federal for-hire permits has limited growth in the industry and, in turn, anglers' access to vessels. Information on the number of recreational angler trips targeting red snapper taken on private vessels and for-hire vessels is provided in Figure 1.1.4. An evaluation of effort by mode suggests that private recreational anglers now account for an increasing share of the red snapper-related effort in the Gulf. While private angling represented on average 44% of the red snapper angler-trips for the time interval between 1986 and 1990, the private vessels accounted for an average of 69% of angler-trips between 2009 and 2013 (Table 1.1.4). By 2013, 79% of the red snapper angler-trips in the Gulf were taken by anglers fishing from private vessels.

Table 1.1.4. Annual red snapper recreational angler-trips for two modes (1986-2013). For-hire mode includes state and federally permitted for-hire vessels.

Year	Private	For-Hire
1986	137,333	176,765
1987	99,246	119,306
1988	155,361	206,373
1989	149,792	195,193
1990	140,198	141,887
1991	152,440	205,971
1992	211,462	224,306
1993	271,553	375,144
1994	225,322	349,083
1995	227,270	286,872
1996	202,922	290,376
1997	236,126	366,071
1998	160,684	438,945
1999	298,205	343,977
2000	282,217	292,780
2001	424,662	263,655
2002	365,114	314,549
2003	427,267	290,070
2004	471,805	208,719
2005	304,604	172,426
2006	353,714	206,878
2007	448,143	219,040
2008	257,738	173,584
2009	369,853	201,955
2010	196,842	105,953
2011	316,096	184,336
2012	298,014	187,659
2013	842,112	218,666

Source: NMFS-SERO.

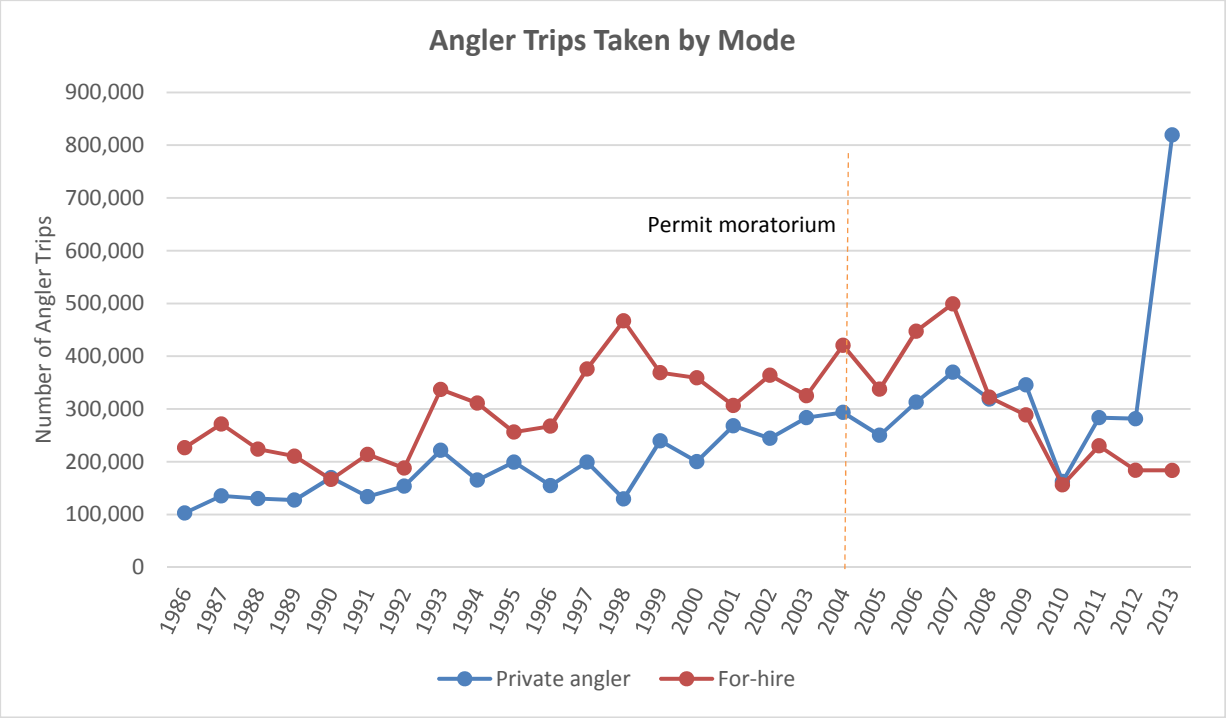

Figure 1.1.4. Number of red snapper angler trips taken on private and for-hire (all charter boats and headboats) vessels. Angler trips for Texas, from 2010-2013, include headboat trips only. Source: National Marine Fisheries Service, Southeast Regional Office.

Gulf-wide private/state-permitted guideboats and federal for-hire recreational landings are provided in Figure 1.1.5. Table 2.2.1.1 provides landings by year for the private and for-hire components and Table 2.2.1.2 includes the proportions of each group's landings out of the total recreational landings. Since 1986, private angler landings have increased as a percentage of the total recreational landings, while landings from charter boats have decreased proportionally. Headboat landings have also decreased over time, but by a smaller percentage than charter boats.

The proportion of landings Gulf-wide by mode varies with a gradual shift toward private angler vessels in recent years, particularly since the permit moratorium began. The pattern of landings within each state, and the average proportion of landings for each state over time, vary from the Gulf-wide averages. Figures 1.1.6-1.1.10 provide the proportion of landings by mode for each Gulf State.

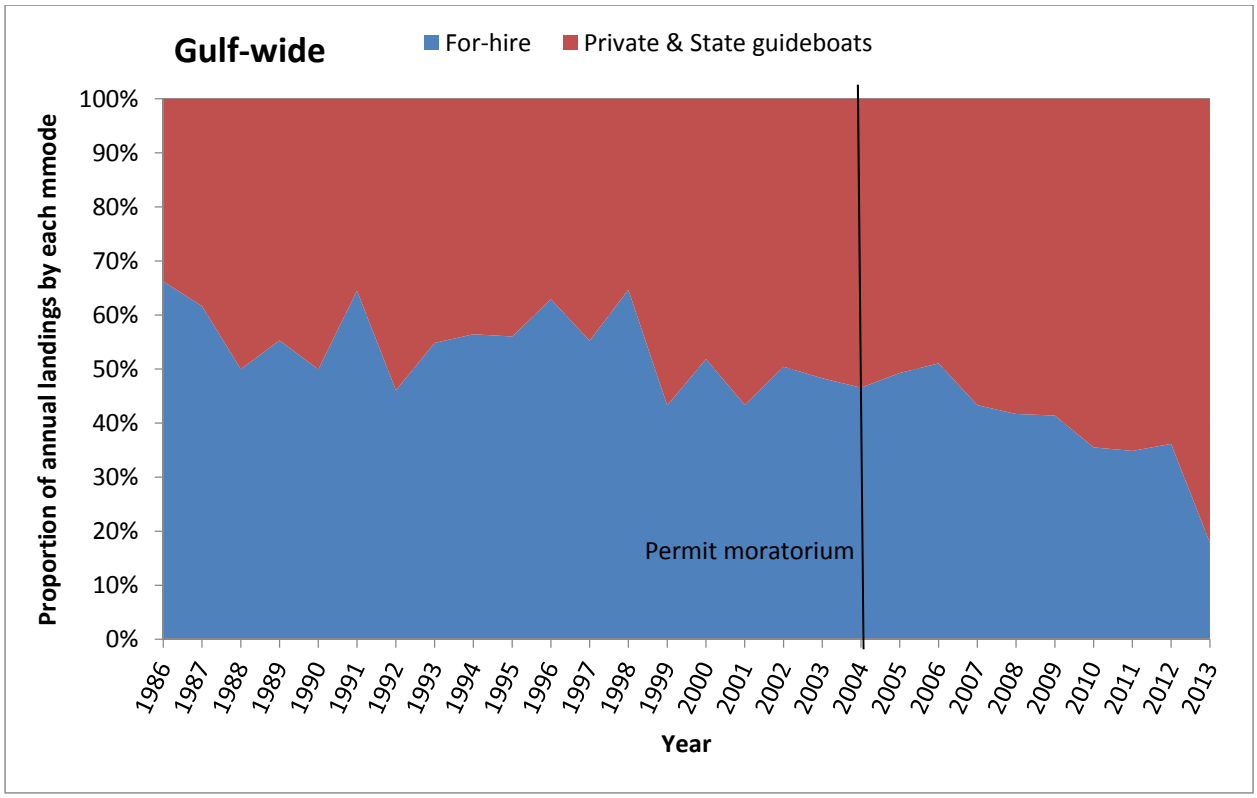

Figure 1.1.5. Gulf-wide: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013). Source: Southeast Fisheries Science Center, ACL database.

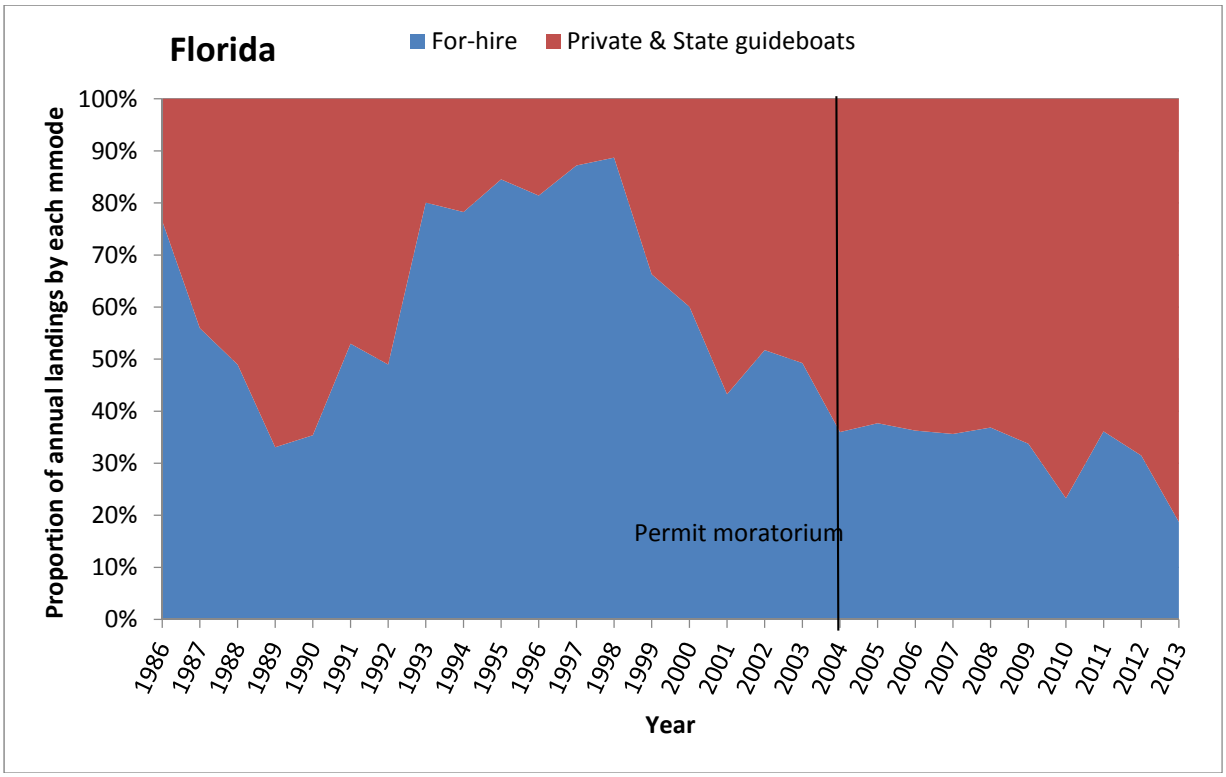

Figure 1.1.6. Florida: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013).

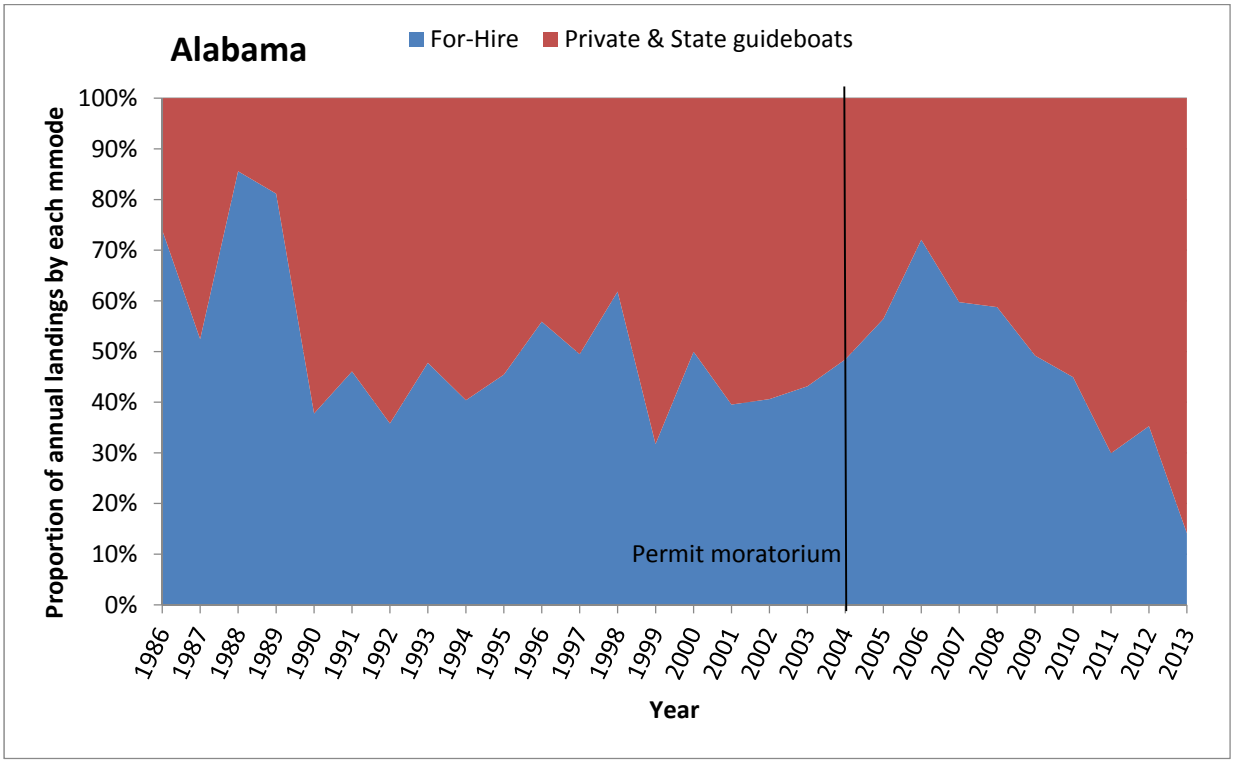

Figure 1.1.7. Alabama: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013).

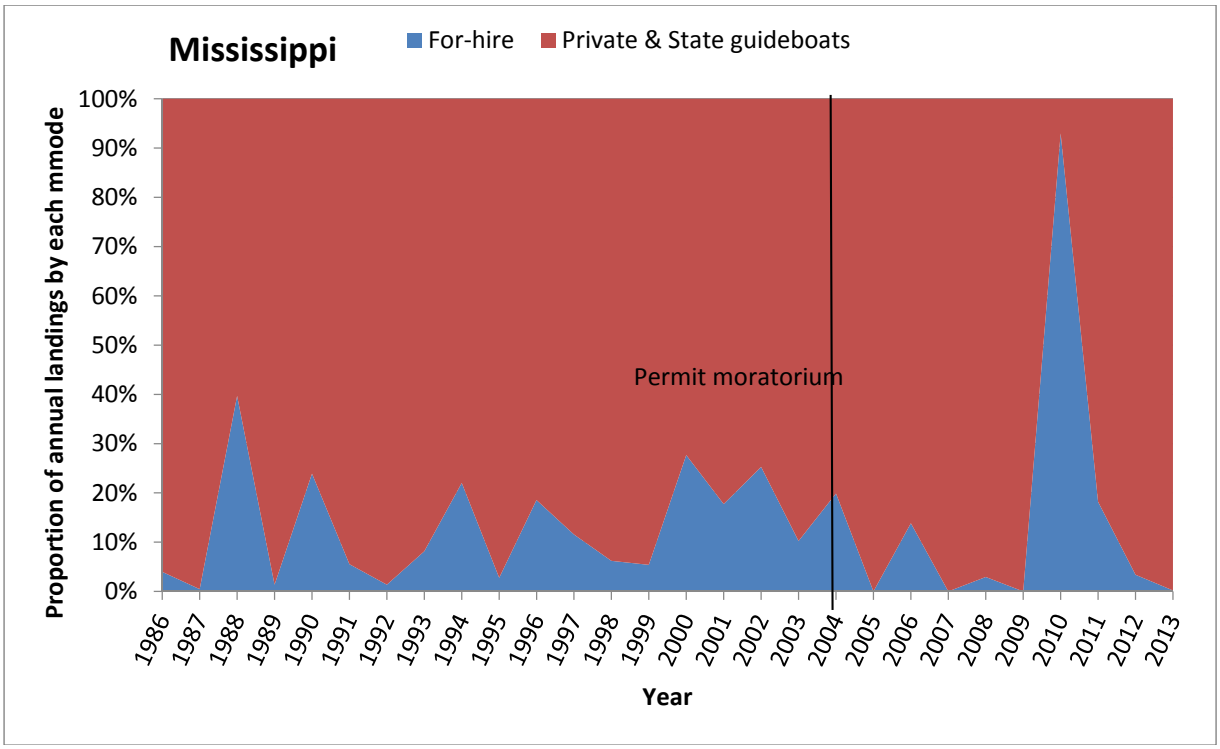

Figure 1.1.8. Mississippi: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013). For the years with 100% landings by private vessels, no data were available for for-hire landings.

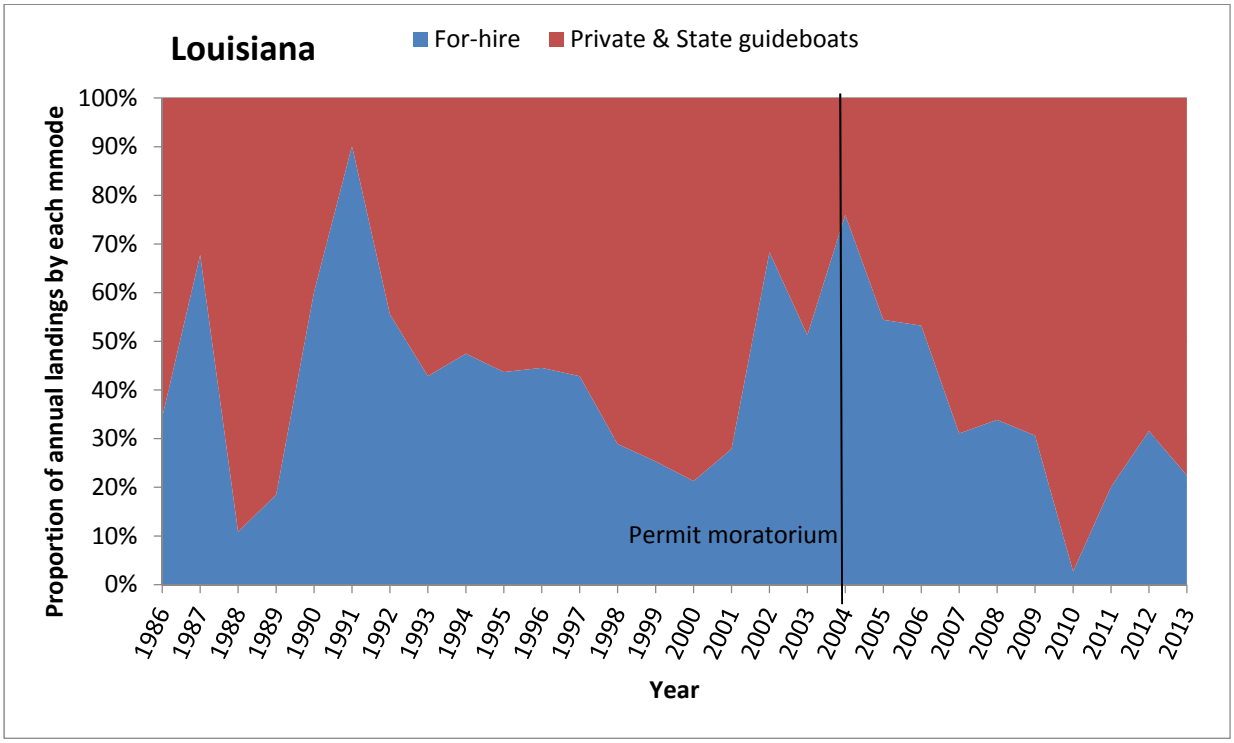

Figure 1.1.9. Louisiana: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013).

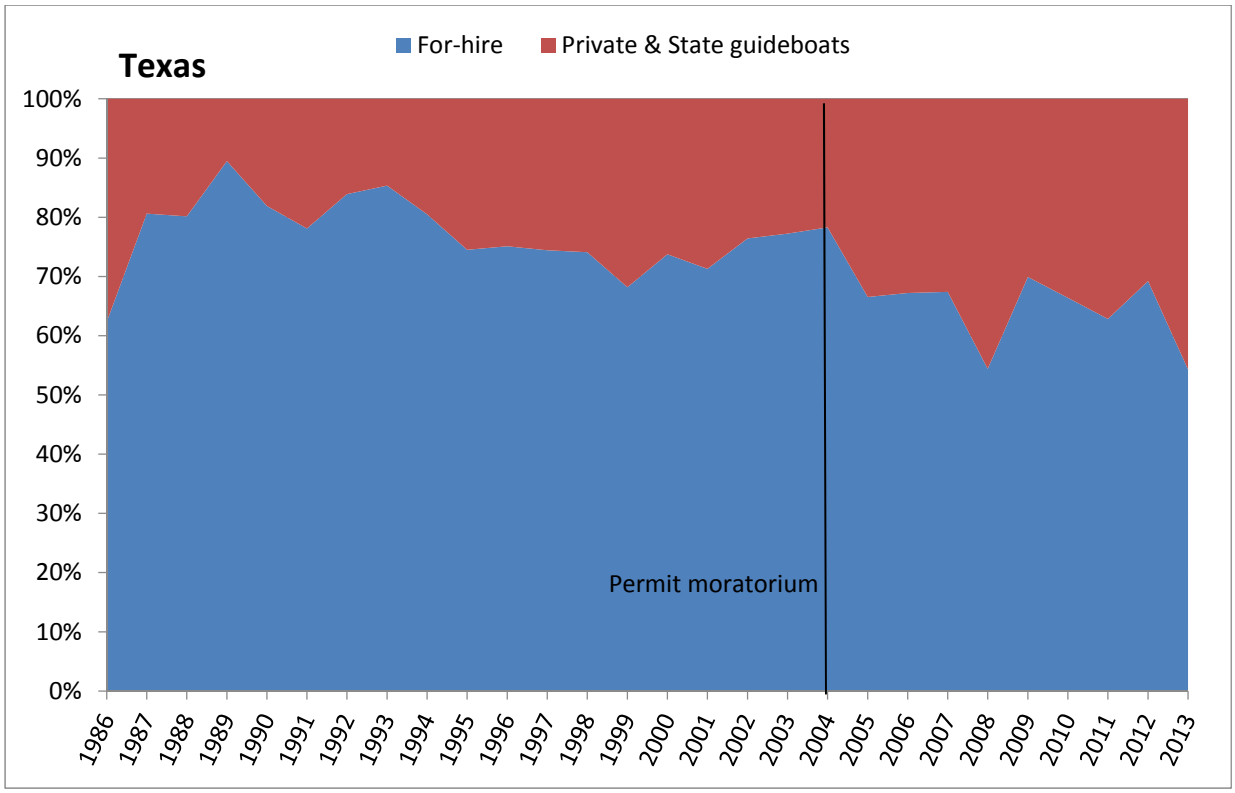

Figure 1.1.10. Texas: Proportion of recreational red snapper landings by mode (federal for-hire; private vessels and state-permitted guideboats) (1986-2013).

A separation of the recreational red snapper sector into two components could have additional implications. Section 407(d) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) mandates that the recreational harvest of red snapper be closed once the recreational quota is reached. With separate for-hire and private angler quotas, it is possible that a component with remaining quota could be shut down, should it be determined that the Gulf-wide recreational quota has been met.

As with allocation decisions that determine access to a resource between user groups, sector separation is a controversial topic, strongly supported by some and opposed by others. Opponents of sector separation argue that separate allocations could deprive recreational fishermen of full access to the resource, particularly in situations where one sector (component) fails to fully harvest its allocation, but un-harvested allocation is unavailable to the other sector (component). Proponents of sector separation suggest that it could improve accountability and management flexibility, allowing the for-hire and private angling components to potentially be managed with different regulations, such as fishing seasons, bag, and size limits. Proponents also argue that sector separation would allow the Council to consider alternative management approaches for each component, e.g., incentive-based approaches or the creation of organizations similar to angling management organizations proposed by Sutinen and Johnston (2003).

1.2 Purpose and Need

The purpose of this action is to define, within the recreational sector, distinct private angling and federal for-hire components of the recreational red snapper fishery in the Gulf of Mexico and allocate the recreational red snapper quota between these recreational components. Establishing separate components within the recreational sector would provide a basis for flexible management approaches tailored to each component and reduce the likelihood for recreational quota overruns which could jeopardize the rebuilding of the red snapper stock. The need for the proposed action is to prevent overfishing while achieving the optimum yield, particularly with respect to recreational opportunities, while rebuilding the red snapper stock.

1.3 History of Management

This history of management covers events pertinent to red snapper allocation and setting quotas. A complete history of management for the FMP is available on the Council's website: http://www.gulfcouncil.org/fishery_management_plans/reef_fish_management.php and a history of red snapper management through 2006 is presented in Hood et al. (2007). The final rule for the Reef Fish Fishery Management Plan [FMP] (with its associated environmental impact statement [EIS]) (GMFMC 1981) was effective November 8, 1984, and defined the reef fish fishery management unit to include red snapper and other important reef fish.

Currently, the commercial sector fishing for red snapper is regulated by a 13-inch total length (TL) minimum size limit and managed under an individual quota program. Recreational fishing for red snapper is managed with a 16-inch TL minimum size limit, 2-fish bag limit, and a season beginning on June 1 and ending when the recreational quota is projected to be caught. Other reef fish fishery management measures that affect red snapper fishing include permit requirements for the commercial and for-hire sectors as well as season-area closures.

Red snapper allocation and quotas: The final rule for **Amendment 1** (GMFMC 1989) to the Reef Fish FMP (with its associated Environmental Assessment (EA), Regulatory Impact Review (RIR), and Initial Regulatory Flexibility Analysis [IRFA]) was effective in February 1990. The amendment specified a framework procedure for specifying the total allowable catch (TAC) to allow for annual management changes. A part of that specification was to establish a species' allocation. These were based on the percentage of total landings during the base period of 1979-1987. For red snapper, the commercial sector landed 51% and the recreational sector landed 49% of red snapper over the base period. **Amendment 1** also established a commercial quota of 3.1 million pounds. The recreational quota was established through a 1997 regulatory amendment (with its associated EA and RIR) (GMFMC 1995) with a final rule effective in October 1997. Prior to 1997, the recreational sector had exceeded its allocation of the red snapper TAC, though the overages were declining through more restrictive recreational management measures (see Section 3, Table 3.1.2). With the establishment of a recreational quota, the Regional Administrator was authorized to close the recreational season when the quota is reached as required by the Magnuson-Stevens Act. Commercial and recreational quotas,

recreational allocations, and commercial and recreational landings are provided in Table 3.1.2. The Council is evaluating whether the allocation should be changed in Amendment 28.
At its April 2014 meeting, the Council requested an emergency rule to revise the recreational AMs for red snapper by applying a 20% buffer to the recreational quota, which resulted in a recreational annual catch target (ACT) of 4.312 million pounds whole weight. The Council's decision to request an emergency rule was made following the decision of the U.S. District Court for the District of Columbia in Guindon v. Pritzker (March 26, 2014). A framework action is being developed that would create an ACT and a quota overage adjustment to apply to the 2015 fishing year and beyond. At the June 2014 meeting, the Council selected as preferred to adopt an ACT based on a 20% buffer to the recreational quota. The Council also selected as preferred an overage adjustment such that the amount by which the recreational quota is exceeded in a fishing season is deducted from the following year's quota.

For-hire permit requirements: The requirement of permits to operate for-hire vessels in the Gulf exclusive economic zone for reef fish fishing was implemented through **Amendment 11** (with its associated EA, RIR, and IRFA) on April 1, 1996. The initial purpose of the permits was to address potential abuses in the two-day bag limit allowance. It was thought that by having a permit to which sanctions could be applied would improve compliance with the two-day bag limit. In addition, the permit requirement was seen as a way to enhance monitoring of the for-hire component of the recreational sector. **Amendment 20** (with its associated EA and RIR; GMFMC 2003), implemented on June 16, 2003, established a three-year moratorium on the issuance of new charter and headboat Gulf reef fish permits to limit further expansion in the for-hire fisheries, an industry concern, while the Council considered the need for more comprehensive effort management systems. This moratorium was extended indefinitely in **Amendment 25** (with its Supplemental EIS, RIR, and IRFA), implemented June 15, 2006).

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 – Establishment of Private Angling and Federal For-hire Components

Alternative 1: Maintain the current structure of the recreational sector. The recreational sector includes private anglers and all for-hire operators.

Preferred Alternative 2: Establish a red snapper federal for-hire component. The federal for-hire component would include **all** for-hire operators with a valid or renewable federal reef fish for-hire permit. Establish a private angling component that would include all other for-hire operators and private recreational anglers.

Alternative 3: Establish a **voluntary** red snapper federal for-hire component. The federal for-hire component would include **only** for-hire operators with a valid or renewable federal reef fish for-hire permit **who elected to join** the federal for-hire component. A **fully transferable** endorsement to the federal reef fish charter permit would be issued to those for-hire operators who **elected to join** the federal for-hire component. Establish a private angling component that would include all other for-hire operators and private recreational anglers.
Opportunities to join or to opt out from the federal for-hire component are offered:

Option a: once, at the implementation of the program
Option b: every year
Option c: every 3 years
Option d: every 5 years

Alternative 4: Establish a **voluntary** red snapper federal for-hire component. The federal for-hire component would include **only** for-hire operators with a valid or renewable federal reef fish for-hire permit **who elected to join** the federal for-hire component. A **non-transferable** endorsement to the federal reef fish charter permit would be issued to those for-hire operators who **elected to join** the federal for-hire component. Establish a private angling component that would include all other for-hire operators and private recreational anglers.
Opportunities to join or to opt out from the federal for-hire component are offered:

Option a: once, at the implementation of the program
Option b: every year
Option c: every 3 years
Option d: every 5 years

Discussion

In its search for alternative approaches that could potentially improve the management of red snapper resources, particularly for the recreational sector, the Gulf of Mexico Fishery Management Council (Council) has considered and continues to evaluate a variety of management measures. These include the possible devolution of some management responsibilities to the states, the specification of data collection requirements, and a reconsideration of restrictions placed on segments of the recreational sector. In addition, segments of the recreational sector have initiated pilot programs intended to improve red snapper management in the recreational sector. The potential partition of the recreational sector proposed in this amendment falls within the range of measures under consideration.

The Council initially considered a separation of the recreational sector into a for-hire component that would include federally permitted for-hire vessels and state-permitted for-hire vessels. However, during the October 2013 meeting, the Council indicated that this partition would not be practicable because a sector that includes federally permitted for-hire vessels and state-permitted vessels would be unmanageable. Because the Council has no authority to manage or place constraints on state-permitted for-hire vessels, the Council has decided to consider a for-hire component limited to federally permitted vessels only. Therefore, the establishment of a federal for-hire component as proposed here reflects the Council's intent. The establishment of a federal for-hire component would expand the range of possible management avenues available to the Council as it continues to seek improvements in the management of recreational red snapper. Potential future improvements may include more flexibility for each segment and a better business environment for federally permitted for-hire operators. The extent to which the federal for-hire component and the private angling component would benefit from a partition of the recreational sector, with distinct red snapper quotas allocated to each component, rests on the quality of the management measures that would be implemented after the establishment of separate components.

Alternative 1 would not change the current management structure of red snapper fishing by the recreational sector. All participants in the recreational sector, private anglers and for-hire operators alike, would continue to be subject to the same set of regulations, including size and daily possession limits, and seasonal closures. **Alternative 1** would not recognize the specificities inherent to different components of the recreational sector and would limit the Council's ability to implement management measures specific to each component. The status quo alternative would continue to adopt a one size fits all approach to management and would curtail efforts to consider management approaches that may be more suitable to the various components of the recreational sector.

Preferred Alternative 2 would partition the recreational sector into two components. One would be a federal for-hire component including federally permitted for-hire operators and their angler clients, and the other would be the private angling component, including anglers fishing from private vessels and state-permitted for-hire vessels. **Preferred Alternative 2** would not grant federally permitted for-hire operators the flexibility to opt in or out of the federal for-hire sector. Once established, the red snapper federal for-hire component of the recreational sector would include all federally permitted for-hire operators. **Preferred Alternative 2** may adversely

affect the quality of the interaction between the Council and its constituents, particularly those who are currently opposed to the establishment of a separate federal for-hire component.

The potential change to the current structure of the recreational sector and the establishment of distinct federal for-hire and private angling components has been extensively discussed by the Council and its constituents. These discussions have highlighted both clear support for the implementation of "sector separation" as well as marked opposition to the idea. In light of these considerations, the Council decided to include in this amendment alternatives that would allow for-hire operators to either join the federal for-hire sector to be created or elect to stay within the private angling sector. The motion directing staff to include a voluntary option in this amendment was approved during the October 2013 Council meeting. **Alternative 3** provides a range of options that would allow federal for-hire operators to determine the component of the recreational sector within which they would be included. In practical terms, the Council and the National Marine Fisheries Service (NMFS) would have to design and make available a vehicle (such as an electronic fillable form) to allow for-hire operators to opt in and join the federal for-hire sector. Additionally, the creation of a voluntary federal for-hire component would require the establishment of a practicable and readily verifiable means to distinguish vessels operating under the federal for-hire component from those vessels that elected to be included in the private angling component. Under **Alternative 3,** NMFS would issue a fully transferable endorsement to the federal for-hire reef fish permit to those for-hire operators who join the federal for-hire component.

Alternative 3 Option a would give federally permitted for-hire operators one opportunity to select the component of the recreational sector within which they would like to be included. Upon implementation of this amendment, a federally permitted for-hire operator could exercise their option to join the federal for-hire component or be a member of the private angling component. Although **Alternative 3** would grant greater flexibility than **Preferred Alternative 2**, it would not allow federally permitted for-hire operators to change their mind and switch between the components of the recreational sector once membership into the federal for-hire and private angling components have been established. These limitations may constitute a challenge for those for-hire operators who may wish to join the federal for-hire sector in subsequent years.

Alternative 3 Options b-d would allow for-hire operators to switch their membership from one component of the recreational sector to the other at specified times. Federally permitted operators who initially opted out of the federal for-hire sector would have the opportunity to reconsider and join the sector at a later date. Similarly, **Alternative 3 Options b-d** would allow operators who joined the federal for-hire sector to change their mind and decide later that the private angling sector would be a more suitable option. **Alternative 3 Option b,** which would offer federally permitted for-hire operators an opportunity to switch their membership on an annual basis would be the most flexible option. However, annual fluctuations in the membership of the federal for-hire and private angling components would likely increase the administrative burden and may affect the timely implementation of some recreational management measures. If it is determined that continuously fluctuating sectors could impede the longer term management of the federal for-hire or private angling components, the Council may consider the establishment of longer time intervals between periods in which federally permitted for-hire operators are afforded opportunities to reconsider and switch their membership from one

component to the other. **Alternative 3 Option c** would allow federally permitted for-hire operators to switch membership every three years. **Alternative 3 Option d** would extend the time interval during which full flexibility is granted to federally permitted for-hire operators and allow them to switch membership every five years.

Alternative 4 would also establish a voluntary federal for-hire component and grant fishermen the flexibility to join or opt out of the federal for-hire component at regular time intervals. Federal for-hire operators who do not elect to join the federal for-hire component would be members of the private angling component. With respect to the flexibility to join or opt out of the federal for-hire component, **Alternative 4** grants fishermen the same level of flexibility that **Alternative 3** would allow. As in **Alternative 3**, **Alternative 4** would offer opportunities to join or to opt out of the federal for-hire component once, at the implementation of the program (**Option a**), every year (**Option b**), every 3 years (**Option c**), or every 5 years (**Option d**). However, relative to the endorsement to the federal reef fish for-hire permit to be issued to those operators who elected to join the federal for-hire component, **Alternative 4** would be less flexible than **Alternative 3**. **Alternative 4** would issue a non-transferable endorsement to the federal reef fish for-hire permit to operators who elect to join the federal for-hire component.

For **Preferred Alternative 2** and **Alternatives 3-4**, separate for-hire and private angling components of the recreational sector would be established and the recreational quota would be divided between the components (Action 2). Additional implications may arise from Section 407(d) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), which mandates the closure of the recreational harvest of red snapper in the Gulf of Mexico (Gulf) when the recreational quota is reached or projected to be reached. With sub-quotas of the recreational quota distributed to each component, it is possible that one component with remaining quota could be shut down, should it be determined that the Gulf-wide recreational quota has been met. The potential implications of such a closure could be mitigated in various ways, such as the adoption of component-specific management and accountability measures.

2.2 Action 2 – Allocation of the Recreational Red Snapper Quota between the Components of the Recreational Sector

Available red snapper landings data for the for-hire fleet typically combine landings from federally permitted and state-permitted for-hire vessels. Based on an approach proposed in a National Marine Fisheries Service-Southeast Regional Office report evaluating sector separation alternatives (SERO 2011), red snapper landings from federally permitted for-hire vessels were estimated by discounting the total for-hire red snapper landings by 7%, which approximates the maximum percentage landed by state-permitted for-hire vessels in the Gulf of Mexico. Following the implementation of Reef Fish Amendment 30B in 2009, the percentage of Gulf-wide for-hire landings occurring from state waters has fluctuated ranged from 7-15% (2010 excluded due to the BP oil spill). These estimated percentages may include landings from federally permitted vessels fishing in state waters. Additionally, these percentages are contingent on other factors including red snapper availability in state waters. Amounts deducted from the aggregate for-hire landings were added to landings assigned to the private angling component, because state-permitted for-hire operators are included in the private angling component. Unless otherwise specified, landings and landing percentages assigned to the federal-for-hire and private angling components of the recreational sector reflect this adjustment. In addition, red snapper landings for the shore mode were subtracted from landings assigned to the private angling component, because they are typically excluded from landing estimates used in stock assessments.

Action 2 is only applicable if separate components are established in Action 1. Initially, this action had three sub-actions including providing alternatives to apportion the recreational quota among the components created in Action 1, and two actions for adjusting the baseline allocation should a voluntary federal for-hire component be established in Action 1. Because Action 1, Alternative 2 was selected as preferred, which establishes a mandatory sector separation where all federal for-hire vessels would be in the federal for-hire component, there is no need to adjust the baseline allocation determined in Action 2 for vessel operators who decide to opt out of the for-hire component. Thus, on August 28, 2014, the Council moved these actions to adjust the baseline allocation to the Alternatives Considered But Rejected section (Appendix D).

Alternative 1: Maintain the current structure of the recreational sector. Do not divide the recreational red snapper quota and annual catch target (ACT) into sub-quotas and sub-ACTs.

Alternative 2: Allocate the recreational red snapper quota and ACT based on average landings between 1986 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 50.1% and 49.9%, respectively.

Alternative 3: Allocate the recreational red snapper quota and ACT based on average landings between 1991 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 48.2% and 51.8%, respectively.

Alternative 4: Allocate the recreational red snapper quota and ACT based on average landings between 1996 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 45.9% and 54.1%, respectively.
Alternative 5: Allocate the recreational red snapper quota and ACT based on average landings between 2001 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 41.9% and 58.1%, respectively.

Alternative 6: Allocate the recreational red snapper quota and ACT based on average landings between 2006 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 37.8% and 62.2%, respectively.

Preferred Alternative 7: Allocate the recreational red snapper quota and ACT based on 50% of the average percentages landed by each component between 1986 and 2013 (2010 excluded) and 50% of the average percentages landed by each component between 2006 and 2013 (2010 excluded). Resulting federal for-hire and private angling allocations would be 44.0% and 56.0%, respectively.

Alternative 8: Allocate the recreational red snapper quota and ACT based on percentages of the quota landed by each component between 2011 and 2013. Resulting federal for-hire and private angling allocations would be 29.1% and 70.9%, respectively.

Alternative 9: Allocate the recreational red snapper quota and ACT based on average landings between 1986 and 2003. Resulting federal for-hire and private angling allocations would be 54.3% and 45.7%, respectively.

Discussion

The partition of the recreational sector into two separate components, i.e., a federal for-hire component and a private angling component (Action 1), is a prerequisite for considering alternative allocations of the recreational red snapper quota in this action. Without the establishment of separate federal for-hire and private angling components, management alternatives included in Action 2 (except the status quo alternative) and in subsequent actions in this amendment would be irrelevant. Therefore, Action 2 assumes that, for red snapper, the recreational sector has been split into a federal for-hire component and private angling component and that all federal for-hire operators would join the newly established federal for-hire component.

Gulf-wide annual landings represented by the federal for-hire and private angling vessels are provided in Table 2.1. The annual proportions of red snapper landings represented by federal for-hire and private angling vessels are provided in Table 2.2.

Table 2.1. Recreational red snapper landings for headboats, charter boats and private anglers in the Gulf of Mexico. Landings in pounds whole weight. Charter, headboat, and total for-hire landings have not been adjusted to account for state-licensed guideboat landings.

Year	Charter boat	Headboat	Total For-Hire	Private Anglers
1986	1,703,443	410,487	2,113,930	855,263
1987	790,168	411,040	1,201,208	602,945
1988	848,011	614,156	1,462,167	1,242,427
1989	620,836	986,440	1,607,276	991,997
1990	489,855	378,312	868,167	541,389
1991	1,266,858	483,672	1,750,531	742,879
1992	1,021,654	950,062	1,971,716	2,009,025
1993	2,252,198	1,384,389	3,636,587	2,515,275
1994	1,709,652	1,525,449	3,235,101	2,072,569
1995	1,526,740	1,357,623	2,884,363	1,902,972
1996	1,764,886	1,408,779	3,173,665	1,517,252
1997	2,185,235	1,304,411	3,489,646	2,383,509
1998	1,819,124	1,124,745	2,943,869	1,289,235
1999	1,275,570	698,967	1,974,537	2,271,694
2000	1,505,691	763,287	2,268,978	1,800,550
2001	1,500,346	573,486	2,073,831	2,373,241
2002	2,187,105	824,802	3,011,907	2,537,342
2003	1,898,607	791,897	2,690,504	2,491,041
2004	2,080,152	693,276	2,773,428	2,766,672
2005	1,567,960	526,337	2,094,297	1,859,541
2006	1,633,190	576,238	2,209,427	1,815,422
2007	1,733,607	487,004	2,220,612	2,547,496
2008	1,218,936	407,952	1,626,888	1,997,306
2009	1,320,028	805,893	2,125,922	2,648,973
2010	439,917	429,527	869,444	1,407,965
2011	983,002	630,563	1,613,564	2,692,425
2012	1,277,333	724,077	2,001,410	3,145,075
2013	1,273,232	388,898	1,662,130	7,912,892

Source: MRIP-based SEFSC Recreational ACL database.

The contrast between the open entry approach in place for private anglers and the moratorium imposed on federal for-hire reef fish permits is reflected in the progressive change in relative percentages harvested by each component. Also contributing to this change, federal for-hire vessels may not participate in the additional fishing opportunities provided to private anglers by states adopting different regulations for state waters. Over time, while the proportion of landings attributable to private anglers has been increasing, the relative share of landings by anglers fishing from federally permitted for-hire vessels has declined. This trend has been increasingly noticeable in recent years. Therefore, anglers fishing from federal for-hire vessels would account for relatively greater shares of the recreational landings when averages are computed

over longer time intervals (including earlier years). It follows that using more recent time intervals to compute average landings would correspond with a greater percentage of landings attributed to the private angling component.

Table 2.2. Red snapper landings for the federal for-hire and private angling components in pounds whole weight and percentage of the total recreational landings. For-hire landings summarized here were reduced by 7% and those landings were added to the private-angling component's landings to account for landings by state guide boats.

Year	Federal For-Hire Component		Private Angling Component	
	Pounds	Percent	Pounds	Percent
1986	1,965,955	66.2%	1,003,238	33.8%
1987	1,117,123	61.9%	687,029	38.1%
1988	1,359,815	50.3%	1,344,778	49.7%
1989	1,494,767	57.5%	1,104,507	42.5%
1990	807,395	57.3%	602,161	42.7%
1991	1,627,993	65.3%	865,416	34.7%
1992	1,833,696	46.1%	2,147,045	53.9%
1993	3,382,026	55.0%	2,769,836	45.0%
1994	3,008,644	56.7%	2,299,026	43.3%
1995	2,682,458	56.0%	2,104,877	44.0%
1996	2,951,508	62.9%	1,739,408	37.1%
1997	3,245,371	55.3%	2,627,784	44.7%
1998	2,737,798	64.7%	1,495,306	35.3%
1999	1,836,319	43.2%	2,409,911	56.8%
2000	2,110,150	51.9%	1,959,378	48.1%
2001	1,928,663	43.4%	2,518,409	56.6%
2002	2,801,073	50.5%	2,748,175	49.5%
2003	2,502,168	48.3%	2,679,377	51.7%
2004	2,579,288	46.6%	2,960,812	53.4%
2005	1,947,696	49.3%	2,006,141	50.7%
2006	2,054,767	51.1%	1,970,082	48.9%
2007	2,065,169	43.3%	2,702,939	56.7%
2008	1,513,006	41.7%	2,111,188	58.3%
2009	1,977,107	41.4%	2,797,788	58.6%
2010	808,583	35.5%	1,468,826	64.5%
2011	1,500,615	34.8%	2,805,374	65.2%
2012	1,861,311	36.2%	3,285,174	63.8%
2013	1,545,781	16.1%	8,029,241	83.9%

Source: MRIP-based SEFSC Recreational ACL database.

Estimated red snapper allocations considered in **Alternatives 2-9** are based on average percentages harvested by the federal for-hire and the private angling components during various time intervals selected from a 1986-2013 time series. Percentages computed were then applied

to the current red snapper recreational quota (5.39 million pounds (mp)). For each alternative, resulting allocations for the two components of the recreational sector are provided in Table 2.3. Due to the fishery closures and associated impacts from the Deepwater Horizon MC252 oil spill (see Section 3.3), the Council decided to exclude 2010 landings from the time intervals in **Alternatives 2-7**.

Table 2.3. Red snapper allocations for the federal for-hire and private angling components in percentage of the recreational quota and in pounds. The pounds allocated are based on a recreational quota of 5.39 mp.

Alternative	Time Intervals	Federal For-hire		Private		Total
		lbs	%	lbs	%	lbs
2	1986-2013*(a)	2,700,390	50.1	2,689,610	49.9	5,390,000
3	1991-2013*	2,597,980	48.2	2,792,020	51.8	5,390,000
4	**1996-2013***	2,474,010	**45.9**	2,915,990	**54.1**	**5,390,000**
5	2001-2013*	2,258,410	41.9	3,131,590	58.1	5,390,000
6	2006-2013*(b)	2,037,420	37.8	3,352,580	62.2	5,390,000
Pref. 7	0.5(a)+0.5(b)*	2,371,600	44	3,018,400	56	5,390,000
8	2011-2013	1,568,490	29.1	3,821,510	70.9	5,390,000
9	1986-2003	2,926,770	54.3	2,463,230	45.7	5,390,000

***** Time interval excludes 2010.

Table 2.4a provides the red snapper fishing season lengths that would have been observed in 2014 if sector separation was implemented. Estimated season lengths for the private angler component are provided assuming consistency or inconsistency between state and federal regulations. These estimates are not forecasts for future red snapper season lengths. Even under status quo, i.e., a single recreational sector, the length of the 2015 recreational red snapper season is not known.

When states adopt inconsistent, less restrictive regulations for state waters the length of the federal recreational red snapper season must be shortened to account for increased landings from state waters. NMFS manages red snapper Gulf-wide, and is required to constrain harvest to within a specified quota. Gulf States have the authority to establish less restrictive regulations for their state waters, but the harvest resulting from these additional fishing opportunities must be deducted from the Gulf-wide quota, reducing the available fishing opportunities for other anglers Gulf-wide. This primarily affects anglers fishing in Gulf States with consistent regulations, as well as those fishing from federally permitted for-hire vessels. But, this also affects anglers differently within a state, because red snapper availability and abundance within a state's waters can vary regionally. Anglers in areas where red snapper are available in state waters enjoy a greater proportion of the additional fishing opportunities provided by their state, compared with anglers fishing in other areas of the state where red snapper are rarely, if ever,

present in state waters. For example, red snapper are frequently caught in state waters along the Florida Panhandle but few red snapper exist in state waters along the Florida Peninsula.

The amount of harvest taken in state waters outside of the federal season has increased in recent years, as states have adopted longer seasons in an attempt to provide their anglers with greater access. For example, over half of the recreational quota was projected to be caught outside of the federal season in 2014; the remaining recreational quota only allowed for a nine-day season to be set. Because federally permitted for-hire vessels may not partake in the additional fishing opportunities provided in some state waters, the proportion of landings from these vessels has decreased in recent years, while the proportion of landings by private anglers fishing under the less restrictive state regulations represents an increasing percentage of the recreational quota in the most recent years. Thus, there is a trade-off in the amount of allocation each component would receive, based on the time series selected for the allocation. The federal for-hire component would receive a larger allocation the farther the time series extends back in time, while the private angling component would receive a larger allocation from selecting an allocation based on the most recent years.

Table 2.4b provides the estimated landings for each Gulf State on which the 2014 recreational red snapper season was based, including estimated landings during and outside of the federal season. The proportion of each state's estimated landings to occur outside of the federal season is included. Alabama and Mississippi did not announce the additional fishing days to harvest red snapper in their state waters until after the nine-day season was put in place and therefore no estimates of landings from Alabama and Mississippi state waters were incorporated into the 2014 projections.

Table 2.4a. Red snapper allocations for the federal for-hire and private angling components in percentage and estimated 2014 season lengths.

Alternative	Allocation		Federal Season Lengths		
	For-Hire	Private	For-Hire	Private (Inconsistent Regs)*	Private (Consistent Regs)
1	Status Quo		9**	9	18
2	50.1%	49.9%	38	0	12
3	48.2%	51.8%	37	0	13
4	45.9%	54.1%	34	1	13
5	41.9%	58.1%	31	2	14
6	37.8%	62.2%	27	3	15
Pref 7	44.0%	56.0%	33	1	14
8	29.1%	70.9%	19	6	18
9	54.3%	45.7%	42	0	11

***** In 2014, state seasons were open off all states when federal waters were closed. However, the additional days provided by Alabama and Mississippi were not announced until after setting the 2014 season. The federal season length was shortened to account for landings occurring outside the federal season.

****** For-hire season length would have been 18 days if all states adopted consistent fishing regulations.

Table 2.4b. Projections of landings (pounds) during and outside of the federal season for each Gulf State, used for setting the 2014 recreational red snapper fishing season, including the number of additional days outside of the federal season each Gulf State allowed red snapper harvest to be open in state waters.

State	Outside of Federal Season:		Projected landings in federal season (9 days)	Total projected landings	% of projected landings outside of federal season
	State waters open (days)	Projected landings			
Florida	43	1,270,521	701,737	1,972,258	64.4%
Alabama	[12*]	-	1,038,486	1,038,486	-
Mississippi	[12*]	1,282+	78,692	79,974	1.6%
Louisiana	277	653,839	98,868	752,707	86.9%
Texas	356	106,294	75,827	182,121	58.4%

Note: The total projected landings by state do not include red snapper landed by the Headboat Collaborative. When added, the total estimated landings equals the recreational ACT of 4.312 mp.

Source: NMFS-SERO. ***** Landings estimates for the 2014 season did not include the additional state water fishing days provided by Alabama and Mississippi during July.

+The estimated landings outside of the federal season for Mississippi are based on a small amount of landings that occurred outside of the state and federal seasons in 2013.

The allocation considered in **Alternative 2** is based on average landings computed over the longest time series available (1986-2013) and would allocate 50.1% and 49.9% of the red snapper recreational quota to the federal for-hire and private angling components, respectively. **Alternatives 3-6**, would allocate increasing percentages of the recreational quota to the private angling component because they are based on progressively more recent time intervals.

Preferred Alternative 7 would determine the percentages of the red snapper recreational quota allocated to the federal for-hire and private angling components by averaging the corresponding percentages that would be allocated to each component in **Alternatives 2** and **6**. **Preferred Alternative 7** would equally weigh average landings between 1986 and 2013 and landings between 2006 and 2013. This allocation approach has been used by the Council in previous allocation exercises, e.g., the jurisdictional apportionment of black grouper and yellowtail snapper resources between the Gulf and South Atlantic Councils.

Alternative 8 would allocate the recreational red snapper quota based on average percentages of the recreational red snapper quota harvested by each component during the last three years (2011-2013). **Alternative 8** would allocate 29.1% and 70.9% of the recreational red snapper quota to the federal for-hire component and to the private angling component, respectively.

Alternative 9 would allocate the recreational red snapper quota based on average percentages of the recreational red snapper quota harvested by each component until the year the moratorium on the issuance of new federal for-hire reef fish permits took effect. **Alternative 9** would allocate 54.3% and 45.7% of the recreational red snapper quota to the federal for-hire and private angling component, respectively.

2.3 Action 3 – Recreational season closure provisions

Alternative 1: Maintain the current recreational red snapper season closure provisions. The recreational red snapper ACT will be used to determine the recreational red snapper season length.

Preferred Alternative 2: Establish separate red snapper season closure provisions for the federal for-hire and private angling components. The federal for-hire red snapper ACT will be used to determine the federal for-hire red snapper season length. The private angling red snapper ACT will be used to determine the private angling red snapper season length.

Discussion

Alternative 1 would maintain the current red snapper season closure that applies to the recreational sector as a whole. Under this provision, the recreational harvest of red snapper in or from the Gulf exclusive economic zone (EEZ) is closed from January 1 through May 31 each year. During the closure, the bag and possession limit for red snapper taken in or from the Gulf EEZ is zero. Beginning June 1, the recreational red snapper season is open and does not close until the entire recreational quota is projected to be caught. At that point, the bag and possession limit for red snapper taken in or from the Gulf EEZ is zero for the remainder of the year.

Implemented by emergency rule, an ACT was put in place for the 2014 recreational red snapper season, which applied a 20% buffer to the recreational quota. The Council is expected to take final action in August 2014 on a framework action to permanently adopt an ACT (the 20% buffer of the emergency rule is the preferred alternative). The ACT of the framework action is expected to be implemented prior to the expiration of the emergency rule. Should the emergency rule expire and not be extended before the framework action is implemented, the recreational red snapper quota (equivalent to the ACL) would be used to determine the recreational red snapper season length (**Alternative 1**).

Under **Preferred Alternative 2**, there would be two red snapper season closures. One would be for the federal for-hire component of the recreational sector. The season would begin on June 1 and close when the federal for-hire red snapper ACT is projected to be caught. The other closure would be for all other vessels of the recreational sector, primarily comprised of private angling vessels, but would include for-hire vessels that wish to opt out of the for-hire quota under Action 3. For this component of the sector, the season would begin on June 1 and close when this component's ACT is projected to be caught.

Preferred Alternative 2 would provide three benefits should the quota be split under Action 1. The first would be if better landings information became available for one sector, then either in-season monitoring of the harvest or better projections could be used as the basis for the quota closure. For example, if electronic logbooks were used in the federal for-hire sector, then this information could be used to determine when the federal for-hire sector is closed. A second benefit to **Preferred Alternative 2** is that if for some reason effort in either of the two components were to be differentially affected, then the season for the sector experiencing the

reduced effort could be longer. For example, this could occur if fuel prices spiked resulting in a reduced number of offshore trips by the private angling component, or if a hurricane were to extensively damage some region where one component was better represented than the other. Finally, this alternative would provide the Council with more flexibility in managing these components. For example, some in the for-hire sector have indicated they would be interested in having the recreational bag limit reduced to one fish to extend the season length. Should the Council agree to this course of action, then the bag limit could be reduced under another action (framework or plan amendment), and the for-hire component's season length would be extended to account for the reduced bag limit.

Although separate closure provisions would be adopted for each component under **Preferred Alternative 2**, Section 407(d) of the Magnuson-Stevens Act mandates the closure of the recreational harvest of red snapper when the recreational quota is reached or projected to be reached. Even with separate quotas and closures designated for each component, it is possible that one component with remaining quota could be shut down, should it be determined that the Gulf-wide recreational quota was met upon the season closure of the other component. This issue could potentially be mitigated through the adoption of component-specific management and accountability measures.

CHAPTER 3. AFFECTED ENVIRONMENT

The actions considered in this environmental impact statement (EIS) would affect primarily recreational fishing for red snapper in federal and state waters of the Gulf of Mexico (Gulf). Descriptions of the physical, biological, economic, social, and administrative environments were completed in the EISs for Reef Fish Amendments 27/Shrimp Amendment 14 (GMFMC 2007), 30A (GMFMC 2008a), 30B (GMFMC 2008b), 32 (GMFMC 2011a), the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), and the Generic Annual Catch Limits/ Accountability Measures (ACL/AM) Amendment (GMFMC 2011b). Below, information on each of these environments is summarized or updated, as appropriate.

3.1 Description of the Red Snapper Component of the Reef Fish Fishery

A description of the fishery and affected environment relative to red snapper was last fully discussed in joint Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007). This section updates the previous description to include additional information since publication of that EIS.

General Features

Commercial harvest of red snapper from the Gulf began in the mid-1800s (Shipp 2001). In the 1930s, party boats built exclusively for recreational fishing began to appear (Chester 2001). Currently, the commercial sector operates under an individual fishing quota (IFQ) program. In 2011, 362 vessels participated in the IFQ program (NMFS 2012a). The recreational sector operates in the following three modes: charter boats, headboats, and private vessels. In 2012 private vessels accounted for 61.1% of recreational red snapper landings, followed by charter boats (24.8%) and headboats (14.1%). On a state-by-state basis, Florida accounted for the most landings (41.5%), followed by Alabama (28.1%), Louisiana (14.8%), Texas (12.0%), and Mississippi (3.7%) (Table 3.1.1).

Table 3.1.1. Recreational red snapper landings in 2012 by state and mode.

State	Landings (lbs whole weight)				% by State
	Charter	Headboat	Private	All Modes	
FL (west)	641,437	205,114	1,289,253	2,135,804	41.5%
AL	359,469	72,199	1,013,460	1,445,128	28.1%
MS	997	5,894	182,767	189,658	3.7%
LA	236,302	21,999	501,704	760,005	14.8%
TX	39,128	419,671	157,726	616,525	12.0%
Total	**1,277,333**	**724,077**	**3,144,911**	**5,147,120**	
% by Mode	**24.8%**	**14.1%**	**61.1%**		**100%**

Source: NMFS 2013.

The red snapper stock has been found to be in decline or in an overfished condition since the first red snapper stock assessment in 1986 (Parrack and McClellan 1986). The first red snapper rebuilding plan was implemented in 1990 through Amendment 1 (GMFMC 1989). From 1990 through 2009, red snapper harvest was managed through the setting of an annual total allowable catch (TAC). This TAC was allocated with 51% going to the commercial sector and 49% to the recreational sector. Beginning in 2010, TAC was phased out in favor of an ACL as a result of revisions to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The red snapper rebuilding plan has not formally adopted the use of the term ACL. However, by allocating the acceptable biological catch (ABC) between the commercial and recreational sectors, and then setting quotas for each sector that do not exceed those allocations, the terminology and approaches used in the red snapper rebuilding plan are consistent with the use of ACLs. Such alternative terminology is allowed under the guidelines.

Amendment 1 also established a 1990 commercial red snapper quota of 3.1 million pounds (mp) whole weight (ww) (Table 3.1.2). There was no explicit recreational quota or allocation specified in Amendment 1, only a bag limit of 7 fish and a minimum size limit of 13 inches total length. Beginning in 1991, an explicit recreational allocation in pounds was based on 49% of the TAC was specified, and this allocation was specified through Council action until 1997 when the recreational allocation was changed to a quota (Table 3.1.2). Based on the 51:49 commercial to recreational sector allocation, the commercial quota implied a TAC of about 5.2 mp in 1990, followed by explicit TACs of 4.0 mp in 1991 and 1992, 6.0 mp in 1993 through 1995, and 9.12 mp from 1996 through 2006 (Table 3.1.2). The TAC was reduced to 6.5 mp in 2007 and 5.0 mp in 2008 and 2009 as the Gulf of Mexico Fishery Management Council (Council) shifted from a constant catch rebuilding plan to a constant fishing mortality rebuilding plan (GMFMC 2007). Under a constant fishing mortality rate rebuilding plan, the ABC is allowed to increase as the stock rebuilds, thus the ABCs for 2010, 2011, and 2012 were increased to 6.945, 7.530, and 8.080 mp, respectively[1].

In July 2013, the Council reviewed a new benchmark assessment (SEDAR 31 2013) which showed that the red snapper stock was rebuilding faster than projected, partly due to strong recruitment in some recent years. Initially in 2013, a scheduled increase in the ABC to 8.690 mp was cancelled due to an overharvest in 2012 by the recreational sector. After an analysis of the impacts of the overharvest on the red snapper rebuilding plan, the 2013 ABC was increased to 8.460 mp. However, once the new benchmark assessment was completed, the Scientific and Statistical Committee (SSC) increased the ABC for 2013 to 13.5 mp with the caveat that catch levels would have to be reduced in future years unless recruitment returned to average levels. After incorporating a buffer to reduce the possibility of having to later reduce the quota, the Council further increased the 2013 commercial and recreational quotas to a combined 11.0 mp (5.61 mp and 5.39 mp, respectively) (GMFMC 2013a). The Council plans to maintain the 11.0 mp combined quota for 2014 and 2015 based on SSC recommendations, though a 2014 stock assessment may lead to a revised combined quota for 2015.

[1] Note the allocation for the commercial and recreational quotas shifted from the TAC to the ABC in 2010.

Table 3.1.2. Red snapper landings and overage/underage by sector, 1986-2013. Landings are in mp ww. Commercial quotas began in 1990. Recreational allocations began in 1991 and recreational quotas began in 1997. Summing the recreational allocation/quota and the commercial quota yields the total allowable catch (TAC) for the years 1991-2009 and the acceptable biological catch (ABC) for 2010-2013.

	Recreational			Commercial			Total		
Year	**Alloc-ation Quota**	**Actual landings**	**Difference**	**Quota**	**Actual landings**	**Difference**	**TAC/ ABC**	**Actual landings**	**Difference**
1986	na	2.770	na	na	3.700	na	na	6.470	na
1987	na	1.814	na	na	3.069	na	na	4.883	na
1988	na	2.568	na	na	3.960	na	na	6.528	na
1989	na	2.656	na	na	3.098	na	na	5.754	na
1990	na	1.614	na	3.1	2.650	-0.450	na	4.264	na
1991	1.96	2.358	+0.398	2.04	2.213	+0.173	4.0	4.571	+0.571
1992	1.96	3.899	+1.939	2.04	3.106	+1.066	4.0	7.005	+3.005
1993	2.94	5.687	+2.747	3.06	3.374	+0.314	6.0	9.061	+3.061
1994	2.94	5.299	+2.359	3.06	3.222	+0.162	6.0	8.521	+2.521
1995	2.94	4.814	+1.874	3.06	2.934	-0.126	6.0	7.748	+1.748
1996	4.47	4.346	-0.124	4.65	4.313	-0.337	9.12	8.659	-0.461
1997	4.47	6.008	+1.538	4.65	4.810	+0.160	9.12	10.818	+1.698
1998	4.47	4.258	-0.212	4.65	4.680	+0.030	9.12	8.938	-0.182
1999	4.47	3.999	-0.471	4.65	4.876	+0.226	9.12	8.875	-0.245
2000	4.47	3.932	-0.538	4.65	4.837	+0.187	9.12	8.769	-0.351
2001	4.47	4.468	-0.002	4.65	4.625	-0.025	9.12	9.093	-0.027
2002	4.47	5.383	+0.913	4.65	4.779	+0.129	9.12	10.162	+1.042
2003	4.47	4.847	+0.377	4.65	4.409	-0.241	9.12	9.256	+0.136
2004	4.47	4.996	+0.526	4.65	4.651	+0.001	9.12	9.647	+0.527
2005	4.47	4.084	-0.386	4.65	4.096	-0.554	9.12	8.180	-0.940
2006	4.47	4.021	-0.449	4.65	4.649	-0.001	9.12	8.670	-0.450
2007	3.185	4.440	+1.255	3.315	3.183	-0.132	6.5	7.623	+1.123
2008	2.45	3.712	+1.262	2.55	2.484	-0.066	5.0	6.196	+1.196
2009	2.45	4.625	+2.175	2.55	2.484	-0.066	5.0	7.109	+2.109
2010	3.403	2.239	-1.164	3.542	3.392	-0.150	6.945	5.631	-1.314
2011	3.866	4.602	+0.736	3.664	3.594	-0.070	7.53	8.196	+0.666
2012	3.959	5.146	+1.187	4.121	4.036	-0.085	8.08	9.182	+1.102
2013	5.390	8.827	+3.437	5.610	5.449	-0.161	11.00	14.326	+3.326

Sources: Recreational landings from the Southeast Fisheries Science Center including landings from the Marine Recreational Information Program, Texas Parks and Wildlife Department, and the Southeast Headboat Survey. Commercial landings from the Southeast Data Assessment and Review 31 Data Workshop Report (1990-2011), commercial quotas/catch allowances report from the National Marine Fisheries Service /Southeast Regional Office IFQ landings website (2012-2013): http://sero.nmfs.noaa.gov/sf/ifq/CommercialQuotasCatchAllowanceTable.pdf. Commercial quotas/landings in gutted weight were multiplied by 1.11 to convert to ww. Values highlighted in red are those where landings exceeded quotas.

Both the commercial and recreational sectors have had numerous allocation or quota overruns. Table 3.1.2 shows a comparison of quotas and actual harvests from 1990 through 2012. The recreational sector has had allocation/quota overruns in 14 out of 22 years in which an allocation or quota was specified, while the commercial sector has had quota overruns in 10 of 23 years. However, the commercial sector has not had overruns since 2005, including the years 2007 onward when the commercial harvest of red snapper has operated under an IFQ program.

Recreational Red Snapper Sector

Red snapper are an important component of the recreational sector's harvest of reef fish in the Gulf. Red snapper are caught from charter boats, headboats (or party boats), and private anglers fishing primarily from private or rental boats. Red snapper are primarily caught with hook-and-line gear in association with bottom structures. Recreational red snapper harvest allocations since 1991 have been set at 49% of the TAC, or 1.96 mp in 1991 and 1992, 2.94 mp for 1993 through 1995, and 4.47 mp in 1996. In 1997, a 4.47 mp recreational quota was created and it was maintained at this level through 2006. In 2007, the recreational quota was reduced to 3.185 mp. It was reduced again to 2.45 mp in 2008 and 2009. Since 2010, the recreational quota has been increased each year: 3.403 mp in 2010, 3.866 mp in 2011, and 3.959 mp in 2012 (Table 3.1.3).

Before 1984, there were no restrictions on the recreational harvest of red snapper. In November 1984, a 12-inch total length size limit was implemented, but with an allowance for five undersized fish per person. In 1990, the undersized allowance was eliminated, and the recreational sector was managed through bag and size limits with a year-round open season. In 1997, the recreational red snapper allocation was converted into a quota with accompanying quota closure should the sector exceed its quota. Recreational quota closures occurred in 1997, 1998, and 1999, becoming progressively shorter each year even though the quota remained a constant 4.47 mp.

A fixed recreational season of April 21 through October 31 (194 days) was established for 2000 through 2007. However, National Marine Fisheries Service (NMFS) returned to variable length seasons beginning in 2008. Under this management approach, due to a lag in the reporting of recreational catches, catch rates over the course of the season were projected in advance based on past trends and changes in the average size of a recreationally harvested red snapper. The recreational season opened each year on June 1 and closed on the date when the quota was projected to be reached. In 2008, the season length was reduced from 194 days to 65 days in conjunction with a reduction in quota to 2.45 mp. The season length then increased to 75 days in 2009. In 2010, the recreational red snapper season was originally projected to be 53 days. However, due to reduced effort and large emergency area closures resulting from the Deepwater Horizon MC252 oil spill, catches were below projections, and a one-time supplemental season of weekend only openings (Friday, Saturday, and Sunday) was established from October 1 through November 22. This added 24 fishing days to the 2010 season for a total of 77 days. In 2011, the season was reduced to 48 days despite an increase in the quota, due to an increase in the average size of a recreationally harvested fish. In 2012 the season was initially scheduled to be 40 days, but was extended to 46 days to compensate for the loss of fishing days due to storms (Table 3.1.3). For 2013, an increase in the ABC occurred too late to extend the June recreational

season, so the Council requested that NMFS reopen the recreational season on October 1 for whatever number of days would be needed to harvest the additional quota. NMFS estimated that the additional recreational quota would take 14 days to be caught, and therefore announced a supplemental season of October 1 through 14.

Table 3.1.3. Red snapper recreational landings vs. allocation/quota and days open, bag limit, and minimum size limits 1986-2012. Landings are in mp ww. Minimum size limits are in inches total length. Recreational allocations began in 1991, and became quotas in 1997.

Year	Allocation/ Quota	Actual landings	Difference	% over or under	Days open	Bag limit	Minimum size limit
1986	na	2.770	na		365	none	13
1987	na	1.814	na		365	none	13
1988	na	2.568	na		365	none	13
1989	na	2.656	na		365	none	13
1990	na	1.614	na		365	7	13
1991	1.96	2.358	+0.398	+20%	365	7	13
1992	1.96	3.899	+1.939	+99%	365	7	13
1993	2.94	5.687	+2.747	+93%	365	7	13
1994	2.94	5.299	+2.359	+80%	365	7	14
1995	2.94	4.814	+1.874	+64%	365	5	15
1996	4.47	4.346	-0.124	-3%	365	5	15
1997	4.47	6.008	+1.538	+34%	330	5	15
1998	4.47	4.258	-0.212	-5%	272	4	15
1999	4.47	3.999	-0.471	-11%	240	4	15
2000	4.47	3.932	-0.538	-12%	194	4	16
2001	4.47	4.468	-0.002	0%	194	4	16
2002	4.47	5.383	+0.913	+20%	194	4	16
2003	4.47	4.847	+0.377	+8%	194	4	16
2004	4.47	4.996	+0.526	+12%	194	4	16
2005	4.47	4.084	-0.386	-9%	194	4	16
2006	4.47	4.021	-0.449	-10%	194	2	16
2007	3.185	4.440	+1.255	+39%	194	2	16
2008	2.45	3.712	+1.262	+52%	65	2	16
2009	2.45	4.625	+2.175	+89%	75	2	16
2010	3.403	2.239	-1.164	-34%	53 + 24 = 77	2	16
2011	3.866	4.602	+0.736	+19%	48	2	16
2012	3.959	5.146	+1.187	+30%	46	2	16

Sources: Southeast Fisheries Science Center including landings from the Marine Recreational Information Program, Texas Parks and Wildlife Department, and the Southeast Headboat Survey (May 2013). Values highlighted in red are those where landings exceeded quotas.

During the six years when the recreational harvest was an allocation, not a quota (1991 – 1996), actual recreational harvests in pounds of red snapper exceeded the allocation every year except 1996. During the period when the recreational harvest was managed as a quota (1997 – 2012), actual recreational harvest in pounds of red snapper exceeded the quota in 9 out of 16 years, including 5 of the last 6 years (Table 3.1.3). Historical recreational landings estimates have recently been revised to reflect changes in methodology under the Marine Recreational Information Program (MRIP).

For-hire vessels have operated under a limited access system with respect to the issuance of new for-hire permits for fishing reef fish or coastal migratory pelagics since 2003. A total of 3,340 reef fish and coastal migratory pelagic charter permits were issued under the moratorium, and they are associated with 1,779 vessels. Of these vessels, 1,561 have both reef fish and coastal migratory pelagics permits, 64 have only reef fish permits, and 154 have only coastal migratory pelagics permits.

Savolainen et al. (2012) surveyed the charter and headboat fleets in the Gulf. They found that most charter boat trips occurred in the exclusive economic zone (68%) and targeted rig-reef species (64%; snappers and groupers). Pelagic (mackerel and cobia) trips accounted for 19% of trips. If examined by state, more trips targeted rig-reef species with the exception of Louisiana where rig-reef species and pelagic species had almost the same proportion of trips. In a similar survey conducted in 1998, Holland et al. (1999) found species targeted by Florida charter boat operators were king mackerel (41%), grouper (~37%), snapper (~34%), cobia (25%), and Spanish mackerel (20%). For the rest of the Gulf, Sutton et al. (1999) using the same survey reported that the majority of charter boats targeted snapper (91%), king mackerel (89%), cobia (76%), and tuna (55%).

For headboats, Savolainen et al. (2012) reported that most head boats target offshore species and fish in federal waters (81% of trips), largely due to vessel size and consumer demand. On average, 84% of trips targeted rig-reef species, while only 10 % targeted inshore species and 6% pelagic species. Holland et al. (1999) reported approximately 40% of headboats did not target any particular species. The species targeted by the largest proportion of Gulf coast Florida headboats were snapper (60%), grouper (60%) and sharks (20%) with species receiving the largest percentage of effort red grouper (46%), gag 33%), black grouper (20%), and red snapper (7%). For the other Gulf States, Sutton et al. (1999) reported that the majority of headboats targeted snapper (100%), king mackerel (85%), shark (65%), tuna (55%), and amberjack (50%). The species receiving the largest percentage of total effort by headboats in the four-state area were snapper (70%), king mackerel (12%), amberjack (5%), and shark (5%).

Commercial Red Snapper Sector

In the Gulf, red snapper are primarily harvested commercially with hook-and-line and bandit gear, with bandit gear being more prevalent. Longline gear captures a small percentage of total landings (generally < 5%; SEDAR 31 2013). Current regulations prohibit longline gear for the harvest of reef fish inside of 50 fathoms west of Cape San Blas. East of Cape San Blas, longline gear is prohibited for harvest of reef fish inside of 20 fathoms from September through May.

From June through August, the longline boundary is shifted out to 35 fathoms to protect foraging sea turtles.

Between 1990 and 2006, the principal method of managing the commercial sector for red snapper was with quotas set at 51% of TAC and seasonal closures after each year's quota was filled. The result was a race for fish in which fishermen were compelled to fish as quickly as possible to maximize their catch of the overall quota before the season was closed. The fishing year was characterized by short periods of intense fishing activity with large quantities of red snapper landed during the open seasons. The result was short seasons and frequent quota overruns (Table 3.1.4). From 1993 through 2006, trip limits, limited access endorsements, split seasons and partial monthly season openings were implemented in an effort to slow the race for fish. At the beginning of the 1993 season, 131 boats qualified for red snapper endorsements on their reef fish permits that entitled them to land 2,000 lbs of red snapper per trip.

In 2007, a commercial red snapper IFQ program was implemented to reduce overcapacity and mitigate race to fish conditions. Each vessel that qualified for the program was issued shares as a percentage of the commercial quota. The number of shares was based on historical participation. At the beginning of each year, each shareholder is issued allocation in pounds based on the number of shares they have. Each shareholder is then allowed to harvest, sell or lease their allocation to other fishermen, or purchase allocation from other fishermen. In addition, shares can be bought and sold. As a result of this program, the commercial red snapper season is no longer closed since 2007, but a commercial vessel cannot land red snapper unless it has sufficient allocation in its vessel account to cover the landing poundage. Thus, the IFQ program has ended quota overruns (Table 3.1.4). Recently, a 5-year review of the IFQ program was completed (GMFMC 2013b) and the Council is working to determine if changes are needed to the program. The five-year review found that the IFQ program had mixed success reducing overcapacity, but was successful in mitigating derby fishing behavior and preventing quota overages (Agar et al, 2014).

Table 3.1.4. Commercial red snapper harvest vs. days open, by sector, 1986-2012.

Year	Quota	Actual landings	Days Open (days that open or close at noon are counted as half-days) ("+" = split season)
1986	na	3.700	365
1987	na	3.069	365
1988	na	3.960	365
1989	na	3.098	365
1990	3.1	2.650	365
1991	2.04	2.213	235
1992	2.04	3.106	52½ + 42 = 94½
1993	3.06	3.374	94
1994	3.06	3.222	77
1995	3.06	2.934	50 + 1½ = 51½
1996	4.65	4.313	64 + 22 = 86
1997	4.65	4.810	53 + 18 = 71
1998	4.65	4.680	39 + 28 = 67
1999	4.65	4.876	42 + 22 = 64
2000	4.65	4.837	34 + 25 = 59
2001	4.65	4.625	50 + 20 = 70
2002	4.65	4.779	57 + 24 = 81
2003	4.65	4.409	60 + 24 = 84
2004	4.65	4.651	63 + 32 = 95
2005	4.65	4.096	72 + 48 = 120
2006	4.65	4.649	72 + 43 = 115
2007	3.315	3.183	IFQ
2008	2.55	2.484	IFQ
2009	2.55	2.484	IFQ
2010	3.542	3.392	IFQ
2011	3.664	3.594	IFQ
2012	4.121	4.036	IFQ

Sources: Southeast Data Assessment and Review 31 Data Workshop Report (1990-2011 landings), commercial quotas/catch allowances report from National Marine Fisheries Service/Southeast Regional Office Individual Fishing Quota landings website (2012 landings): http://sero.nmfs.noaa.gov/sf/ifq/CommercialQuotasCatchAllowanceTable.pdf. Commercial quotas/landings in gutted weight were multiplied by 1.11 to convert to ww. Values highlighted in red are those where landings exceeded quotas.

3.2 Description of the Physical Environment

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 (Figure 3.2.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73 º F through 83º F (23-28º C) including bays and bayous (Figure 3.2.1) between 1982 and 2009, according to satellite-derived measurements (NODC 2012: http://accession.nodc.noaa.gov/0072888). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

The physical environment for Gulf reef fish, including red snapper, is also detailed in the EIS for the Generic EFH Amendment (GMFMC 2004a) and the Generic ACL/AM Amendment (GMFMC 2011b). In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. A planktonic larval stage lives in the water column and feeds on zooplankton and phytoplankton (GMFMC 2004a). Juvenile and adult reef fish are typically demersal and usually associated with bottom topographies on the continental shelf (<100m) 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. For example, juvenile red snapper are common on mud bottoms in the northern Gulf, particularly off Texas through Alabama. Also, some juvenile snapper (e.g. mutton, gray, red, dog, lane, and yellowtail snappers) and grouper (e.g. Goliath grouper, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems.

In the Gulf, fish habitat for adult red snapper consists of submarine gullies and depressions, coral reefs, rock outcroppings, gravel bottoms, oilrigs, and other artificial structures (GMFMC 2004a); eggs and larvae are pelagic; and juveniles are found associated with bottom inter-shelf habitat (Szedlmayer and Conti 1998) and prefer shell habitat over sand (Szedlmayer and Howe 1997). Adult red snapper are closely associated with artificial structures in the northern Gulf (Szedlmayer and Shipp 1994; Shipp and Bortone 2009) and larger individuals have been found to use artificial habitats, but move further from the structure as they increase in size and based on the time of day (Topping and Szedlmayer 2011). . Detailed information pertaining to the closures and preserves is provided in the February 2010 Regulatory Amendment (GMFMC 2010) and is incorporated here by reference.

There are environmental sites of special interest that are discussed in the Generic EFH Amendment (GMFMC 2004a) that are relevant to red snapper management. These include the longline/buoy area closure, the Edges Marine Reserve, Tortugas North and South Marine Reserves, individual reef areas and bank habitat areas of particular concern (HAPCs) of the northwestern Gulf the Florida Middle Grounds HAPC, the Pulley Ridge HAPC, and Alabama Special Management Zone. These areas are managed with gear restrictions to protect habitat and

specific reef fish species. These restrictions are detailed in the Generic EFH Amendment (GMFMC 2004a).

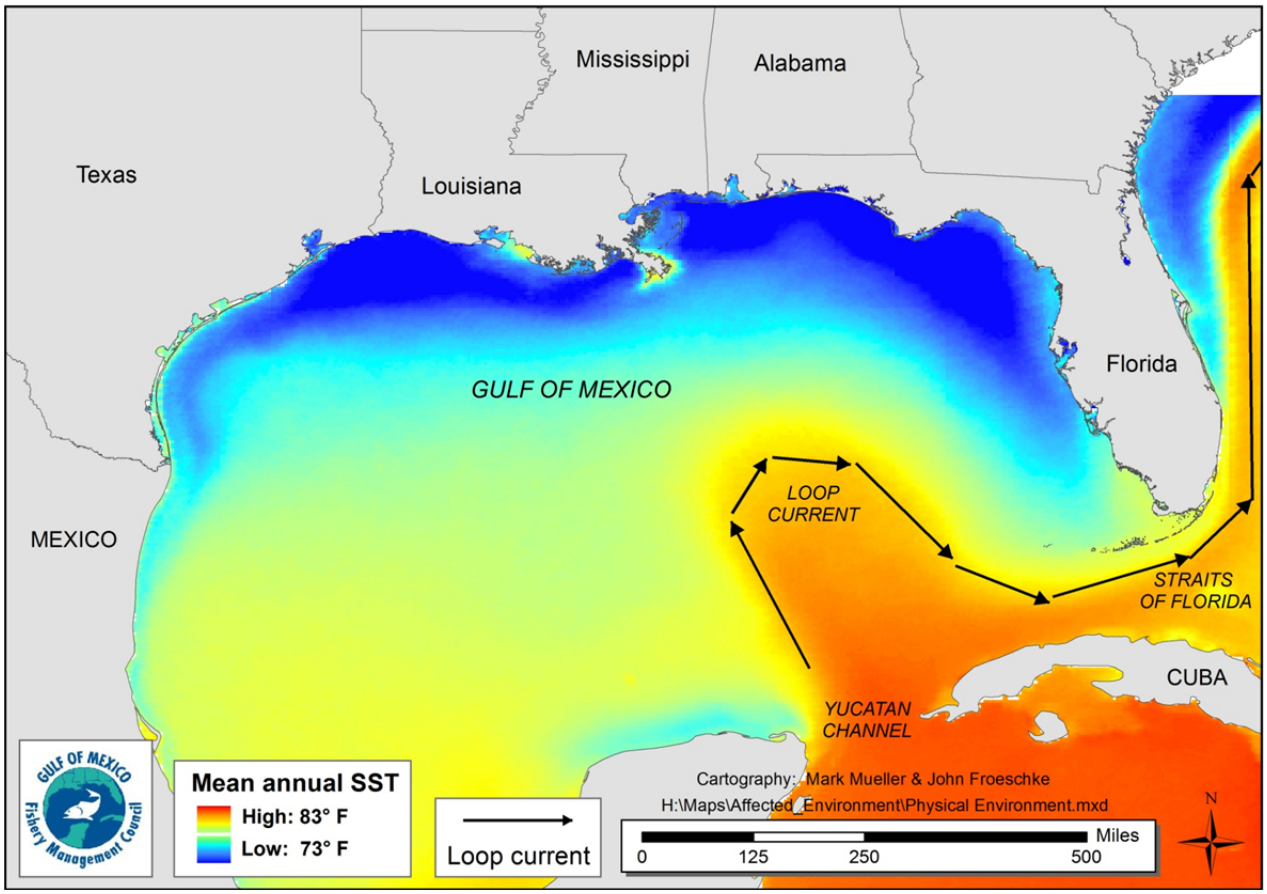

Figure 3.2.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (http://accession.nodc.noaa.gov/0072888)

3.3 Description of the Biological Environment

The biological environment of the Gulf, including the species addressed in this amendment, is described in detail in the final EIS for the Generic EFH Amendment (GMFMC 2004a) and is incorporated here by reference, and summarized below.

Definition of Overfishing

In January 2012, the Generic ACL/AM Amendment (GMFMC 2011b) became effective. One of the provisions in this amendment was to redefine overfishing. In years when there is a stock assessment, overfishing is defined as the fishing mortality rate exceeding the maximum fishing mortality threshold. In years when there is no stock assessment, overfishing is defined as the catch exceeding the overfishing limit (OFL). Note that, because the overfishing threshold is now re-evaluated each year instead of only in years when there is a stock assessment, this status for red snapper, gag, and other reef fish could change on a year-to-year basis.

Red Snapper Life History and Biology

Red snapper demonstrate the typical reef fish life history pattern (Appendix C). Eggs and larvae are pelagic while juveniles are found associated with bottom features or over barren bottom. Spawning occurs over firm sand bottom with little relief away from reefs during the summer and fall. Most females are mature by age two and almost all are mature by age 5 (Woods 2003). Red snapper have been aged up to 57 years (Wilson and Nieland 2001). In the late 1990s, most caught by the directed fishery were 2- to 4-years old (Wilson and Nieland 2001), but a recently completed stock assessment suggests that the age and size of red snapper in the directed fishery has increased in recent years (SEDAR 31 2013). A more complete description of red snapper life history can be found in the EIS for the Generic EFH Amendment (GMFMC 2004a) and in the supporting documentation for SEDAR 31[2].

Status of the Red Snapper Stock

Southeast Data Assessment and Review (SEDAR) 31 Benchmark Stock Assessment

Commercial harvest of red snapper from the Gulf began in the mid-1800s (Shipp 2001). In the 1930s, party boats built exclusively for recreational fishing began to appear (Chester 2001). The first stock assessment conducted by National Marine Fisheries Service (NMFS) in 1986 suggested that the stock was in decline (Parrack and McLellan 1986) and as early as 1988 (Goodyear 1988) the stock biomass has been found to be below threshold levels.

The most recent red snapper stock assessment was completed in 2013 (SEDAR 31 2013). The primary assessment model selected for the Gulf red snapper stock evaluation assessment was Stock Synthesis (Methot 2010). Stock Synthesis is an integrated statistical catch-at-age model which is widely used for stock assessments in the United States and throughout the world. The

[2] Southeast Fisheries Science Center, SEDAR 31 (http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=31)

results of the SEDAR 31 assessment, including an assessment addendum that was prepared after a review of the SEDAR Assessment Panel Report by the SEDAR Review Panel, was presented to the Scientific and Statistical Committee (SSC) in May 2013. Under the base model, it was estimated that the red snapper stock has been overfished since the 1960s.

Although the red snapper stock continues to recover, spawning stock biomass was estimated to remain below both the minimum stock size threshold and the spawning stock size associated with maximum sustainable yield proxy of a biomass level corresponding to a spawning stock biomass of 26% spawning potential ratio. Therefore, the SSC concluded that the stock remains overfished. With respect to overfishing, the current fishing mortality rate (geometric mean of 2009-2011) was estimated to be below both fishing mortality at the 26% spawning potential ratio proxy. Therefore, the SSC concluded the stock is not currently experiencing overfishing.

Even though the red snapper recreational harvest exceeded its quota in 2012, the total catch (recreational and commercial combined) remained below the OFL. Therefore, as of 2012, overfishing is not occurring in the red snapper stock.

A red snapper update assessment scheduled for 2014 is expected to re-evaluate the acceptable biological catch (ABC) for 2015 and beyond.

General Information on Reef Fish Species

The National Ocean Service collaborated with NMFS and the Council to develop distributions of reef fish (and other species) in the Gulf (SEA 1998). The National Ocean Service obtained fishery-independent data sets for the Gulf, including SEAMAP, and state trawl surveys. Data from the Estuarine Living Marine Resources 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 parts per thousand). National Ocean Service staff analyzed these data to determine relative abundance of the mapped species by estuary, salinity zone, and month. For some species not in the Estuarine Living Marine Resources Program 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 Gulf, occupying both pelagic and benthic habitats during their life cycle. Habitat types and life history stages are summarized in Appendix C 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. Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf (<328 feet; <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 from Texas to 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 Fishery Management Plan (FMP) for Corals and Coral Reefs (GMFMC and SAFMC 1982).

Status of Reef Fish Stocks

The Reef Fish FMP currently encompasses 31 species (Table 3.3.2). Eleven other species were removed from the FMP in 2012 through the Generic ACL/AM Amendment (GMFMC 2011b). Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) websites. The assessed species are:

- Red Snapper (SEDAR 7 2005; SEDAR 7 Update 2009; SEDAR 31 2013)
- Vermilion Snapper (Porch and Cass-Calay 2001; SEDAR 9 2006c; SEDAR 9 Update 2011a)
- Yellowtail Snapper (Muller et al. 2003; SEDAR 3 2003; O'Hop et al. 2012)
- Mutton Snapper (SEDAR 15A 2008)
- Gray Triggerfish (Valle et al. 2001; SEDAR 9 2006a; SEDAR 9 Update 2011b)
- Greater Amberjack (Turner et al. 2000; SEDAR 9 2006b; SEDAR 9 Update 2010)
- Hogfish (Ault et al. 2003; SEDAR 6 2004b)
- Red Grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009)
- Gag (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009)
- Black Grouper (SEDAR 19 2010)
- Yellowedge Grouper (Cass-Calay and Bahnick 2002; SEDAR 22 2011b)
- Tilefish (Golden) (SEDAR 22 2011a)
- Atlantic Goliath Grouper (Porch et al. 2003; SEDAR 6 2004a; SEDAR 23 2011)

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress on a quarterly basis utilizing the most current stock assessment information. The most recent update can be found at: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm. The status of both assessed and unassessed stocks as of the writing of this report is shown in Table 3.3.1.

Table 3.3.1. Species of the Reef Fish FMP grouped by family.

Common Name	Scientific Name	Stock Status
Family Balistidae – Triggerfishes		
Gray Triggerfish	*Balistes capriscus*	Overfished, no overfishing
Family Carangidae – Jacks		
Greater Amberjack	*Seriola dumerili*	Overfished, no overfishing
Lesser Amberjack	*Seriola fasciata*	Unknown
Almaco Jack	*Seriola rivoliana*	Unknown
Banded Rudderfish	*Seriola zonata*	Unknown
Family Labridae - Wrasses		
Hogfish	*Lachnolaimus maximus*	Unknown
Family Malacanthidae - Tilefishes		
Tilefish (Golden)	*Lopholatilus chamaeleonticeps*	Not overfished, no overfishing
Blueline Tilefish	*Caulolatilus microps*	Unknown
Goldface Tilefish	*Caulolatilus chrysops*	Unknown
Family Serranidae - Groupers		
Gag	*Mycteroperca microlepis*	Overfished, no overfishing
Red Grouper	*Epinephelus morio*	Not overfished, no overfishing
Scamp	*Mycteroperca phenax*	Unknown
Black Grouper	*Mycteroperca bonaci*	Not overfished, no overfishing
Yellowedge Grouper	**Hyporthodus flavolimbatus*	Not overfished, no overfishing
Snowy Grouper	**Hyporthodus niveatus*	Unknown
Speckled Hind	*Epinephelus drummondhayi*	Unknown
Yellowmouth Grouper	*Mycteroperca interstitialis*	Unknown
Yellowfin Grouper	*Mycteroperca venenosa*	Unknown
Warsaw Grouper	**Hyporthodus nigritus*	Unknown
**Atlantic Goliath Grouper	*Epinephelus itajara*	Unknown
Family Lutjanidae - Snappers		
Queen Snapper	*Etelis oculatus*	Unknown
Mutton Snapper	*Lutjanus analis*	Not overfished, no overfishing
Blackfin Snapper	*Lutjanus buccanella*	Unknown
Red Snapper	*Lutjanus campechanus*	Overfished, no overfishing
Cubera Snapper	*Lutjanus cyanopterus*	Unknown
Gray Snapper	*Lutjanus griseus*	Unknown
Lane Snapper	*Lutjanus synagris*	Unknown
Silk Snapper	*Lutjanus vivanus*	Unknown
Yellowtail Snapper	*Ocyurus chrysurus*	Not overfished, no overfishing
Vermilion Snapper	*Rhomboplites aurorubens*	Not overfished, no overfishing
Wenchman	*Pristipomoides aquilonaris*	Unknown

Notes: * In 2013 the genus for yellowedge grouper, snowy grouper, and warsaw grouper was changed by the American Fisheries Society from *Epinephelus* to *Hyporthodus* (American Fisheries Society 2013).
**Atlantic goliath grouper is a protected grouper and benchmarks do not reflect appropriate stock dynamics. In 2013 the common name was changed from goliath grouper to Atlantic goliath grouper by the American Fisheries Society to differentiate from the Pacific goliath grouper, a newly named species (American Fisheries Society 2013).

Protected Species

There are 38 species protected by federal law that may occur in the Gulf. Thirty-seven of these are under the jurisdiction of NMFS, while the West Indian manatee (*Trichechus manatus*) is managed by the U.S. Fish and Wildlife Service. Of the species under NMFS's jurisdiction, 28 are marine mammals that are protected under the Marine Mammal Protection Act (MMPA). The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF) classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals. More information about the LOF and the classification process can be found at: http://www.nmfs.noaa.gov/pr/interactions/lof/. Six of these marine mammal species are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). In addition to those six marine mammals, five sea turtle species (Kemp's ridley, loggerhead, green, leatherback, and hawksbill), two fish species (Gulf sturgeon and smalltooth sawfish), and two coral species (elkhorn coral and staghorn coral) are also protected under the ESA. Designated critical habitat for *Acropora* corals, smalltooth sawfish, Gulf sturgeon, and the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles also occur within nearshore waters of the Gulf. NMFS has conducted specific analyses ("Section 7 consultations") to evaluate the potential adverse effects from the Gulf reef fish fishery on species protected under the ESA. Summaries of those consultations and their determination are in **Appendix A**. Those consultations indicate that of the species listed above, sea turtles and smalltooth sawfish are the most likely to interact with the reef fish fishery. These species potentially affected by the fishery are discussed below.

Marine Mammals

The gear used by the Gulf reef fish fishery is classified in the Marine Mammal Protection Act 2014 List of Fisheries as a Category III fishery (79 FR 14418). 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. Dolphins are the only species documented as interacting with these fisheries. Bottlenose dolphins prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery. They are also a common predator around reef fish vessels, feeding on the discards. Marine Mammal Stock Assessment Reports and additional information are available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/sspecies/.

Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the South Atlantic. The following sections are a brief overview of the general life history characteristics of the sea turtles found in the South Atlantic region. Several volumes exist that cover the biology and ecology of these species more thoroughly (i.e., Lutz and Musick (eds.) 1997, Lutz et al. (eds.) 2003).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are

thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The **hawksbill's** pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp (Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985, Byles 1988). Their maximum diving range is unknown. Depending on the life stage a Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985, Mendonca and Pritchard 1986, Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985, Byles 1988).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life

stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984, Eckert et al. 1986, Eckert et al. 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerhead hatchlings forage in the open ocean and are often associated with *Sargassum* rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads range from 211 m to 233 m (692-764ft.) (Thayer et al. 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyon et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyon et al. 1989).

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 and longline components of the reef fish 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, entangled, 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.

Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 (the first was captured off North Carolina in 1963 and the other off Georgia in 2002 (National Smalltooth Sawfish Database, Florida Museum of Natural History)). Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 meters (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

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.

On September 30, 2011, the Protected Resources Division released a biological opinion, which concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish (NMFS 2011a). An incidental take statement was issued specifying the amount and extent of anticipated take, along with reasonable and prudent measures and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes. The Council addressed measures to reduce take in the reef fish fishery's longline component in Amendment 31 (GMFMC 2009). Other listed species and designated critical habitat in the Gulf were determined not likely to be adversely affected.

On December 7, 2012, NMFS published a proposed rule to list 66 coral species under the ESA and reclassify *Acropora* from threatened to endangered (77 FR 73220). In a memo dated February 13, 2013, NMFS determined the reef fish fishery was not likely to adversely affect *Acropora* because of where the fishery operates, the types of gear used in the fishery, and that other regulations protect *Acropora* where they are most likely to occur. None of the new information regarding population level concerns would affect those determinations.

Climate change

Kennedy et al. (2002) and Osgood (2008) have suggested global climate change could affect temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; change precipitation patterns and cause a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. For reef fishes, Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. 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. Hollowed et al. (2013) provided a review of projected effects of climate change on the marine fisheries and dependent communities. Integrating the potential effects of climate change into the fisheries assessment is currently difficult due to the time scale differences (Hollowed et al. 2013). The fisheries stock assessments rarely project through a time span that would include detectable climate change effects.

Deepwater Horizon MC252 Oil Spill

On April 20, 2010 an explosion occurred on the Deepwater Horizon MC252 oil rig approximately 36 nautical miles (41 statute miles) off the Louisiana coast. Two days later the rig sank. An uncontrolled oil leak from the damaged well continued for 87 days until the well was successfully capped by British Petroleum on July 15, 2010. The Deepwater Horizon MC252 oil spill affected at least one-third of the Gulf area from western Louisiana east to the Florida Panhandle and south to the Campeche Bank in Mexico (Figure 3.3.1).

As reported by the National Oceanic and Atmospheric Administration Office of Response and Restoration (NOAA 2010), the oil from the Deepwater Horizon MC252 spill is relatively high in alkanes, which can readily be used by microorganisms as a food source. As a result, the oil from this spill is likely to biodegrade more readily than crude oil in general. The Deepwater Horizon MC252 oil is also relatively much lower in polyaromatic hydrocarbons. Polyaromatic hydrocarbons are highly toxic chemicals that tend to persist in the environment for long periods of time, especially if the spilled oil penetrates into the substrate on beaches or shorelines. Like all crude oils, MC252 oil contains volatile organic compounds (VOCs) such as benzene, toluene, and xylene. Some VOCs are acutely toxic but because they evaporate readily, they are generally a concern only when oil is fresh.[3]

In addition to the crude oil, 1.4 million gallons of the dispersant, Corexit 9500A®, was applied to the ocean surface and an additional 770,000 gallons of dispersant was pumped to the mile-deep well head (National Commission 2010). No large-scale applications of dispersants in deep water had been conducted until the Deepwater Horizon MC252 oil spill. Thus, no data exist on the environmental fate of dispersants in deep water. However, a study found that, while Corexit 9500A® and oil are similar in their toxicity, when Corexit 9500A® and oil were mixed in lab tests, toxicity to microscopic rotifers increased up to 52-fold (Rico-Martínez et al. 2013). This suggests that the toxicity of the oil and dispersant combined may be greater than anticipated.

Oil could exacerbate development of the hypoxic "dead" zone in the Gulf as could higher than normal input of water from the Mississippi River drainage. For example, oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion.

Changes have occurred in the amount and distribution of fishing effort in the Gulf in response to the oil spill. This has made the analysis of the number of days needed for the recreational sector to fill its quota more complex and uncertain, and will make the requirement to allow the recreational sector to harvest its quota of red snapper while not exceeding the quota particularly challenging. Nevertheless, substantial portions of the red snapper population are found in the northwestern and western Gulf (western Louisiana and Texas) and an increasing population of red snapper is developing off the west Florida continental shelf. Thus, spawning by this segment of the stock may not be impacted, which would mitigate the overall impact of a failed spawn by that portion of the stock located in oil-affected areas. An increase in lesions were found in red snapper in the area affected by the oil, but Murowski et al. (2014) found that the incidence of

[3] Source: http://sero.nmfs.noaa.gov/sf/deepwater_horizon/OilCharacteristics.pdf

lesions had declined between 2011 and 2012. The 2013 stock assessment for red snapper (SEDAR 31, 2013) showed a steep decline in the 2010 recruitment; however, the recruitment increased in 2011 and 2012.

As a result of the Deepwater Horizon MC252 spill, a consultation pursuant to ESA Section 7(a)(2) was reinitiated. As discussed above, on September 30, 2011, the Protected Resources Division released a biological opinion, which after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent Deepwater Horizon MC252 oil release event in the northern Gulf), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011a).

For additional information on the Deepwater Horizon MC252 oil spill and associated closures, see:
http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

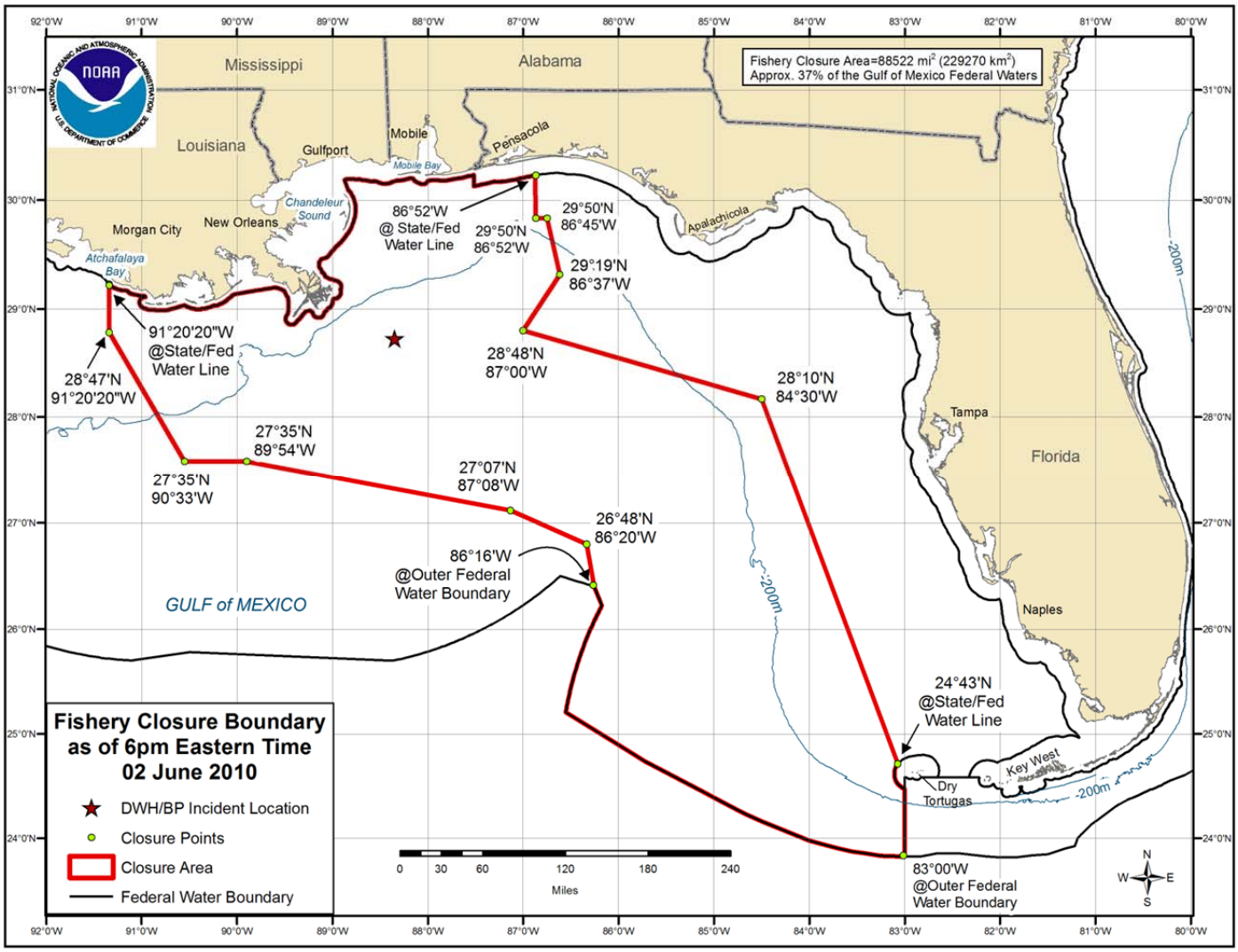

Figure 3.3.1. Fishery closure at the height of the Deepwater Horizon MC252 oil spill.

3.4 Description of the Social Environment

This section provides a historical background and a current description of recreational red snapper fishing for which the proposed actions will be evaluated in Section 4.0. Because the proposed actions in this amendment apply only to the management of the recreational sector of the red snapper fishery, the following description focuses primarily on the recreational component of the fishery.

Context of recreational red snapper management in the Gulf

Although the recreational sector is often described as "open access," open entry is more accurate as a true open access resource lacks rules of usage (Feeny et al. 1990). However, the federal for-hire component of the recreational sector is not open access, as there is a moratorium on the issuance of new federal for-hire permits. Thus, part of the recreational sector is open access, while the other is not. For the recreational sector, harvest constraints are implemented primarily by reductions to the bag limit and shortening of the fishing season. The bag limit has been reduced from seven red snapper per angler per day in 1990 (when the sector allocation was established), to five fish in 1995, four fish in 1998, and two fish in 2007 (Figure 3.4.1). In 1997, the recreational season was shortened for the first time from year round and has been getting shorter ever since. From 2008 through 2012, the recreational season averaged 62 days in length.

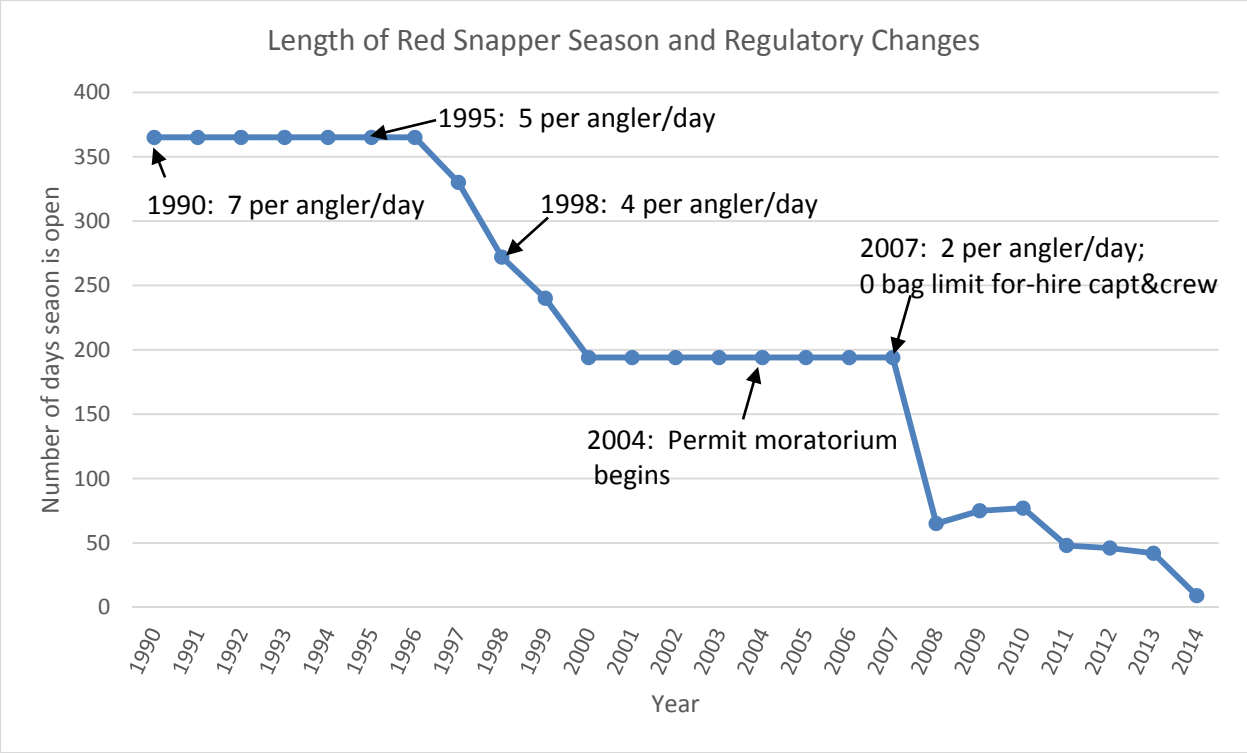

Figure 3.4.1. Length of recreational red snapper fishing season, with date of changes in bag limits, trip limits, and implementation of the for-hire permit moratorium.

The practice in recent years of projecting season length for a given quota based on past effort has not prevented the quota from being exceeded (Figure 3.4.2). Without attending measures to actually stop harvest when the quota is met, a quota does not on its own constitute an output control. There is a disjunction between management measures used to constrain the rate of recreational harvest, and attempts to estimate the rate of harvest under such measures, as anglers modify their fishing activity in response to new access restrictions. Even with additional quota, continuing to rely on existing management measures to slow harvest may allow two problems to continue. First, the harvest coming from the recreational sector will continue to face the problems of "subtractability" and "excludability," where the resource is open to anyone able to access it during a particular time. Without rules governing who has access to the resource (excludability), the effects of smaller returns are shared among all participants (subtractability; Feeny et al. 1990; McCay and Acheson 1987).

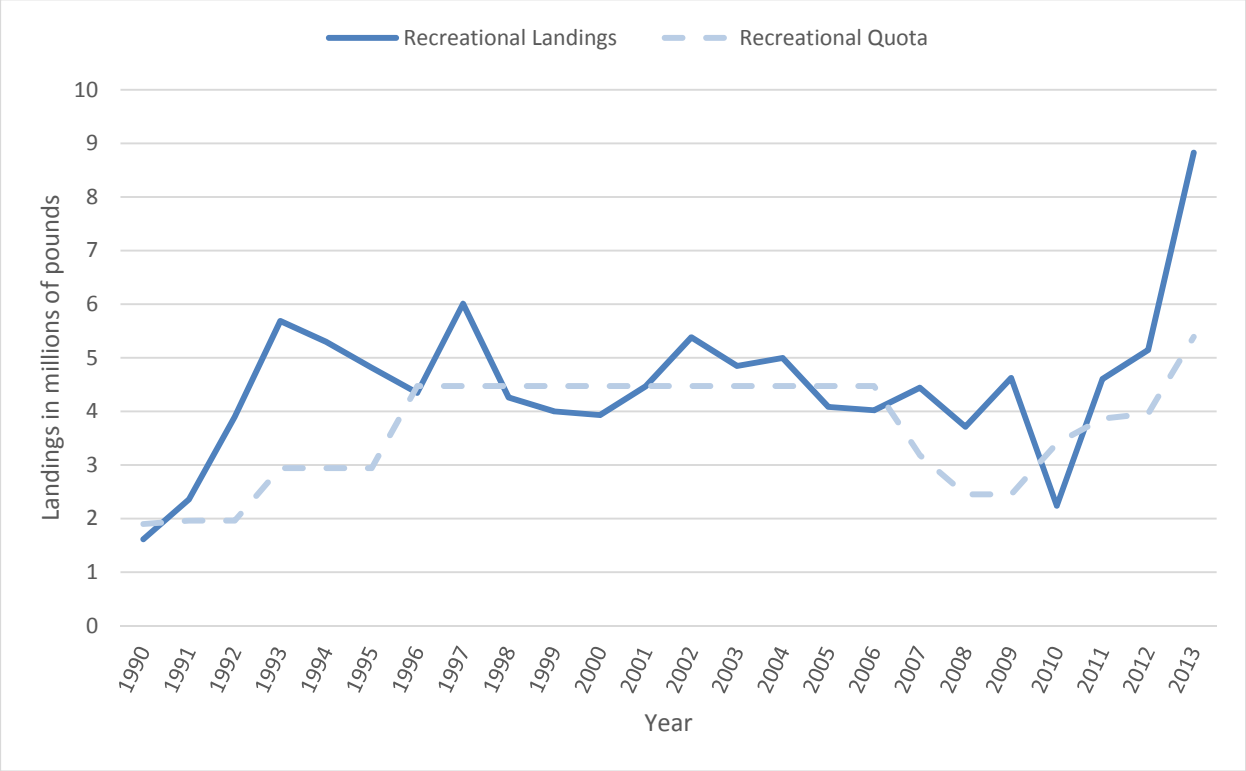

Figure 3.4.2. Recreational landings (solid line) and quotas (dotted line) in millions of pounds whole weight.

The second problem concerns the quota overages. Alongside the short seasons, increases in average weight of fish, and lag time to calculate landings from MRIP, quota overages are likely to continue under the system of predicting season length based on past fishing effort. Faced with a shorter season for a desired target species, individual anglers rationally adjust their effort and fishing activity. With no restrictions on entry by private vessels to the fishery (excludability), new participants join as well. This has resulted in an inverse relationship between season length and effort, where the shorter the length of the recreational fishing season, the more red snapper have been landed per day (Figure 3.4.3). However, it cannot be assumed that the pattern would reverse, where an increase in the length of the season would correspond with a proportional

reduction in effort. Compounding this problem, the average weight of a red snapper has increased under the rebuilding plan meaning that each angler's bag limit weighs more. Thus, the rate at which the quota is caught accelerates. That recreational anglers as a sector are said to "exceed the quota" is not a reflection of individual angler compliance, but rather, reflects rational changes to fishing activity under situations of decreased access, and the inability of the existing management system to close harvest before the quota is met. Examples of management changes that may reduce quota overages include the adoption of accountability measures or implementation of real time quota monitoring.

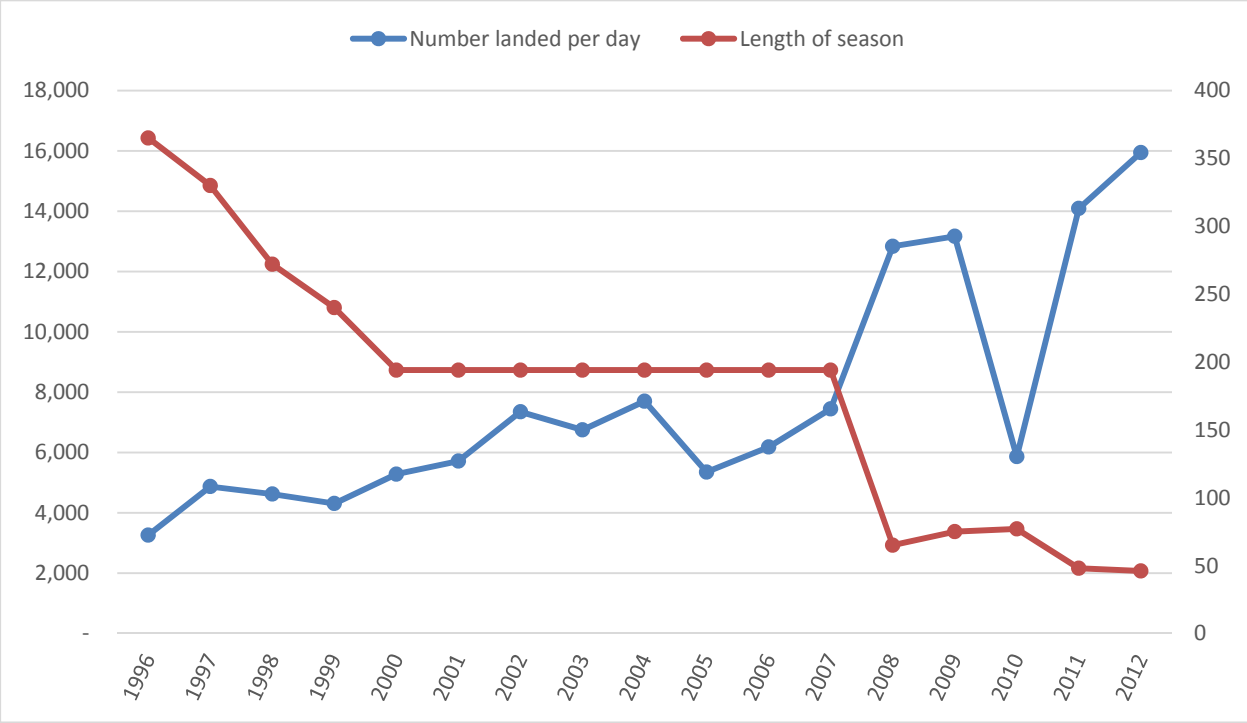

Figure 3.4.3. Length of recreational red snapper season in days (red line, right axis) and landings divided by average weight of fish and number of days in the season (blue line, left axis), providing the average number of red snapper landed per day (1996-2012). Source: Southeast Fisheries Science Center, recreational ACL dataset (Sept 2013).

Recreational anglers can access red snapper fishing by private vessels and for-hire vessels. Both modes share the same bag limit and fishing season; however, additional restrictions are placed on the for-hire fleet, to which private vessels are not subject. Since 2007, captain and crew of for-hire vessels have been prohibited from retaining a bag limit, and there are mandatory reporting requirements for headboats to report all landings and discards. In 2004, a moratorium was put in place on the issuance of federal for-hire permits. As with commercial permits, no new federal for-hire permits may be issued, but existing permits may be transferred. There is no mechanism to limit entry by private recreational vessels.

Thus, the issue of excludability described above reflects private recreational vessels only. During the open season, participation is limited to a finite number of for-hire vessels, but there is no restriction to the number of private vessels that may harvest red snapper. Since the permit

moratorium became effective, the number of federally permitted for-hire vessels has decreased, while the number of private fishing licenses has increased. The proportion of red snapper landed by each component of the recreational sector has shifted toward private vessel landings representing a greater proportion of the recreational quota (Figure 1.1.2). For the years 1991-2011, private-angler landings of red snapper represent 45.5% of recreational landings, but represent 56% for just the last 6 years. For-hire vessel landings of red snapper have decreased proportionally for these same years, from 54.5% to 44% of the recreational landings.

3.4.1 Fishing Communities

This section provides a description of where recreational fishing for red snapper occurs. The description is based on the geographical distribution of landings of red snapper and federal for-hire permits, and the relative importance of red snapper for recreational communities. This spatial approach enables discussion of fishing communities and the importance of fishery resources to those communities, as required by National Standard 8.

Recreational Fishing Communities

Red snapper is harvested recreationally in all states in the Gulf. However, as the red snapper stock has continued to rebuild, the proportion of landings made up by the eastern Gulf States (Alabama and western Florida) has increased compared to the western Gulf States (Texas and Louisiana). The majority of the recreational catch is landed in Florida and Alabama (Table 3.4.1.1). Fishermen in other Gulf States are also involved in recreational red snapper fishing, but these states represent a smaller percentage of the total recreational landings.

Table 3.4.1.1. Percentage of total recreational red snapper landings by state for 2011 and 2012.

State	2011	2012
AL	50.3%	28.1%
FL (Gulf Coast)	32.4%	41.5%
LA	6.2%	14.8%
MS	0.7%	3.7%
TX	10.5%	12.0%

Source: SERO LAPP/DM Branch 2011 and NMFS 2013.

Red snapper landings for the recreational sector are not available at the community level, making it difficult to identify communities as dependent on recreational fishing for red snapper. And it cannot be assumed that the proportion of commercial red snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because of sector differences in fishing practices and preferences.

While there are no landings data at the community level for the recreational sector, Table 3.4.1.2 offers a ranking of communities based upon the number of charter permits and charter permits divided by population. The count includes both reef fish and coastal pelagic charter permits.

This is a crude measure of the reliance upon recreational fishing and is general in nature and not specific to red snapper. Ideally, additional variables quantifying the importance of recreational fishing to a community would be included (such as the amount of recreational landings in a community, availability of recreational fishing related businesses and infrastructure, etc.); however, these data are not available at this time. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the list suggesting a greater importance for recreational fishing in that region. 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 and have a dynamic commercial fishery for red snapper will likely have a vigorous recreational red snapper fishery. The communities that meet those criteria are: Destin, Panama City, and Panacea, Florida; Freeport, Texas; and Venice and Grand Isle, Louisiana.

Table 3.4.1.2. Average community rank by total number of charter permits by community* and population.

Community	State	Charter Permits	Rank Charter Permits	Charter Permit/Pop	Rank Charter Permits/Pop	Average Rank
Orange Beach	AL	223	3	0.0358	6	5
Destin	FL	234	2	0.0186	16	9
Port Aransas	TX	96	8	0.0250	11	10
Steinhatchee	FL	44	23	0.0307	7	15
Dauphin Island	AL	44	23	0.0277	9	16
Apalachicola	FL	45	21	0.0204	15	18
Port O'Connor	TX	33	35	0.0306	8	22
Freeport	TX	78	10	0.0062	46	28
Carrabelle	FL	30	43	0.0244	13	28
Venice	LA	20	60	0.0862	2	31
Grand Isle	LA	27	44	0.0167	21	33
Panama City	FL	159	4	0.0043	62	33
Panama City Beach	FL	77	11	0.0053	55	33
Port Saint Joe	FL	27	44	0.0076	39	42
Cedar Key	FL	18	68	0.0184	17	43
Saint Marks	FL	13	81	0.0408	4	43
Panacea	FL	20	60	0.0116	32	46
Matagorda	TX	14	78	0.0184	18	48
Madeira Beach	FL	25	49	0.0058	51	50

***** Total number of charter permits does not correspond to number of vessels; a vessel may have several different types of charter permits. Source: Southeast Regional Office, 2008.

Destin and Panama City are likely more reliant with regard to recreational fishing as they have numerous charter operations. When visiting charter service websites from these two communities photos of red snapper are very prominent and advertised as a key target species.[4]

[4] http://www.fishdestin.com/fishinggallery.html; and http://www.jubileefishing.com/

Panacea is less reliant upon red snapper and located in a more rural area than the other communities. In terms of occupation it has the lowest percentage working in farming, forestry, and fishing, yet it does have the largest percentage class of worker in that category. All of these communities are considered to be primarily involved in fishing based upon their community profiles (Impact Assessment, Inc. 2005).

The Orange Beach Red Snapper World Championship Tournament, billed as "Alabama's state celebration of recreational saltwater fishing,"[5] was an annual event in March. Dauphin Island, Alabama also has a number of charter services that specialize in bottom fishing, especially for red snapper.[6] All three Alabama communities are considered primarily involved in fishing as noted in the profiles of fishing communities for both states (Impact Assessment, Inc. 2006). Red snapper fishing is featured at Pascagoula charter websites[7] and the community ranks third with regard to value of red snapper landings out of total commercial landings. Pascagoula is regarded as primarily involved in fishing according to its community profile (Impact Assessment, Inc. 2006).

Venice and Grand Isle, Louisiana, are also ranked among the top recreational fishing communities. A sampling of charter service websites from these communities indicates they do feature red snapper as a target species but not as prominently as charter services from other states.

Red snapper are also an important species for charter fishing in Galveston and Freeport, Texas. Many of the charter services include photos of red snapper catches on their website and note that this species is one of their prime target species.[8] Although many inshore species like trout and redfish are more prominently displayed. Matagorda and Freeport are noted as being primarily involved in fishing while Galveston is secondarily involved.

Charter boats and Headboats by Community

Charter vessels and headboats target red snapper throughout the Gulf. At this time it is not possible to determine which species are targeted by specific charter vessels and associate those vessels with their communities of origin (other than to glean information from various charter websites as was done for the descriptions above for specific communities). However, harvest data are available for headboats by species and can be linked to specific communities through the homeport identified for each vessel. These data are available for headboats registered in the Southeast Headboat Survey (HBS; see Section 3.3.2.2 for a discussion of the survey).

In 2013, 68 federal for-hire vessels in the Gulf were registered in the HBS (K. Brennen, NMFS SEFSC, pers. comm.). Forty-four of these vessels landed red snapper in 2013 (HBS, SERO LAPPs/DM database). The majority of vessels with red snapper landings are registered in Florida and Texas; however a small number of vessels are registered in Louisiana (Table 3.4.1.3).

[5] http://www.cityoforangebeach.com/pages_2007/pdfs/events/2009/2009_Snapper_Tournament.pdf
[6] http://gulfinfo.com/fishing.htm
[7] http://www.jkocharters.com/1938863.html
[8] http://www.texassaltwaterfishingguide.com/ or http://www.matagordabay.com/

Table 3.4.1.3. Number of federal for-hire vessels in the Gulf registered in the HBS with landings of red snapper in 2013, by state.

State	Number of Vessels
AL	0
FL	25
LA	3
MS	0
TX	16

Source: HBS, SERO LAPPs/DM database.

Vessels with red snapper landings are based in 14 homeports (10 homeports were located in Florida, 2 in Texas, and 2 in Louisiana; Table 3.4.1.4). The top four homeports represent about 90.5% of the red snapper landings by vessels participating in the HBS (SERO LAPPs/DM database, 2013). Homeports with the greatest landings of red snapper include South Padre Island, Texas (about 30.7% of red snapper landed by HBS vessels in 2013); Port Aransas, Texas (23%); Panama City Beach, Florida (18.5%); and Destin, Florida (18.3%; HBS, SERO LAPPs/DM database). Other homeports represent a small portion of landings and include fewer than three vessels; therefore landings are not reported to maintain confidentiality.

Table 3.4.1.4. Homeports with landings of red snapper by registered HBS vessels in 2013, by ranking based on number of fish landed by community.

Community	State
South Padre Island	TX
Port Aransas	TX
Panama City Beach	FL
Destin	FL
Venice	LA
Tarpon Springs	FL
Madeira Beach	FL
Port St. Joe	FL
Gulf Breeze	FL
Golden Meadow	LA
Clearwater	FL
Fort Myers Beach	FL
Hernando Beach	FL
Naples	FL

Source: HBS, SERO LAPPs/DM database.

To present additional information about the charter boats and headboats that are engaged in recreational red snapper fishing, all vessels with a federal for-hire permit for reef fish, including historical captain permits, are included in the following analysis as a proxy. However, it cannot be assumed that every included permitted vessel is engaged in red snapper fishing.

The majority of federal for-hire permits for reef fish are held by operators in Florida (58.8% in 2013), followed by Texas (16.2%), Alabama (11.6%), Louisiana (8.9%), Mississippi (3.4%), and other states (1%; Table 3.4.1.5). The distribution of permits by state has followed a similar pattern throughout the last five years (Table 3.4.1.5). These data may deviate from the numbers included elsewhere in the document because of the date on which data were gathered. Data included in Table 3.4.1.5 are based on the number of permits throughout the year, rather than from a specific date, and include permits that were valid or renewable sometime during the year. However, if the permit was sold, then only the most current permit has been counted.

Table 3.4.1.5. Number of federal for-hire permits for Gulf reef fish including historical captain permits, by state and year.

State	2009	2010	2011	2012	2013
AL	150	147	148	155	159
FL	900	865	832	814	804
LA	111	110	123	123	122
MS	52	52	50	48	47
TX	241	237	226	221	221
Other	19	21	17	17	14
Total	1,473	1,432	1,396	1,378	1,367

Source: NMFS Southeast Regional Office permit office, SERO Access database. Includes valid and renewable permits.

Federal for-hire permits are held by those with mailing addresses in a total of 323 communities, located in 22 states (Southeast Regional Office (SERO) permit office, February 13, 2014). The communities with the most federal for-hire permits are provided in Table 3.4.1.6. Figure 3.4.1.1 shows the spatial distribution of for-hire permits around the Gulf. A pattern of abundance for for-hire permits is evident, with large clusters of for-hire permitted vessels in Florida communities along the Panhandle, in the greater Tampa Bay area, in the Naples-Fort Meyers-Marco Island area, and in the Florida Keys; in Alabama (Orange Beach, Mobile, and Gulf Shores); in Texas (Port Aransas, Galveston, Freeport, Corpus Christi, and Houston); and in Mississippi (Biloxi, Ocean Springs, and Gulfport).

Table 3.4.1.6. Top ranking communities based on the number of federal for-hire permits, including historical captain permits, in descending order.

Community	State	Permits
Destin	FL	67
Orange Beach	AL	47
Key West	FL	45
Panama City	FL	43
Naples	FL	36
Pensacola	FL	30
Panama City Beach	FL	29
Sarasota	FL	19
Port Aransas	TX	19
Galveston	TX	18
Clearwater	FL	17
Marco Island	FL	17
Fort Walton Beach	FL	15
Gulf Breeze	FL	15
Biloxi	MS	15
St. Petersburg	FL	14
Chauvin	LA	14
Gulf Shores	AL	12
Marathon	FL	12
Port St. Joe	FL	12
Freeport	TX	12

Source: NMFS SERO permit office, February 13, 2014.

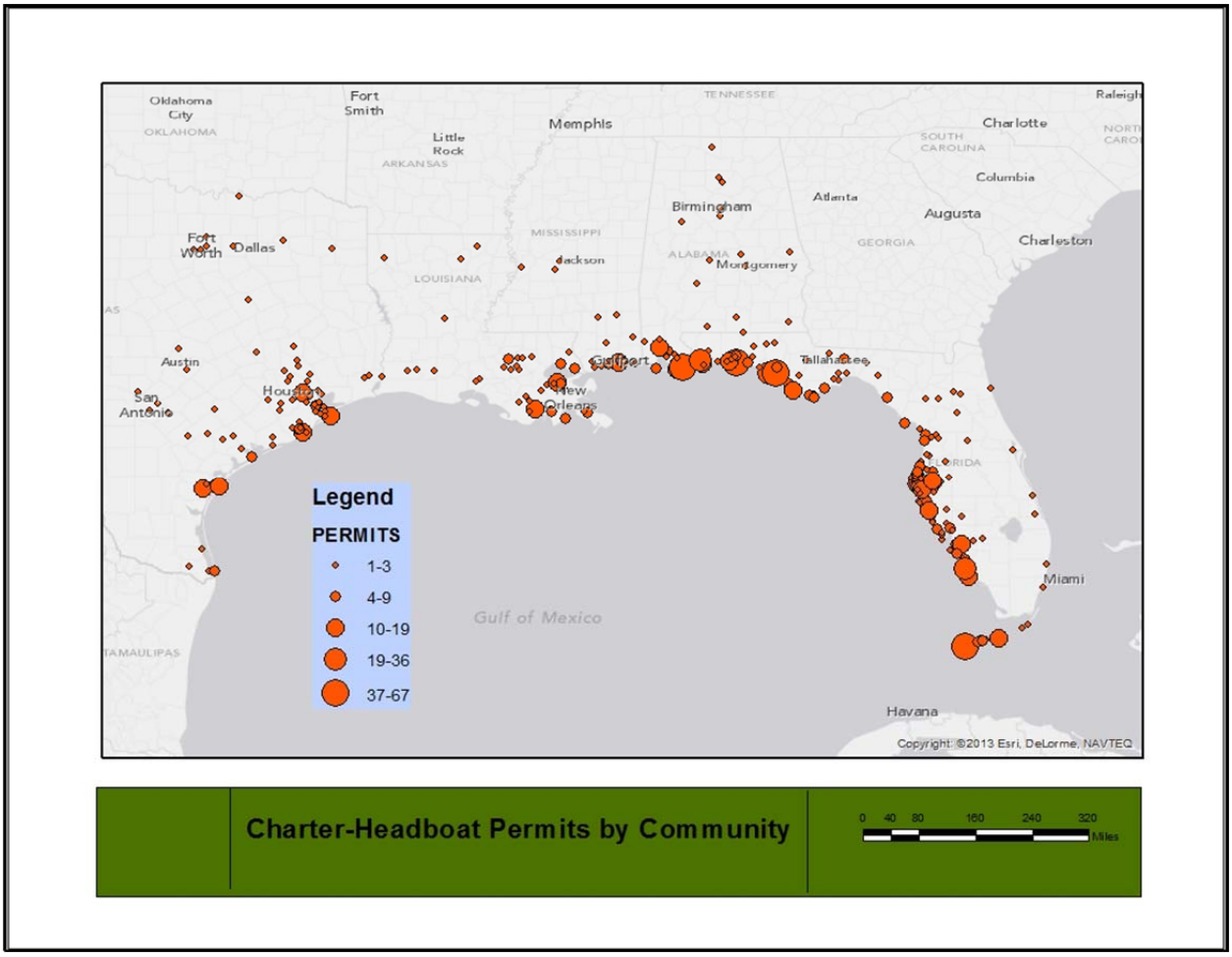

Figure 3.4.1.1. Distribution of federal for-hire permits, including historical captain permits in Gulf States, by community. Source: NMFS SERO permit office, February 13, 2014.

3.4.2 Environmental Justice Considerations

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The main focus of Executive Order 12898 is to consider "the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories…" This executive order is generally referred to as environmental justice (EJ).

To evaluate EJ considerations for the proposed actions, information on poverty and minority rates is examined at the county level. Information on the race and income status for groups at the different participation levels (vessel owners, crew, dealers, employees, etc.) is not available.

Because the proposed actions would be expected to affect fishermen and associated industries in several communities along the Gulf coast and not just those profiled, it is possible that other counties have poverty or minority rates that exceed the EJ thresholds.

Table 3.4.2.1. Environmental Justice thresholds (2010 U.S. Census data) for counties in the Gulf of Mexico region. Only coastal counties (west coast for Florida) with minority and/or poverty rates that exceed the state threshold are listed.

State	County/Parish	Minority Rate	Minority Threshold*	Poverty Rate	Poverty Threshold*
Florida		**39.5**	**47.4**	**13.2**	**15.8**
	Dixie	8.7	38.7	19.6	-3.8
	Franklin	19.2	28.2	23.8	-8.0
	Gulf	27	20.4	17.5	-1.7
	Jefferson	38.5	8.9	20.4	-4.6
	Levy	17.9	29.5	19.1	-3.3
	Taylor	26.2	21.2	22.9	-7.1
Alabama		**31.5**	**37.8**	**16.8**	**20.2**
	Mobile	39.5	-1.7	19.1	1.1
Mississippi		**41.2**	**49.4**	**21.4**	**25.7**
Louisiana		**38.2**	**45.8**	**18.4**	**22.1**
	Orleans	70.8	-25.0	23.4	-1.3
Texas		**52.3**	**62.7**	**16.8**	**20.1**
	Cameron	87.4	-24.7	35.7	-15.6
	Harris	63.5	-0.8	16.7	3.4
	Kenedy	71.7	-9.0	52.4	-32.3
	Kleberg	75	-12.3	26.1	-6.0
	Matagorda	51.9	10.8	21.9	-1.8
	Nueces	65.5	-2.8	19.7	0.4
	Willacy	89	-26.3	46.9	-26.8

*The county minority and poverty thresholds are calculated by comparing the county minority rate and poverty estimate to 1.2 times the state minority and poverty rates. A negative value for a county indicates that the threshold has been exceeded. No counties in Mississippi exceed the state minority or poverty thresholds.

In order to identify the potential for EJ concern, the rates of minority populations (non-white, including Hispanic) and the percentage of the population that was below the poverty line were examined. Because this proposed action could be expected to affect fishermen and associated businesses in numerous communities along the Gulf coast, census data (available at the county level, only) have been assessed to examine whether any coastal counties have poverty or minority rates that exceed the EJ thresholds. The threshold for comparison that was used was 1.2

times the state average for minority population rate and percentage of the population below the poverty line. If the value for the county was greater than or equal to 1.2 times the state average, then the county was considered an area of potential EJ concern (EPA 1999). Census data for the year 2010 was used. Estimates of the state minority and poverty rates, associated thresholds, and county rates are provided in Table 3.4.2.1; note that only counties that exceed the minority threshold and/or the poverty threshold are included in the table**.**

While some counties and communities expected to be affected by this proposed amendment may have minority or economic profiles that exceed the EJ thresholds and, therefore, may constitute areas of concern, significant EJ issues are not expected to arise as a result of this proposed amendment. No adverse human health or environmental effects are expected to accrue to this proposed amendment, nor are these measures expected to result in increased risk of exposure of affected individuals to adverse health hazards. The proposed management measures would apply to all participants in the affected area, regardless of minority status or income level, and information is not available to suggest that minorities or lower income persons are, on average, more dependent on the affected species than non-minority or higher income persons.

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

3.5 Description of the Economic Environment

3.5.1 Commercial Sector

A description of the commercial sector of the red snapper component of the Gulf reef fish fishery is contained in GMFMC (2013b) and is incorporated herein by reference. Because this action would only change management of the recreational sector, updates of the information on the commercial sector are not provided.

3.5.2 Recreational Sector

3.5.2.1 Angler Effort

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

1. Target effort – The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted

as either the first or second primary target for the trip. The species did not have to be caught.

2. Catch effort – The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
3. Total recreational trips – The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

Other measures of effort are possible, such as the number of catch trips (the number of individual angler trips that catch a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures. Estimates of the number of red snapper target trips for the shore, charter, and private/rental boat modes in the Gulf for 2011-2013 are provided in Table 3.5.2.1.1. Estimates of red snapper target effort for additional years, and other measures of directed effort, are available at http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Table 3.5.2.1.1. Red snapper recreational target trips, by mode, 2011-2013*.

	Alabama	West Florida	Louisiana	Mississippi	Total
	Shore Mode				
2011	808	0	0	0	808
2012	1,639	0	0	0	1,639
2013	434	0	0	0	434
Average	960	0	0	0	960
	Charter Mode				
2011	19,011	29,642	1,424	0	50,077
2012	16,610	24,653	7,203	74	48,540
2013	21,965	32,864	7,240	38	62,107
Average	19,195	29,053	5,289	37	53,575
	Private/Rental Mode				
2011	116,886	113,021	19,900	16,790	266,597
2012	72,031	136,595	43,547	13,515	265,688
2013	224,078	457,519	24,496	21,434	727,527
Average	137,665	235,712	29,314	17,246	419,937
	All Modes				
2011	136,705	142,663	21,324	16,790	317,482
2012	90,280	161,248	50,750	13,589	315,867
2013	246,477	490,383	31,736	21,472	790,068
Average	157,821	264,765	34,603	17,284	474,472

* Texas information unavailable. 2013 estimates are preliminary.
Source: Personal communication from the NMFS, Fisheries Statistics Division April 8, 2014.
Note: these estimates may vary from those derived from other sources or estimation methodologies.

Headboat data do not support the estimation of target effort because target intent is not collected. Table 3.5.2.1.2 contains estimates of the number of headboat angler days for all Gulf States for 2011-2013. Estimates from previous years are available in GMFMC (2013a) and are incorporated herein by reference.

Table 3.5.2.1.2. Headboat angler days.

Year	West Florida/Alabama	Louisiana/Mississippi	Texas	Total
2011	157,025	3,657	47,284	207,966
2012	161,975	3,680	51,776	217,431
2013	174,800	3,406	55,749	233,955
Average	164,600	3,581	51,603	219,784

Source: HBS.

3.5.2.2 Permits

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

A federal for-hire vessel permit has been required for reef fish since 1996 and the fleet currently operates under a limited access system. On May 29, 2014, there were 1,336 valid (non-expired) or renewable Gulf Charter/Headboat Reef Fish permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the for-hire permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the HBS. Participation in the HBS is based on determination by the Southeast Fishery Science Center (SEFSC) that the vessel primarily operates as a headboat. Sixty-seven vessels were registered in the HBS as of April 8, 2014 (K. Brennen, NMFS SEFSC, pers. comm.).

Information on Gulf charter boat and headboat operating characteristics is included in Savolainen et al. (2012) and is incorporated herein by reference.

There are no specific federal permitting requirements for recreational anglers to fish for or harvest reef fish. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed action. (Note: although it is not a federal permit, Louisiana has developed an

offshore angler permit. Tabulation of these permits would be expected to provide an estimate of only a small portion of the total number of individual anglers expected to be affected by this proposed action.)

3.5.2.3 Economic Value

Economic value can be measured in the form of consumer surplus per red snapper trip for anglers (the amount of money that an angler would be willing to pay for a fishing trip in excess of the cost of the trip) and producer surplus per passenger trip for for-hire vessels (the amount of money that a vessel owner earns in excess of the cost of providing the trip). The estimated value of the consumer surplus per red snapper angler trip for a trip on which the angler is allowed to harvest two red snapper is $58.43 (GMFMC 2010; value updated to 2013 dollars). Estimates of the consumer surplus per fish, instead of per angler trip, for red snapper and other saltwater species are provided in Carter and Liese (2012).

Estimates of the producer surplus per for-hire passenger trip are not available. Instead, net operating revenues, which are the return used to pay all labor wages, returns to capital, and owner profits, are used as the proxy for producer surplus. The estimated net operating revenue (2013 dollars) is $160.13 per target charter angler trip and $53.01 per target headboat angler trip regardless of species targeted or catch success (C. Liese, NMFS SEFSC, pers. comm.). Estimates of net operating revenue per red snapper trip are not available.

3.5.2.4 Business Activity

The desire for recreational fishing generates economic activity as consumers spend their income on various goods and services needed for recreational fishing. This spurs economic activity in the region where recreational fishing occurs. It should be clearly noted that, in the absence of the opportunity to fish, the income would presumably be spent on other goods and services and these expenditures would similarly generate economic activity in the region where the expenditure occurs. As such, the analysis below represents a distributional analysis only.

Estimates of the business activity (economic impacts) associated with recreational angling for red snapper were derived using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the MRFSS to collect economic expenditure information, as described and utilized in NMFS (2011b). Estimates of the average expenditures by recreational anglers are also provided in NMFS (2011b) and are incorporated herein by reference.

Recreational fishing generates business activity (economic impacts). Business activity for the recreational sector is characterized in the form of full-time equivalent jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Estimates of the average red snapper target effort (2011-2013) and associated business activity (2013 dollars) are provided in Table 3.5.2.4.1. As discussed above, other measures of red snapper effort can be estimated, such as, for example, catch effort or directed effort. Estimates of business activity by effort “type” are not available. As a result, estimation of the business activity associated with a different measure of red snapper activity

would utilize the same coefficients (e.g., output impact per trip) used to generate the estimates provided in Table 3.5.2.4.1. These coefficients are not provided here; however, they are easily generated from the information in Table 3.5.2.4.1 by dividing the measure of impact in the table by the respective number of target trips. For example, the output impact coefficient for the shore mode in Alabama is approximately $79 ($75,991/960 = $79.16). If another measure (number of trips) of red snapper effort for the Alabama shore mode, for example, direct effort, were available, the business activity associated with this measure would be calculated by multiplying that estimate of the number of red snapper trips by $79.16.

The estimates provided in Table 3.5.1 only apply at the state-level. These numbers should not be added across the region. Addition of the state-level estimates to produce a regional (or national total) could either under- or over-estimate the actual amount of total business activity because of the complex relationship between different jurisdictions and the expenditure/impact multipliers. Neither regional nor national estimates are available at this time.

Estimates of the business activity associated with headboat effort are not available. Headboat vessels are not covered in the MRFSS/MRIP so, in addition to the absence of estimates of target effort, estimation of the appropriate business activity coefficients for headboat effort has not been conducted.

Table 3.5.2.4.1. Summary of red snapper target trips (2011-2013 average) and associated business activity (thousand 2013 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas
	Shore Mode				
Target Trips	960	0	0	0	*
Output Impact	$75,991	$0	$0	$0	*
Value Added Impact	$40,879	$0	$0	$0	*
Jobs	1	0	0	0	*
	Private/Rental Mode				
Target Trips	137,665	235,712	29,314	17,246	*
Output Impact	$8,666,295	$11,579,138	$2,586,528	$532,155	*
Value Added Impact	$4,744,600	$6,885,390	$1,272,145	$255,047	*
Jobs	84	107	22	4	*
	Charter Mode				
Target Trips	19,195	29,053	5,289	37	*
Output Impact	$10,813,363	$9,870,872	$2,724,291	$12,439	*
Value Added Impact	$5,952,394	$5,852,411	$1,546,848	$7,009	*
Jobs	134	94	26	0	*
	All Modes				
Target Trips	157,820	264,765	34,603	17,283	*
Output Impact	$19,555,648	$21,450,010	$5,310,819	$544,594	*
Value Added Impact	$10,737,872	$12,737,801	$2,818,992	$262,056	*
Jobs	219	201	49	4	*

*Because target information is unavailable, associated business activity cannot be calculated.
Source: effort data from the MRFSS/MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011).

3.6 Description of the Administrative Environment

3.6.1 Federal Fishery Management

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

Responsibility for federal fishery management is shared by 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 Appendix A. In most cases, the Secretary has delegated this authority to NMFS.

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

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

Regulations contained within FMPs are enforced through actions of the National Oceanic and Atmospheric Administration's Office of Law Enforcement, the United States Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee, which have developed joint enforcement agreements and cooperative enforcement programs (www.gsmfc.org).

The red snapper stock in the Gulf is classified as overfished, but no longer undergoing overfishing. A rebuilding plan for red snapper was first implemented under Amendment 1 (GMFMC 1989), and has undergone several revisions. The current rebuilding plan was established in Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007), and calls for rebuilding the stock to a level capable of supporting maximum sustainable yield on a continuing basis by 2032. Periodic adjustments to the ACL and other management measures needed to affect rebuilding are implemented through regulatory amendments.

3.6.2 State Fishery Management

The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf States exercises legislative and regulatory authority over their respective state's 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 2004b).

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1 – Establishment of Private Angling and Federal For-hire Components

Action 1 would consider the establishment of a federal for-hire and private angling components within the recreational sector. Alternatives include no action (Alternative 1), establishement of the components where all for-hire vessels would be added to the federal for-hire component (Preferred Alternative 2), and establishment of the components where federal for-hire operatators may opt into the federal for-hire component (Alternatives 3 and 4). Alternatives 3 and 4 differ in that the endorsement used to identify which for-hire vessels are in the for-hire component are fully transferable under Alternative 3 and not transferable under Alternative 4. Alternatives 3 and 4 also have options for the frequency that vessel operators may choose to opt in or out of the for-hire component of just once (option a), every year (option b), every 3 years (option c), and every 5 years (option d).

4.1.1 Direct and Indirect Effects on the Physical Environment

Sections 3.2, 3.3, and GMFMC (2004a, 2004c, and 2007) describe the physical environment and habitat used by red snapper. In summary, adult red snapper targeted by the reef fish fishery are found around hard bottom habitat. In terms of red snapper fishing, most commercial red snapper fishermen use handlines (mostly bandit rigs and electric reels, occasionally rod-and-reel) with a small percentage (generally <5% annually) caught with bottom longlines (see Section 3.1). Recreational red snapper fishing almost exclusively uses vertical-line gear, most frequently rod-and-reel (See Section 3.1). The following describes the effects of handline fishing gear on the physical environment. Because the actions of this amendment apply only to the recreational sector and longlines are used exclusively by the commercial sector, the effects of longline gear will not be discussed here. A summary of effects from longline gear on the physical environment can be found in GMFMC (2011b).

Handline gear (rod-and-reel) used in recreational fishing for reef fish is generally suspended over hard bottom because many managed reef fish species occur higher over this type of substrate than over sand or mud bottoms (GMFMC 2004a). Recreational fishing with rod-and-reel lays gear on the bottom. The terminal part of the gear is either lifted off the bottom or left contacting the bottom. Sometimes the fishing line can become entangled on coral and hard bottom outcroppings. The subsequent algal growth can foul and eventually kill the underlying coral (Barnette 2001). Researchers conducting studies in the restricted fishing area at Madison-Swanson reported seeing lost fishing line on the bottom, much of which appeared to be older and covered with invertebrate growth (A. David, Southeast Fisheries Science Center, pers. comm.), a clear indication that bottom fishing has had an impact on the physical environment prior to fishing being prohibited in the area (GMFMC 2003).

Anchor damage is also associated with handline fishing vessels, particularly by the recreational sector where fishermen may repeatedly visit well marked fishing locations. Bohnsack (2000) points out that “favorite” fishing areas such as reefs are targeted and revisited multiple times,

particularly with the advent of global positioning technology. The cumulative effects of repeated anchoring could damage the hard bottom areas where fishing for red snapper occurs.

Effects from fishing on the physical environment are generally tied to fishing effort. The greater the fishing effort, the more gear interacts with the bottom. This action alone should have no direct or indirect effect on the physical environment regardless of the alternative because it would only establish at most two different components to the recreational sector. Whether the recreational sector is maintained as one component (**Alternative 1**, no action) or divided into two components (**Preferred Alternative 2** and **Alternatives 3-4**), the recreational quota would not change and so fishing effort is likely to remain the same.

4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment

Direct and indirect effects from fishery management actions have been discussed in detail in Reef Fish Amendment 22 and Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2004b and 2007) and in several red snapper framework actions (GMFMC 2010, 2012a, 2013a) and are incorporated here by reference. Potential impacts of the 2010 Deepwater Horizon MC252 oil spill on the biological/ecological environment are discussed in Section 3.3 and the January 2011 Framework Action (GMFMC 2011c) and are also incorporated here by reference. These impacts may include recruitment failure and reduced fish health. Management actions that affect this environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from the population through fishing reduces the overall population size. Fishing gears have different selectivity patterns which refer to a fishing method's ability to target and capture organisms by size and species. This would include the number of discards, mostly sublegal fish or fish caught during seasonal closures, and the mortality associated with releasing these fish.

Fishing can affect life history characteristics of reef fish such as growth and maturation rates. For example, Fischer et al. (2004) and Nieland et al. (2007) found that the average size-at-age of red snapper had declined and associated this trend with fishing pressure. Woods (2003) found that the size at maturity for Gulf red snapper had also declined and speculated this change may also have been due to increases in fishing effort. The reef fish fishery can also affect species outside the reef fish complex. Specifically, sea turtles have been observed to be directly affected by the longline component of the Gulf reef fish fishery. These effects occur when sea turtles interact with fishing gear and result in an incidental capture injury or mortality and are summarized in GMFMC (2009). However, for sea turtles and other listed species, the most recent biological/ecological opinion for the Reef Fish Fishery Management Plan concluded authorization of the Gulf reef fish fishery managed in the reef fish plan is not likely to jeopardize the continued existence of sea turtles, smalltooth sawfish, or *Acropora* species (NMFS 2011a). In addition, the primary gear used by the recreational sector (hook-and-line) was classified in the 2014 List of Fisheries (79 FR 14418, April 14, 2014) as a Category III fishery with regard to marine mammal species, indicating this gear has little effect on these populations (see Section 3.3 for more information).

The most likely indirect effect on the red snapper stock from this action would be on discard mortality. Regulatory discards are fish that are caught, but not kept because they are too small,

would put a fisherman over the bag limit, or are caught out of season. A certain percentage of these fish die and are called dead discards. The most recent red snapper stock assessment (SEDAR 31 2013) estimated dead discard rates for the recreational sector at 10%. However, the number of discards relative to the landed fish may differ between components. For example, the relative number of landed fish between the charter boat and private angling components over the time period 1981-2011 was 45% to 55%, respectively (Data Workshop Report Figure 4.11.1 in SEDAR 31 2013). But the relative number of discards over the same time period was much lower for the charter boat component than the private angling component at 31% to 69%, respectively (Data Workshop Report Figure 4.11.4 in SEDAR 31 2013). Thus, the relative number of discarded fish compared to landed fish is less for charter boat fishing than for private angling. It should be noted that similar numbers of fish were not available for headboat trips and so a similar comparison could not be made for this portion of the component.

Alternative 1, no action, would not split the recreational sector into two components, so no change in effects on the biological/ecological environment is expected. Given the discussion above, it is difficult to know whether the effects from **Preferred Alternative 2** and **Alternatives 3-4** are adverse or beneficial. The direction of the effects would be dependent on what the allocation is between the two components set in Action 2. If the allocation does not change from current levels, then there will be no change in effects. However, if the allocation allows an increase in the number of fish harvested by for-hire vessels, this may cause a decrease in the number of red snapper discards (and dead discards) providing a benefit to the stock. If the allocation goes in the other direction, then this could adversely affect the stock.

4.1.3 Direct and Indirect Effects on the Social Environment

Although a shared set of federal management measures regulates the recreational harvest of red snapper Gulf-wide, participants' opportunities to harvest red snapper depend on the red snapper regulations of a participant's state, the amount of fishing allowed to take place in other Gulf States with less restrictive regulations than federal regulations, and the type of vessel used to access the fishery. Recreational vessels with a federal for-hire permit must abide by federal regulations if more strict than state regulations; recreational vessels without a federal permit (including private vessels with state-licensed anglers, and state-licensed for-hire vessels) are able to participate in any additional fishing opportunities provided by their state in their state's waters, such as if the state season is open longer than the federal season. Only anglers fishing from private recreational vessels are able to participate in fishing opportunities in both federal waters under federal regulations, and in state waters, if expanded opportunities are provided by that state.

Due to the open entry system in which an unrestricted number of private vessels may enter the fishery, the percentage of the recreational red snapper quota landed by federal for-hire permits has decreased, reducing the fishing opportunities of anglers who do not have access to private vessels. The limited number of federal for-hire permits, and thus the access to red snapper fishing they provide, has declined (Figures 1.1.1 and 1.1.2). Under **Alternative 1**, differential access to fishing opportunities between the private angling and federal for-hire components and the resulting decline in access and representation by the federal for-hire fleet would continue. This is an issue of subtractability, where additional fishing by anglers in states with less

restrictive regulations than federal regulations reduces the amount of fish available to be harvested by each angler in the sector as a whole. This is primarily a problem for the red snapper recreational season which must be closed when the recreational quota is reached (Section 407(d) of the Magnuson-Stevens Fisheries Conservation and Management Act [Magnuson-Stevens Act]). Under **Alternative 1**, anglers fishing from private vessels in states that provide additional fishing opportunities beyond the federal regulations enjoy the greatest amount of fishing opportunities, compared to all other Gulf recreational anglers (Table 4.1.3.1). Nevertheless, red snapper are not uniformly distributed in all depths and habitats, and these opportunities depend on the presence of red snapper in state waters. For example, red snapper may be frequently encountered within Florida's nine nautical miles of state waters off the Panhandle, but anglers fishing off the central west coast of Florida and in Alabama's three nautical miles of state waters are not likely to encounter harvestable red snapper.

Table 4.1.3.1. Comparison of fishing opportunities (Alternative 1) allowed among recreational vessels in state and federal waters, in states with consistent and inconsistent regulations for red snapper.

Allowed to fish in:	**All States during federal season**		**States with additional fishing opportunities**	
Fishing from:	**State waters**	**EEZ**	**State waters**	**EEZ**
Private vessels	Yes	Yes	Yes	No
State-permitted for-hire vessels	Yes	No	Yes	No
Federally permitted for-hire vessels	Yes	Yes	No	No

Preferred Alternative 2 and **Alternatives 3-4** would establish two distinct components within the recreational sector for the purpose of partitioning access to the recreational red snapper quota. The social effects of establishing a federal for-hire and private angling component would be expected to correspond with recreational participants' sentiments about the action taken. There are both avid supporters and objectors to establishing separate components; it is assumed that supporters expect positive effects and opponents expect to be affected negatively. The actual effects resulting from establishing separate components are unknown, but would be indirect and result from how stakeholders or state marine resource departments respond to a federal decision to create separate components of federally permitted and non-federally permitted vessels, and from any subsequent management measures developed and applied to each component. Social benefits would be expected for the federal for-hire component if the separation of the sectors allows the for-hire fleet to stem the trend of decreasing access to red snapper. For-hire vessels and the communities where these vessels are homeported would be expected to benefit as a result of increased stability of access to red snapper. However, these benefits could be decreased should the amount of red snapper harvested in state waters outside the federal season increase, and result in the entire red snapper quota being caught in state waters.

Preferred Alternative 2 would require all federal for-hire operators to participate in an established federal for-hire component, while **Alternatives 3** and **4** would allow federal for-hire

operators to decide whether to participate in the federal for-hire component or to remain within the private angling component. By requiring participation, **Preferred Alternative 2** provides less flexibility to federal for-hire operators than **Alternatives 3** and **4**. For federal for-hire operators who oppose establishing separate components, and those who will remain undecided until the specifics of how fishing opportunities will be distributed is determined, **Alternatives 3** and **4** allow these participants to decide in which component they prefer to operate. For the individual for-hire operator, positive effects would be expected by allowing them to decide which component is best for their business. However, establishing a voluntary federal for-hire component, thereby allowing those operators who do not wish to participate to be managed under the private angling component (**Alternatives 3** and **4**), would be expected to diminish the potential benefits of establishing separate components, particularly for the federal for-hire component.
The options under **Alternatives 3** and **4** would be expected to reflect this tradeoff in benefits between flexibility for individual operators, and the functioning of the component as a whole. The greater the frequency federal for-hire operators have to switch between components could possibly provide increased benefits to the operator that may correspond with unintended consequences for the rest of the component, through some amount of instability of membership. Thus, for the federal for-hire component as a whole, **Options a** would be expected to be most beneficial for the federal for-hire component, followed by **Options d** and **Options c**. Considering the potential desire for flexibility of individual operators, these options would be ordered in reverse. Allowing federal for-hire operators to switch between components every year (**Options b**) would not be expected to be beneficial for individual federal for-hire operators or the component as a group, and would instead be expected to correspond with confusion among operators and their angler passengers.

Alternative 3 would provide an additional measure of flexibility compared to **Alternative 4**, by allowing the endorsement denoting participation in the federal for-hire component to be fully transferable to another federal for-hire operator who is not participating in the federal for-hire component. Positive effects may be expected for the individual federal for-hire operators engaged in the transfer, but the indirect effects that would accrue to the component as a whole remain unknown. Depending on the method selected to distribute fishing opportunities among vessels (Action 2), it is likely that indirect unintended consequences would result. For example, fishing opportunities may be initially distributed based on vessel capacity, but there is no prohibition on the operator transferring the endorsement to a vessel of different capacity.

4.1.4 Direct and Indirect Effects on the Economic Environment

Alternative 1 would continue to treat the recreational sector as a single entity for the management of red snapper. The Council would continue to apply the same set of red snapper management measures, e.g., bag and size limits and seasons to private recreational anglers, for-hire recreational anglers, and for-hire operators. Federal angler licensing requirements also would continue to be the same for both private and for-hire anglers. **Alternative 1** would not affect the current recreational harvest or other customary uses of recreational red snapper. Therefore, **Alternative 1** would not be expected to result in any direct economic effects on recreational fishermen, for-hire operations, or associated shore-side businesses. However, maintaining the current management structure of the recreational sector may impede the

implementation of management measures that would result in additional economic benefits to the federal for-hire and/or private angling components. Tailoring management measures to the specific needs of the separate harvesting components would be expected to result in improved use of the resource, better timing of effort and other resources associated with harvest activities, and associated increases in economic benefits. Although it may be possible to establish different regulations for private and for-hire anglers for some management tools, the current treatment of these entities as a single management unit, which would continue under **Alternative 1,** may impede the ability or speed at which such can be accomplished. Different regulations for these two groups of anglers may be capable of achieving improved management of the red snapper resource and increased economic benefits. If the current management approach of treating the two groups of anglers as a single unit impedes the ability to establish different management, then **Alternative 1** would be expected to result in adverse indirect economic effects due to forgone opportunities to improve the management of red snapper in the recreational sector. These potential indirect economic effects cannot be quantified at this time because they would be determined by the nature and efficacy of any subsequent management measures implemented by the Council following the establishment of separate components within the recreational sector.

Preferred Alternative 2 would depart from the current structure of the recreational sector and establish distinct federal for-hire and private angling components for recreational red snapper management. The federal for-hire component would include all for-hire operators with a valid or renewable federal charter/headboat reef fish permit (for-hire permit) and their angler clients who fish from private vessels. On May 29, 2014, there were 1,336 valid or renewable federal reef fish for-hire permits. The private angling component would include private recreational anglers and state-permitted for-hire operators and their angling clients. The private angling component includes participants in the recreational red snapper fishery that do not possess a federal permit. In and of itself, sector separation, or the establishment of distinct components within the recreational sector, would only be a prerequisite to the future design and implementation of management measures that could be tailored to account for the specific needs of each component, thereby possibly generating additional economic benefits. A quantitative evaluation of potential economic benefits that could result from recreational sector separation would require detailed information on the allocation of the recreational red snapper quota between the two components and on the management measures to be implemented once the new components are created. Although the expected economic effects of the alternative allocations considered in this amendment are discussed in Section 4.2.4., management measures that will be implemented post sector separation have yet to be determined. In the absence of such information, a qualitative discussion of potential economic effects is offered in this section.

In recent years, the percentage of the red snapper recreational quota harvested by the federal for-hire component has steadily decreased, while the percentage landed by the private angling component has increased. Between 1986 and 2013, the percentage of the red snapper recreational quota harvested by the federal for-hire component decreased from 66.2% to 16.1% (Table 2.2.). A primary consequence of the establishment of distinct components with separate red snapper allocations for each component would be to stop this decrease. The separation of the recreational sector into two components would allow the federal for-hire component to harvest a predetermined and non-decreasing portion of the recreational red snapper quota. As a result, although the season from year to year may continue to vary (as affected by changing rates of

effort and harvest success within the for-hire component), it would not be as greatly influenced by harvest activity by the private component. This could potentially result in more predictable season length, better business planning, and improvements to the economic performance of for-hire businesses. Conversely, the establishment of separate components and allocations to each component would limit the private angling component to harvesting the proportion of the recreational red snapper quota allocated to them. In addition to the establishment of separate components, additional management measures would need to be considered by the Council to further mitigate the uncontrolled growth (due to the open access management of private anglers) of the amount of red snapper harvested by the private angling component. In and of itself, the separation of the recreational sector into two distinct components would not shield either component from the Magnuson-Stevens Act provisions in section 407-d which requires that recreational fishing for red snapper be halted once the recreational red snapper quota is met. The economic evaluation of recreational management measures, such as the establishment of separate components, would typically include estimates of the expected changes in economic value, as measured by changes in consumer surplus to recreational anglers and producer surplus to for-hire operators. Definitions and estimates of these measures are provided in Section 3.5.2.3. Estimates of consumer surplus specific to each angler type (private and for-hire) are not available. Although it can be stated that curtailing the growth of fishing effort in the private angling component may redistribute effort (fishing trips) to the federal for-hire component in subsequent years, the resulting effort levels that may develop in the two components are unknown. In addition to generating consumer surplus, fishing activity by the federal for-hire component also generates producer surplus to the for-hire vessels. Based on the assumption that consumer surplus per angler trip is constant across both components, increasing the share of the quota harvested by the federal for-hire component would result in an increase in economic value. The size of any potential increases, however, would be determined by several factors, including the demand for for-hire trips, the ability of the industry to respond to this demand and how these factors change. Further, the evaluation of sector separation for red snapper provided by Doerpinghaus et al. (2013) suggests that sector separation could result in economic benefits compared to the current structure of the recreational sector.

The establishment of separate federal for-hire and private angling components is expected to provide opportunities to design and implement within each component flexible management approaches tailored to the specificities of each component, thereby potentially resulting in increases in economic value. For each component, the magnitude of potential economic benefits that could result from this action would primarily rest on the type and quality of the management instruments implemented post sector separation. The property rights structure associated with the access to fishing privileges established to manage each component would constitute a key determinant of the magnitude of expected potential economic benefits. Following the separation of the recreational sector in components, continued management of the federal for-hire and private angling components using traditional command and control approaches, e.g., bag and size limit and season closures, would miss opportunities to substantially increase economic value in the fishery. In general, incentive-based or rights-based management approaches, i.e., management measures based on well-specified property rights, would be expected to generate greater increases in economic value. The use of rights-based instruments in recreational fisheries management is relatively limited but includes noteworthy examples such as the recent halibut

catch sharing plan for the charter for-hire (guided sport) and commercial fisheries in Alaska[9] and the halibut experimental recreational fishery in Canada[10]. These programs establish market-based transfer mechanisms between the commercial and the for-hire sector (Alaska) or all segments of the recreational sector (Canada). In the Gulf of Mexico, attempts to evaluate the use of market-based measures in the management of recreational red snapper include the ongoing Gulf Headboat Collaborative Exempted Fishing Permit and the proposed Alabama Charter Program. In addition, the Gulf Council approved a motion to initiate the development of an IFQ-type program for the for-hire industry and will appoint in June 2014 an advisory panel to assist in this effort.

Alternatives 3 and **4** would also establish red snapper federal for-hire and private angling components. However, as opposed to **Preferred Alternative 2,** which would include all federally-permitted for-hire operators in the federal for-hire component, **Alternatives 3** and **4** would only include those operators who elect to join the federal for-hire component. Therefore, the private angling component that would be established by **Alternatives 3** or **4** would include all other for-hire operators and private recreational anglers.
Alternatives 3 and **4** would provide federally-permitted for-hire operators the opportunity to join or opt out of the federal for-hire component once, at the implementation of the program (**Option a**), every year (**Option b**), every 3 years (**Option c**), or every 5 years (**Option d**). To distinguish members of the federal for-hire component from federally-permitted for-hire operators that opt out of the component, under **Alternative 3,** a fully transferable permit endorsement would be issued to the operators who elect to join the federal for-hire component. In contrast, the endorsement that would be issued under **Alternative 4** would be non-transferable.

The economic effects expected to result from **Alternatives 3** and **4** would be comparable to the effects expected from **Preferred Alternative 2** but would be may be reduced if some federal for-hire operators do not participate in the federal for-hire component. This reduction in economic benefits, if it occurs, would originate from the resultant reduction in the allocation of red snapper quota to the federal for-hire component, and the fact that management measures tailored to the specific needs of this sector as a whole would encompass fewer vessels. The larger the number of federally-permitted operators who elect to opt out, the greater the expected reduction in potential economic benefits that may occur. However, compared to **Preferred Alternative 2**, **Alternatives 3** and **4** would grant added flexibility to individual for-hire operators to determine their participation and/or switch their membership from one component to the other. This added flexibility could potentially result in increased positive economic effects because operators would be able to select and adjust as needed the component deemed to be most beneficial to their business. From this perspective, **Alternative 3** would be expected to result in potentially more economic benefits than **Alternative 4** because it would allow the endorsement to be fully transferable. However, the implementation of a voluntary federal for-hire component may adversely affect the Council's management strategies for recreational red snapper, thereby potentially resulting in negative economic effects, as well as increase the administrative costs of management. For example, under **Alternatives 3** or **4 (Options b-d)** if wide fluctuations in the membership of each component are observed (due to a sizeable number of for-hire operators

[9] Final rule published in the Federal Register 78 FR 75844, December 12, 2013.
[10] http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/ground-fond/halibut-fletan/docs/2014/presentation-eng.html

switching their membership), variations in the portions of the recreation quota allotted to each component would increase the challenges to estimating season length, and render the implementation of management measures, such as the distribution of fish tags or other methods of access to fishing privileges, that the Council may consider. The greater the flexibility to opt in or out, or transfer the endorsement, the greater the potential adverse economic effects associated with these management and administrative complications. As such, the management and administrative challenges, and associated adverse economic effects, stemming from potential membership fluctuations would be heightened under **Alternative 3,** compared to **Alternative 4** and **Preferred Alternative 2**, because of the fully transferable endorsement it would grant to members of the federal for-hire component. A transferable endorsement, would for example allow endorsements to be moved during a given fishing season from operators who typically do not harvest much red snapper to operators who do, rendering estimated season and harvest targets unreliable.

With respect to the options considered under **Alternatives 3** and **4**, the more flexible the participation decision option, the better it may be for the vessel. Thus, the ranking (best to worst) of the options from the vessel perspective would be as ordered: **Option a-Option b-Option c-Option d**. As may be obvious from the discussion in the previous paragraph, from the management perspective, the ranking order of these options would be reversed.

Overall, aside from the uncertainty of the future management measures that may be tailored for each component, it is not possible to rank these alternatives based on quantitative or qualitative estimates of the resultant expected economic effects. Increased management flexibility, as would occur under the establishment of separate components under **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4**, should allow the development of tailored management more closely attuned to sector needs and, therefore, result in increased economic benefits compared to **Alternative 1**. Determining whether the potential adverse economic effects accruing to more complicated management and administration that would be associated with the increased participant flexibility enabled by **Alternatives 3** and **4** negate the potential increased economic benefits accruing to participants, however, is not possible with available data and associated uncertainties.

4.1.5 Direct and Indirect Effects on the Administrative Environment

The establishment of two components to the red snapper recreational sector would have direct effects on the administrative environment through additional rulemaking. Because **Alternative 1**, the no-action alternative, would not require rulemaking, it would have no effect on the administrative environment. The act of establishing the two components under **Preferred Alternative 2** and **Alternatives 3-4** is a one-time event, and thus these alternatives would have an equivalent burden to this environment though the minor direct administrative impacts associated with the rulemaking to implement the new components. **Alternatives 3** and **4** would allow owners of federally permitted for-hire vessels to opt into the federal for-hire component. This would require an additional administrative burden above what would be required by **Preferred Alternative 2** to develop and issue an endorsement to track who has decided to operate within the federal for-hire component or within the private recreational angler component. **Alternatives 3** and **4** also have four options for the frequency owners of federally permitted for-hire vessels can decide to opt out of the federal for-hire component. **Option a**

would have the least administrative burden because the option would only present itself at the beginning of the program. **Options b-d** allow owners to opt out at different time frames. **Option b** would have the greatest burden as owners would be able to make this determination annually, while **Option d** would have the least burden of these three options because owners would only be able to make this decision every five years. **Option c**, every three years, would have effects intermediate to **Options b** and **d**. Finally, **Alternative 3** adds an extra level of administrative complexity (added burden) by allowing the federal for-hire component endorsements to be fully transferable.

Although **Preferred Alternative 2** and **Alternatives 3 and 4** would increase the administrative burden, the effects are likely not too onerous. The National Marine Fisheries Service (NMFS) currently has a system in place to issue, transfer, and monitor permits and endorsements in the Constituency Service Branch at the Southeast Regional Office. Therefore, any additional administrative burden would be in adding these new requirements to the existing NMFS program and not requiring the development of a new program.

Indirect effects of creating the new components under **Preferred Alternative 2** and **Alternatives 3-4** compared to **Alternative 1** would require monitoring of the recreational harvest by the two components, enforcement of the harvesting rules, and setting management measures to minimize the risk of harvests by the components of exceeding the recreational quota. However, regardless of which alternative is selected, these activities need to continue. Therefore, the indirect effects from each alternative would likely be similar.

4.2 Action 2 – Allocation of the Recreational Red Snapper Quota between the Components of the Recreational Sector

Action 2 considers the allocation between the federal for-hire and private angling components. No action (Alternative 1) would not set an allocation. Eight other allocation alternatives are considered that base the allocation of the quota and ACT on different time series. Allocations range from 54.3% and 45.7% for federal for-hire and private angling components, respectively (Alternative 9), to 29.1% and 70.9%, respectively (Alternative 8). The preferred alternative is Alternative 7 which would allocate the recreational red snapper quota and ACT based on average landings between 1996 and 2013 (2010 excluded). The resulting federal for-hire and private angling allocations would be 45.9% and 54.1%, respectively.

4.2.1 Direct and Indirect Effects on the Physical Environment

Section 4.1.1 describes the effects from fishing on the physical environment and are not repeated here. This action, setting an allocation between the two recreational components (federal for-hire and private angling), would have no direct effect on the physical environment. This action could indirectly affect the physical environment if setting the allocation results in an increase or decrease in the amount of fishing gear used to harvest red snapper. **Alternative 1**, no action, would not change the current fishing conditions. Thus no change in fishing effort is expected to occur in the short term because no new fishing regulations would be implemented; therefore, habitat-gear interactions would remain unchanged. However, should no action be taken, then the

trend of an increasing private angling share of the harvest may continue in the long term. The private angling component seems to be less efficient in harvesting red snapper based on bag limit analyses reported in SERO (2012). The analysis indicated that charter vessels tend to catch slightly more red snapper on average than private vessels or headboats. Therefore, any increase in the private angler allocation would be expected to require more effort to catch fish compared to the for-hire sector. In addition, this increase in effort would occur in state waters unless state and federal regulations become more compatible (Table 2.3) Thus **Alternatives 1 and 8** (70.9% private angler and based on current conditions), particulary for state waters, likely would have the greatest adverse effects, followed by **Alternative 6** (62.2%), **Alternative 5** (58.1%), **Preferred Alternative 7** (56.0%), **Alternative 4** (54.1%), **Alternative 3** (51.8%), **Alternative 2** (49.9%), and **Alternative 9** (45.7%).

4.2.2 Direct and Indirect Effects on the Biological/Ecological Environment

Section 4.1.2 describes the effects from fishing on the biological/ecological environment and are not repeated here. This action, setting an allocation between the two recreational components (federal for-hire and private angling), would have no direct effect and few indirect effects on the biological/ecological environment. This action could indirectly change the number of discards from the recreational sector. As mentioned in Section 4.1.2, discards relative to landings are greater in the private angling component compared to the charterboat component. Therefore, the greater the allocation favors the private angling component, the greater number of fish are likely to be dead discards. These fish would be added to the number of fish killed by the recreational sector (landings and dead discards) and have an adverse effect on the stock, although this effect might be mitigated if most private angler effort occurs in state waters which are shallower and fish would be less susceptible to the effects of decompression. **Alternative 1**, no action, would not change the current fishing conditions. Thus no change in fishing effort is expected to occur over the short term because no new fishing regulations would be implemented; therefore, the number of dead discards would remain unchanged. However, should no action be taken, then the trend of an increasing private angling share of the harvest may continue in the long term and could create additional dead discards. Thus, **Alternatives 1 and 8** (based on current conditions) have the greatest percentage of fish allocated to the private angling component (70.9%) and, therefore, likely would have the greatest adverse effect. This would be followed by **Alternative 6** (62.2%), **Alternative 5** (58.1%), **Preferred Alternative 7** (56.0%), **Alternative 4** (54.1%), **Alternative 3** (51.8%), **Alternative 2** (49.9%), and **Alternative 9** (45.7%).

4.2.3 Direct and Indirect Effects on the Social Environment

This action concerns how much of the recreational red snapper quota would be allocated to each of the components established in Action 1. The decision to allocate a scarce resource among user groups is controversial as participants of each component contend for the greatest allocation for their component. In theory, social effects could be minimized by establishing an allocation that most closely reflects actual participation and fishing effort. Assuming that participation and fishing effort remain constant, no discernible effects would result from establishing separate quotas, as the proportion of landings represented by each group should remain the same.

Unfortunately, this assumption is not reasonable as many factors affect change in effort and participation. By example, participation by federal for-hire vessels is limited, but open access remains in place for private vessels, which also have access to additional fishing opportunities afforded by some states in state waters. The increasing average size of a recreationally caught red snapper means each person's daily bag limit weighs more on average, each year, filling the quota more quickly. Yet, landings are to be constrained to a specific quantity (5.39 mp in 2013) that is far less than the demand for this highly popular fish (9.58 mp landed in 2013). It should be expected that participation by private anglers under open entry access will continue to increase, resulting in an increasing proportion of total recreational landings, as the proportion landed from for-hire vessels is expected to continue to decline.

Although no additional effects would be expected from **Alternative 1** as the recreational red snapper quota would continue to be managed as a single quota**,** the increasing issues of differential access to fishing opportunities and declining access and representation by the federal for-hire fleet would continue. This is also an issue of subtractability, where additional fishing by anglers in states with more generous regulations than federal regulations reduces the amount of fish available to be harvested by each angler in the sector as a whole. This is primarily a problem for the shortening duration of the red snapper recreational season which must be closed when the recreational quota is reached (Section 407(d) of the Magnuson-Stevens Act). Under **Alternative 1**, anglers fishing from private vessels in states that provide additional fishing opportunities beyond the federal regulations would continue to enjoy the greatest amount of fishing opportunities, compared to all other Gulf recreational anglers (Table 4.2.3.1).

The allocations proposed in **Alternatives 2-9** are based on historical landings of different time series. The magnitude of any social effects would relate to the extent by which each component's average landings for an alternative's time series is greater or lesser than that component's current landings (represented by **Alternative 1**). The components' average landings correspond inversely with each other, such that the larger the proportion allocated to one component, the smaller the proportion that is, in turn, the allocation for the other component (Table 4.2.3.1). The magnitude of the effects would in part reflect changes in effort subsequent to the implementation of an allocation, but changes in effort are not likely attributable to this action.

Evaluating potential effects is further complicated because this action considers only the proportions of a quota, and the quota is likely to change. Effects would be expected from changes in access to fishing opportunities resulting from quota changes. Red snapper is under a rebuilding plan, and an update assessment is expected in 2015, thus, a larger quota may be possible, mitigating some potential negative effects arising from the difference realized between the allocation and any changes, such as in participation, since the allocation was established.

Table 4.2.3.1. Ranking of allocation for each of the components established in Action 1.

Alternative	Time Intervals	Federal For-hire		Private	
		%	Rank	%	Rank
2	Longest time series	50.1	**2**	49.9	**7**
3	More recent years & shorter time series ↓ ↓	48.2	**3**	51.8	**6**
4		45.9	**4**	54.1	**5**
5		41.9	**6**	58.1	**3**
6	Most recent & shortest time series	37.8	**7**	62.2	**2**
Pref. 7	Mixture of longest & more recent time series	44.0	**5**	56.0	**4**
8	Most recent 3 years	29.1	**8**	70.9	**1**
9	Prior to permit moratorium	54.3	**1**	45.7	**8**

Depending on the alternative selected, the portion of the quota that would be assigned to each component may vary widely from the landings in any given year. Also, the proportions provided in **Alternatives 2-9** demonstrate the relationship between the components in terms of the allocation: the greater the quota portion assigned to one component, which would be expected to provide greater benefits as more fish are allowed to be caught, also corresponds to less fish being apportioned to another component. This means that positive and negative effects will result relative to, and in terms of how each apportioned quota is sufficient to satisfy fishing opportunities relative to status quo fishing effort and behavior.

4.2.4 Direct and Indirect Effects on the Economic Environment

Alternative 1 would not allocate the recreational red snapper quota between the federal for-hire and the private angling components. If the Council decides to establish distinct federal for-hire and private angling components (Action 1), **Alternative 1** would not be compatible with this decision and would impede the consideration, design and implementation of management measures tailored to the specific needs of each component.

This amendment would, should the Council decide to do so, partition the recreational sector into two new components and allocate the recreational red snapper quota between the federal for-hire and private angling components. In effect, this amendment would create the components and establish an initial allocation for each component. There is no previously established baseline allocation (status quo allocation) between the federal for-hire and private angling components. The percentages of the recreational red snapper quota harvested by the federal for-hire and private angling components fluctuate annually. Average percentages of the quota harvested by the federal for-hire component have steadily declined over time (Table 2.2).

Relative to the percentage of the recreational red snapper quota harvested by the federal for-hire component in 2013, all remaining alternatives (**Alternative 1** excluded) would increase the estimated percentage allocated to the federal for-hire component and accordingly decrease the

percentage allocated to the private angling sector because percentages of the red snapper recreational quota harvested by the private angling component have been increasing in more recent years. For **Alternatives 2-9**, allocations based on longer time series (including more of the earlier years of the dataset) would be more favorable to the federal for-hire component because of the uneven growth rates observed in the estimated percentages harvested by each component.

The economic effects expected to result from alternative allocations between components are typically evaluated based on consumer and producer surplus changes relative to a baseline allocation. Consumer and producer surplus changes are computed by multiplying estimated changes in the number of trips expected to result from the allocation considered and average consumer surplus per angler trip and producer surplus to for-hire operators, respectively. Average consumer and producer surplus estimates are provided in Section 3.5.2.3. The allocation of greater percentages of the recreational quota to the federal for-hire componentwould be expected to result in greater increases in for-hire trips and associated increases in consumer and producer surplus. However, the magnitude of the increase in for-hire trips that would be expected to result from a given allocation, which is determined by several factors including the demand for for-hire trips, is not known. It also follows that the allocation of greater proportions of the recreational quota to the private angling component would be expected to result in increases in private angler trips and in corresponding increases in consumer surplus. Inferences about changes in economic efficiency are not made here because it cannot be assumed that the resource allocation within each component is efficient. As suggested by Holzer and McConnell (2014) and discussed in a recent report (OECD 2014), the validity and usefulness of changes in net benefit estimates and associated inferences about economic efficiency as well as policy prescriptions based on these inferences are limited when each component's quota is not efficiently allocated within the component. Overall, greater percentages allocated to the federal for-hire component would correspond to increasing economic benefits to the federal for-hire component and decreasing benefits to the private angling component. A study completed by Doerpinghaus et al. (2013), which considers alternative allocations and scenarios to assign responsibilities for recreational overages between anglers on for-hire vessels and those fishing from private vessels, suggests that for-hire operators would enjoy greater economic benefits if the allocation is based on historical percentages landed as opposed to allocation based on recent percentages harvested by each component. It is not possible to rank these alternatives based on the expected net economic outcome. As previously discussed, estimates of angler consumer surplus by component are not available, nor are demand and supply curves to examine potential changes in producer surplus. As a result, all that can be concluded is that the economic benefits accruing to each component would be expected to increase the more allocation that component receives.

4.2.5 Direct and Indirect Effects on the Administrative Environment

The setting of allocations for the two recreational components (federal for-hire and private angling), is an administrative action and it will have effects on the administrative environment through additional rulemaking (direct effect) and monitoring (indirect effect). Because **Alternative 1**, the no-action alternative, would not require rulemaking, it would have no effect on the administrative environment. The act of allocating between the two components would

affect the administrative environment by requiring rulemaking to set the allocations and monitoring of landings to ensure the different components do not exceed their respective quotas. Because each alternative would require the same administrative actions to set up the component quotas, the effects of **Alternatives 2-8** (including **Preferred Alternative 7**) would likely be similar. Although **Alternatives 2-8** would increase the administrative burden, the effects are likely to be minimal. Setting the allocations would be a onetime event unless NMFS and the Council decide to change those allocations at a later date. Monitoring of the recreational harvest by the two components already occurs through the Marine Recreational Information Program, Texas Parks and Wildlife Department, and the Southeast Headboat Survey.

4.3 Action 3 – Recreational Season Closure Provisions

Action 3 considers how the recreational season closure provision would be implemented given the two components. No action (Alternative 1) would maintain the current recreational red snapper season closure provisions where the recreational red snapper ACT would be used to determine the recreational red snapper season length. Preferred Alternative 2 would establish separate red snapper season closure provisions for the federal for-hire and private angling components. The component red snapper ACTs would be used to determine the respective components federal red snapper season length.

4.3.1 Direct and Indirect Effects on the Physical Environment

Section 4.1.1 describes the effects from fishing on the physical environment and are not repeated here. Adjusting the red snapper closure provisions would have no direct effects on the physical environment regardless of whether **Alternative 1** or **Preferred Alternative 2** is selected. This is because this action just codifies how the closure is set, not the quota or projected season length. These latter two actions would be set in a separate framework action or plan amendment and analyzed accordingly with regard to how fishing practices are affected. However, if incompatible regulations for state and federal waters continue, the shift in private angling effort would continue in state waters. This would be exacerbated under **Preferred Alternative 2** should the season length in federal waters for the private angling component be further reduced.

4.3.2 Direct and Indirect Effects on the Biological/Ecological Environment

Section 4.1.2 describes the effects from fishing on the biological/ecological environment are not repeated here. Adjusting the red snapper closure provisions would have no direct effects on the biological/ecological environment regardless of whether **Alternative 1** or **Preferred Alternative 2** is selected. This is because this action just codifies how the closure is set, not the quota or projected season length. These latter two actions would be set in a separate framework action or plan amendment and analyzed accordingly with regard to how fishing practices are affected. These types of effects are described in Section 4.4. However, if incompatible regulations for state and federal waters continue, the shift in private angling effort would continue in state waters and adversely effect the inshore portion of the red snapper stock while the offshore portion of the stock would benefit. This would be accentuated under **Preferred Alternative 2** should the season length in federal waters for the private angling component be further reduced.

4.3.3 Direct and Indirect Effects on the Social Environment

Additional effects are not expected from **Alternative 1**, as the recreational harvest of red snapper must be prohibited for the duration of the year once the quota is reached or projected to be reached. This mandate (Section 407(d) of the Magnuson-Stevens Act) applies to the recreational sector as a whole, regardless if sub-quotas are established and distributed among components of the recreational sector. Even if separate components are established (Action 1) and fishing opportunities apportioned among the components (Action 2), the participants in both components are prohibited from further retaining red snapper once the quota is reached or projected to be reached.

Preferred Alternative 2 would establish separate season closures for the components of the recreational sector. In theory, this would result in positive effects for both components, as neither would lose fishing opportunities as a result of a quota overage by the other component. However, the Magnuson-Stevens Act mandate in Section 407(d) would apply, requiring the closure to red snapper harvest when the recreational quota is met. Thus, if separate quotas and closures are established for each component, it is possible that one component with remaining quota could be shut down, should it be determined that the Gulf-wide recreational quota was met following the season closure of the other component. This issue could potentially be mitigated through the adoption of component-specific management and accountability measures. However, without attending measures, it is not likely that selecting **Preferred Alternative 2** would be sufficient to ensure that each component is provided with the necessary season to harvest its share of the quota.

4.3.4 Direct and Indirect Effects on the Economic Environment

Alternative 1 would continue to close the recreational red snapper season when the recreational red snapper ACT is projected to be caught. The closure provision applies to all components of the recreational sector. If the Council decides to restructure the recreational sector and establish distinct components, the federal for-hire and private angling components would have to be closed at the same time. Although **Alternative 1** is compatible with the establishment of separate components within the recreational sector, it would significantly restrict the range of management measures that could be considered by the Council, resulting in significant reductions in the potential economic effects that could be expected from the implementation of sector separation. **Alternative 1** would allow for differing bag and size limits between the components but would preclude the consideration of any management measure that could be associated with closure dates specific to each component, including rights-based measures that would allow for flexible fishing seasons (or offer the possibility for year round fishing opportunities).

Preferred Alternative 2 would depart from the status quo closure provision and establish separate closure provisions for the federal for-hire and private angling components. Each component would be closed when its red snapper allocation is projected to be met. Compared to **Alternative 1**, **Preferred Alternative 2** would therefore be expected to result in positive economic effects because, as opposed to the status quo, it would not impede the materialization of potential economic benefits expected to result from sector separation. Distinct federal for-hire and private angling components are expected to provide opportunities to design and implement flexible management approaches tailored to the specificities of each component, thereby potentially resulting in increases in economic value. The implementation of distinct components within the recreational sector (**Action 1**) and the establishment of separate closure provisions for the federal for-hire and private components (**Preferred Alternative 2**) do not exempt the components from the requirements of Section 407(d) of the Magnuson-Stevens Act which requires that red snapper recreational fishing be halted once the recreational quota is caught. Therefore, potential economic benefits expected to result from sector separation with specific closure provisions for each component may be limited by this provision in the Act.

4.3.5 Direct and Indirect Effects on the Administrative Environment

Closing a fishing season based on a quota is administrative action. Because **Alternative 1**, the no-action alternative, would not require additional rulemaking, it would not change the effects of such an action on the administrative environment. The act of closing two components rather than one sector under **Preferred Alternatives 2** could require two season notices rather than one notice, thus adding some administrative burden. However, closing fishing seasons is a routine administrative action, so any additional effects should be minimal.

4.4 Cumulative Effects Analysis (CEA)

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

This section uses an approach for assessing cumulative effects that was initially used in Amendment 26 to the Reef Fish FMP and is based upon guidance offered in CEQ (1997). The report outlines 11 items for consideration in drafting a CEA for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope of the analysis.
3. Establish the timeframe for the analysis.
4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.
5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.
6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.
7. Define a baseline condition for the resources, ecosystems, and human communities.
8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
9. Determine the magnitude and significance of cumulative effects.
10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
11. Monitor the cumulative effects of the selected alternative and adapt management.

Cumulative effects on the biophysical environment, socio-economic environment, and administrative environments are analyzed below.

1. Identify the significant cumulative effects issues associated with the proposed actions and define the assessment goals.

The CEQ cumulative effects guidance states this step is accomplished through three activities as follows:

I. The direct and indirect effects of the proposed actions (Section 4.1-4.3);
II. Which resources, ecosystems, and human communities are affected (Section 3 and Appendix C); and
III. Which effects are important from a cumulative effects perspective (information revealed in this CEA).

2. Establish the geographic scope of the analysis.

The primary effects of the actions in this amendment would affect the social, economic, and administrative environments of the Gulf. The physical and biological/ecological environments would be less affected as described in Sections 4.1-4.3.

The geographic scope affected by these actions is described in detail in Reef Fish Amendments 22 and 27 (GMFMC 2004b and 2007) and pertains directly to the Gulf. Red snapper are one of the most sought after species in the reef fish fishery. This species occurs on the continental shelves of the Gulf and the U. S. Atlantic coast to Cape Hatteras, N. C. (Moran 1988). Eggs and larvae are pelagic and juveniles are found associated with bottom features or bare bottom. In the Gulf, adults are found in submarine gullies and depressions; natural vertical relief structures such as coral reefs, rock outcroppings, and gravel bottoms; and artificial structures such as oilrigs and artificial reefs (GMFMC 2004a).

Commercial reef fish vessels and dealers are primarily found in Gulf States (GMFMC 2008b, 2013b). Based on mailing addresses or home ports given to the Southeast Regional Office (SERO) as of January 6, 2014[11], 100% of historical charter captain reef fish, 97% of for-hire reef fish, 98.5% of commercial reef fish permitted vessels, and 100% of vessels with reef fish longline endorsements are found in Gulf States. For permitted reef fish dealers, 94.5% are found in Gulf States. All dealers who are able to process IFQ transactions are located in Gulf States (Section 3.5.1.3). With respect to eligible red snapper individual fishing quota shareholders actually holding red snapper shares, 98% have mailing addresses in Gulf States (GMFMC 2013b). According to NMFS (2013b), approximately 35% of trips and 42% of the catch in 2012 for U. S. marine recreational fishing trips occurred in the Gulf by approximately 3.1 million anglers catching 161 million fish.

3. Establish the timeframe for the analysis

The timeframe for this analysis is 1984 to 2017. Red snapper have been managed in the Gulf since the implementation of the Reef Fish Fishery Management Plan in **1984** which put in place a 13-inch minimum size limit total length (TL). The red snapper stock has been periodically assessed since 1988. The 2013 SEDAR 31 red snapper stock assessment was the last benchmark assessment. The assessment included reconstructed data for analysis for the commercial sector from 1872 through 1962 (Porch et al. 2004), data from 1963-2011 for commercial landings, and data from 1981-2011 for recreational landings (SEDAR 31 2013). In addition, catch effort for the Gulf shrimp fishery (SEDAR 31 2013), including reconstructed data from 1948-1972 (Porch and Turner 2004), was used to estimate juvenile red snapper discards from this fishery.

The following is a list of reasonably foreseeable future management actions. These are described in more detail in Step 4. Note that the next red snapper assessment is scheduled to be completed in 2015 followed by a benchmark assessment that will not be complete until 2016. Should new regulations be needed for the management of this stock, they will likely not be implemented until **2017** at the earliest, or the end of the timeframe discussed in this analysis.

[11]http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/index.html

- The next assessment for red snapper through SEDAR is an update scheduled to occur in 2014 and a benchmark assessment is scheduled for 2015 (completed in 2016). Other reef fish species scheduled for assessments include:gag, greater amberjack, hogfish, and mutton snapper in 2014; red grouper, vermilion snapper, gray triggerfish, scamp, and black grouper in 2015; and gag, greater amberjack, yellowedge grouper, gray snapper, and yellowtail snapper in 2016.

- The Council is currently developing several actions that will affect the reef fish fishery. Actions affecting red snapper include: Amendment 28 (red snapper allocation), Amendment 36 (IFQ program revision), Amendment 39 (red snapper regional management), and a generic status determination criteria amendment (update ACL language). In addition, the Council is working on reef fish actions that update ACLs with new MRIP numbers, look at gag regional management, and require electronic reporting for charter boats. These actions are described in more detail in Step 4 of this CEA.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.

a. Past actions affecting red snapper fishing are summarized in Sections 1.4 and 3.1. The following list identifies more recent actions (Note actions taken prior to Amendment 32, the last EIS done for the Reef Fish FMP are described in detail in that amendment (GMFMC 2011a) and are incorporated here by reference).

The following are past actions are specific to red snapper:

- In January 2011, the Council submitted a framework action (GMFMC 2011c) to NMFS to increase the red snapper total allowable catch to 7.185 mp, with a 3.521 mp recreational quota and a 3.664 mp commercial quota. The final rule from this action established a 48-day recreational red snapper season was June 1 through July 18.
- On August 12, 2011, NMFS published an emergency rule that, in part, increased the recreational red snapper quota by 345,000 pounds for the 2011 fishing year and provided the agency with the authority to reopen the recreational red snapper season later in the year, if the recreational quota had not been filled by the July 19 closing date. However, in August of that year, based on headboat data plus charter boat and private recreational landings through June, NMFS calculated that 80% of the recreational quota had been caught. With the addition of July landings data plus Texas survey data, NMFS estimated that 4.4 to 4.8 mp were caught, well above the 3.865 mp quota. Thus, no unused quota was available to reopen the recreational fishing season.
- On May 30, 2012, NMFS published a final rule to implement a framework action submitted by the Council to increase the commercial and recreational quotas and establish the 2012 recreational red snapper fishing season (GMFMC 2012a). The recreational season opened on June 1 through July 11. However, the north-central Gulf experienced extended severe weather during the first 26 days of the 2012 recreational red snapper fishing season, including Tropical Storm Debby. Because of the severe tropical weather, the season was extended by six days and closed on July 17.
- On May 29, 2013, NMFS published a final rule to implement a framework action submitted by the Council to increase the commercial and recreational quotas (GMFMC

2013c). The combined quotas were raised from 8.080 million pounds whole weight to 8.460 lbs whole weight. The recreational fishing season was set differently for waters off different states because of non-compatible regulations. However, a federal court ruled against different seasons, so the season for federal waters was from June 1 through July 5. Later in 2013, NMFS approved a framework action (GMFMC 2013a) to increase the combined quotas from 8.46 mp to 11 mp. This allowed an additional recreational fishing season from October 1 through October 15.

- An exempted fishing permit was given to the Gulf of Mexico Headboat Collaborative Pilot program that began on January 1, 2014. NMFS authorized the 2-year pilot program to assess the viability of an allocation-based management strategy for achieving conservation and economic goals more effectively than current management. The Headboat Collaborative was allocated a portion of the red snapper and gag recreational quotas based on historical landings data and participating headboats are able to use the allotted quota to harvest red snapper and gag outside the normal recreational fishing seasons.
- In response to a decision by the U.S. District Court for the District of Columbia (Court) in Guindon v. Pritzker, 2014 WL 1274076 (D.D.C. Mar. 26, 2014), NMFS took emergency action May 15, 2014 (79 FR 27768) to address recent recreational red snapper quota overages. At their April 2014 meeting, the Council requested an emergency rule to implement an in-season accountability measure for the recreational harvest of red snapper in the Gulf that would apply to the 2014 season that opened on June 1, 2014. The action set an ACT equal to 80% of the 5.390 mp quota (ACT = 4.312 mp). The resultant 9-day season was based on the ACT and has only a 15% probability of exceeding the quota.

b. The following are recent reef fish actions not summarized in Section 1.4 or 3.1 but are important to the reef fish fishery in general (Note actions taken prior to Amendment 32 are described in detail in that amendment (GMFMC 2011a) and incorporated here by reference).

- A rule effective April 2, 2012, that adjusted the 2012 commercial quota for greater amberjack, based on final 2011 landings data. For 2011, the commercial quota was exceeded by 265,562 pounds. Therefore, NMFS adjust the 2012 commercial quota to account for the overage resulting in a quota of 237,438 pounds.
- A temporary rule effective May 14, 2012, reduced the gray triggerfish annual catch limits and commercial and recreational annual catch targets. The temporary rule was put in place to reduce overfishing while the Council worked on long-term measures to end overfishing and rebuild the stock in Amendment 37.
- A framework action effective on November 19, 2012, eliminated the earned income qualification requirement for the renewal of Gulf commercial reef fish permits and increased the maximum number of crew members for dual-permitted (commercial and charter) vessels. The Council determined the existing earned income requirement in the reef fish fishery is no longer necessary and relaxing the number of crew on dual-permitted vessels increased the safety on commercial trips, particularly for commercial spear fishermen.
- Amendment 38 (GMFMC 2012b), effective March 1, 2013, allows NMFS to shorten the

season for gag and red grouper if landings exceeded the catch limit in the previous year. The amendment also changed the trigger method for recreational accountability measures to an annual comparison of landings to the catch limit rather than using a three-year moving average. Finally, the amendment allows the establishment or modification of accountability measures through the faster framework procedure rather than through slower plan amendments.

- Amendment 37 (GMFMC 2012c), rulemaking effective June 10, 2013, was developed to end overfishing of gray triggerfish and rebuild the gray triggerfish stock. The amendment adjusted the commercial and recreational gray triggerfish annual catch limits and annual catch targets, established a 12-fish commercial gray triggerfish trip limit and a 2-fish recreational daily bag limit, established an annual fishing season closure from June 1 through July 31 for the commercial and recreational sectors, and established an overage adjustment for the recreational sector.
- A framework action effective July 5, 2013, adjusted the recreational gag season to July 1 through December 3, 2013, the time projected to harvest the recreational annual catch target of 1.287 mp. The framework action also restricted the geographical extent of the fixed February 1 through March 31 shallow-water grouper closed season to apply only to waters seaward of the 20-fathom boundary. This allows grouper fishing to occur year-round while providing some protection to species that spawn during February and March.
- A framework action effective September 3, 2013, set a 10-vermilion snapper bag limit within the 20-fish aggregate reef fish bag limit as a precautionary measure to reduce the chance of overfishing for this species. The action also increased the Gulf yellowtail snapper annual catch limit from 725,000 pounds to 901,125 pounds based on a recent stock assessment. Finally, the action eliminated the requirement to use venting tools when fishing for reef fish as 1) some scientific studies have questioned the usefulness of venting tools in preventing barotrauma in fish and 2) the action would give more flexibility to fishermen on when to vent or to use some other device like fish descenders.
- A framework action effective August 30, 2013, simplified for-hire permit renewals and transfers as well as allow more flexibility to the for-hire industry in how they use their vessels.
- Accountability measures for red grouper and gray triggerfish were implemented. For red grouper recreational fishing, the bag limit was reduced from four to three fish on May 5, 2014, and a season closure was projected for September 16, 2014. For gray triggerfish, the recreational season was closed on May 1, 2014.

c. The following are reasonably foreseeable future actions (RFFA) important to red snapper and the reef fish fishery in general[12].

- The Council is currently developing the following actions for red snapper.
    - Amendment 28 would revise the current 51% commercial:49% recreational allocation.
    - A framework action would establish a recreational red snapper ACT and overage adjustment as accountability measures for the recreational sector.

[12] Information on these developing actions can be found on the Council's website at www.gulfcouncil.org.

    - Amendment 36 would revise the IFQ program based on recommendations from the red snapper IFQ program. These recommendations would be based on a review of the program completed in 2013 (GMFMC 2013b).
    - Amendment 39 (currently on hold) would allow regional management of red snapper for the recreational sector. This regional management could be set at the state level or be based on broader regions (e.g., eastern and western Gulf).
    - A generic status determination criteria amendment proposes to update the current red snapper quota-based language for setting commercial and recreational allocations with ACL-based language in accordance with the Magnuson-Stevens Act.
    - An amendment to allow for inter-sector trading of red snapper allocation has been proposed by the Council. The amendment will evaluate the buying of commercial red snapper allocation by components of the recreational sector for recreational harvest.
    - Amendment 41 was proposed by the Council to examine a charter/for-hire IFQ program for red snapper in the Gulf of Mexico.
- The Council is working on other reef fish actions. These are as follow:
    - A framework action to update ACLs with new MRIP numbers for grouper and tilefish stocks managed under IFQ programs. The action proposes to update ACLs developed in the Generic ACL/AM Amendment that used MRFSS landings data with the new MRIP landing estimates.
    - An abbreviated framework action for definition & intent of for-hire fishing in the EEZ.
    - An amendment for regional management for the recreational harvest of gag to provide greater flexibility in regionally managing this species.
    - An amendment to require electronic reporting for charter boats to improve the quality and timeliness of landings data for this sector.
    - A framework action to reduce the red grouper bag limit.
- Congress has proposed HR 3099 and S 1161 which directs the Gulf States Marine Fisheries Commission to: (1) prepare and adopt a data collection strategy for the Gulf red snapper fishery, including interstate collaboration measures and a plan for annual stock assessments; and (2) prepare, adopt, and submit to the Secretary of Commerce a fishery management plan providing for the conservation and management of Gulf red snapper and describing the standards of compliance for Gulf coastal states to use in developing fishery management measures.

d. The following are non-FMP actions which can influence the reef fish fishery.

Amendment 30B (GMFMC 2008b) describes in detail non-FMP actions relating liquefied natural gas terminals, hurricanes, fuel prices, and imports and were reiterated in Amendment 32. To summarize:

- Some liquefied natural gas terminals use sea water to heat the gas back to its gaseous phase. For open systems, high volumes of sea water are required and are likely to result in large mortalities of marine organism eggs and larvae.
- For hurricanes, direct losses to the fishing industry and businesses supporting fishing activities occur ranging from loss of vessels to destruction of fishery infrastructure

(Walker et al. 2006). However, although these effects may be temporary, those fishing-related businesses whose profitability is marginal may be put out of business should a hurricane strike.

- Rising fuel costs have negative impacts on communities by increasing business costs and lowering profits.
- Most seafood consumed in the United States is imported and the quantity of imports has been steadily increasing. The effects of imports on domestic fisheries can cause fishermen to lose markets through commercial sector closures as dealers and processors use imports to meet demand, and limit the price fishermen can receive for their products through competitive pricing of imports.

In addition, Amendment 32 (GMFMC 2011a) discussed in detail a 2005 red tide event on the west-Florida shelf and the resultant oil spill from the explosion on the Deepwater Horizon MC252 oil rig. The red tide event may have affected reef fish, including red snapper populations. It has only been in the last 10 years that mortalities of higher vertebrates have been indisputably demonstrated to be due to acute red tide blooms and their brevetoxins (Landsberg et al. 2009). The extent of this event and possible effects of fish community structure has been described in Gannon et al. (2009).

An estimated 4.9 million barrels of oil was released into the Gulf from the Deepwater Horizon MC252 event (see http://response.restoration.noaa.gov/deepwaterhorizon). The effects on the environment on reef fish and the reef fish fisheries may not be known for several years when affected year classes of larval and juvenile fish enter the adult spawning population orfishery. For red snapper, this occurs at approximately 3 years of age, so a year class failure in 2010 may not be detected in the spawning populations or by harvesters of red snapper until 2013 at the earliest. The results of the studies detecting these impacts on recruitment should be available soon and will be taken into consideration in the next SEDAR assessment. In addition to impacts on recruitment, adult reef fish may also have been negatively affected by the oil spill. For example, Weisberg et al. (2014) suggested the hydrocarbons associated with Deepwater Horizon MC252 oil spill did transit onto the Florida shelf and may be associated with the occurrences of reef fish (including red snapper) with lesions and other deformities. The overall impact of the oil spill may not be realized for quite some time and study results are just now becoming available.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities (Kennedy et al. 2002). Some of the likely effects commonly mentioned in relation to marine resources are sea level rise, ocean acidification, coral bleaching, increased frequency of severe weather events, and change in air and water temperatures (Kennedy et al. 2002; Osgood 2008). The Environmental Protection Agency's climate change Web page provides basic background information on these and other measured or anticipated effects. In addition, the Intergovernmental Panel on Climate Change has numerous reports addressing its assessments of climate change (http://www.ipcc.ch/publications_and_data/publications_and_data.shtml). Additional reports are provided on the Global Climate Change website http://climate.nasa.gov/scientific-consensus.

Global climate changes could affect Gulf fisheries; however, the extent of these effects is not known at this time. Possible impacts include temperature changes in coastal and marine

ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002; Osgood 2008). It is unclear how climate change would affect reef fishes and likely would affect species differently. Climate change can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. 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. Hollowed et al. (2013) provided a review of projected effects of climate change on the marine fisheries and dependent communities. Integrating the potential effects of climate change into the fisheries assessment is currently difficult due to the time scale differences (Hollowed et al. 2013). The fisheries stock assessments rarely project through a time span that would include detectable climate change effects. Climate change may significantly affect Gulf reef fish species in the future, but the level and time frame of these effectscannot be quantified at this time. Actions from this amendment are not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing.

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components. According to the CEQ guidance describing stress factors, there are two types of information needed. The first are the socioeconomic driving variables identifying the types, distribution, and intensity of key social and economic activities within the region. The second are the indicators of stress on specific resources, ecosystems, and communities.

<u>Reef Fish Fishery</u>
Data used to monitor commercial reef fish effort includes the number of vessels with landings, the number of trips taken, and trip duration. Declines in effort may be a signal of stress within the fishery. For the red snapper component of the commercial sector, the number of vessels and trips did decline after the red snapper IFQ program was first implemented. However, the number of vessels and trips with red snapper landings have increased from 2007 to 2012 (GMFMC 2013b). These trends are described in Sections 3.1, 5.0, 6.0 and in GMFMC (2013b). The commercial IFQ program recently underwent a 5-year review (GMFMC 2013b). The stated goals of this program, implemented through Amendment 26 (GMFMC 2006) were to reduce overcapacity and eliminate problems associated with overcapacity. The review found the program was moderately to highly successful in meeting the program goals; however, further improvements were identified regarding overcapacity, discard mortality price reporting, and social and community impacts. Therefore, the red snapper component of the commercial sector does not seem to be stressed.

Within the commercial reef fish sector as a whole, the number of commercial vessels has been declining as evidenced by the number of permits (Table 4.4.1). The number of permits has declined from 1,099 in 2008 to 917 in 2012 and the number landing at least one pound of reef fish has declined from 681 to 557 over the same time period. Although this could be an indicator of stress in the fishery, the commercial sector has undergone several changes in the past few years with the IFQ programs for red snapper, grouper, and tilefish. Given that a primary goal of these programs is to reduce overcapacity, the reduction in permits may just reflect this expected change.

Table 4.4.1. Number of Gulf of Mexico reef fish commercial (landing at least one pound of reef fish), for-hire, and historical captain permits by year.

	Year				
Sector	2008	2009	2010	2011	2012
Commercial	1099 (681)	998 (696)	969 (580)	952 (561)	917 (557)
For-hire	1458	1417	1385	1353	1336
Historical captain	61	56	47	43	42

Source: Southeast Regional Office, Limited Access Permit Program Branch.

Table 4.4.2. Number of Gulf of Mexico reef fish commercial trips catching at least one pound of reef fish and the number of offshore angler trips for the charter and private angling components of the reef fish recreational sector for the years 2008-1012.

	Year				
Sector	2008	2009	2010	2011	2012
Commercial	8,079	8,177	5,991	6,541	6,629
Charter	326,868	319,768	229,679	300,668	355,413
Private angler	1,434,875	1,011,948	767,080	782,989	1,017,007

Sources: Commercial trip data from the Southeast Regional Office, Limited Access Permit Program Branch and recreational angler trip data from NOAA Office of Science and Technology's Recreational Fisheries Statistics web page at https://www.st.nmfs.noaa.gov/recreational-fisheries/index.

Social and economic characteristics of recreational anglers are collected periodically as an add-on survey to MRIP. Data used to monitor recreational reef fish effort in the sector primarily comes from MRIP and includes the number of trips and number of catch trips. Declines in effort may be a signal of stress within the sector. Private and charter fishing modes accounted for most of red snapper target trips, with the private angler mode the most common mode (Table 3.5.2.1.1). By state, Florida accounts for the greater percentage of landings (Table 3.5.2.1.1). For red snapper, changes in angler trips between 2008 and 2012 do not appear to show this segment of the fishery is stressed. Both targeted angler trips and trips that caught red snapper by the sector were highest in 2008 and lowest in 2010 (Table 4.4.2). The low harvest in 2010 was likely due to the Deepwater Horizon MC252 oil spill when large areas of the northern Gulf were closed to fishing. Although the number of annual angler trips for 2011 and 2012 has not reached the high of 2009 since the spill, the annual number of trips for these years is closer to the 2009 level than the 2010 level. This trend is also apparent in the number of private/rental angler and

for-hire trips (Table 4.4.2). Table 3.5.2.1.1 also shows that the number of trips in 2013 for all modes is greater than in 2011 and 2013.

For the reef fish recreational sector, the number of angler trips in offshore waters (Table 4.4.2; used as a proxy for recreational reef fish fishing) and angler days on headboats (Table 3.5.2.1.2) show a similar trend as noted above for recreational red snapper fishing with a decline in 2010 from 2008 and 2009 values followed by an increase in trips in 2011 and 2012. This suggests the sector is recovering from the 2010 Deepwater Horizon MC252 oil spill. Within the for-hire component, the number of for-hire and historical captain permitted vessels has declined from 2008 to 2012 (Table 4.4.1; 1458 to 1336 permits and 61 to 42 permits, respectively) and could be viewed as an indicator of stress. However, the number of offshore trips by the charter component has increased above 2008 and 2009 values suggesting economic conditions for this component are improving.

At this time, climate change does not appear to be a stressor on the reef fish fishey. However, it could be in the future. The National Ocean Service (2011) indicated that 59% of the Gulf coast shoreline is vulnerable to sea level rise. This means coastal communities that support this fishery could be impacted in the future from higher storm surges and other factors associated with sea level rise. These communities do appear to be somewhat resilient given their ability to recover after the 2004 and 2005 hurricane seasons as well as from the Deepwater Horizon MC252 oil spill (see step 4).

Red Snapper

Major stresses to the red snapper stock have primarily come from overfishing, which has been occurring at least since the first stock assessment in 1988 and overfishing only recently ended. It is likely that quota overruns by both commercial and recreational sectors have slowed the recovery of the stock. Trends in landings and the status of red snapper stock are based on NMFS and SEDAR stock assessments (summarized in Sections 3.1 and 3.3) and incorporated here by reference. The most recent stock assessment indicates the stock is continuing to rebuild. It is likely the red snapper stock was adversely affected by the Deepwater Horizon MC252 oil spill in 2010; however, these effects are only just being realized (see step 4d). A recommendation in the 2013 stock assessment (SEDAR 31 2013) is that future assessments of Gulf red snapper should be conducted with the explicit goal of attempting to model any enduring oil spill effects and their effect on the stock. At this point, it is unclear if and how climate change is affecting red snapper stocks. Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates in Gulf fish stocks, but changes to such patterns have not been observed for red snapper.

Ecosystem

With respect to stresses to the ecosystem from actions in this amendment, changes in the red snapper allocation are not likely to create additional stress. Handline gear, the primary gear used by the fishery, and longlines can damage habitat through snagging or entanglement; however, as described in Section 4.1.1, these impacts are minimal. Changes in the population size structure as a result of shifting red snapper fishing selectivities and increases in stock abundance could lead to changes in the abundance of other reef fish species that compete with red snapper for shelter and food. Predators of red snapper could increase if red snapper abundance is increased,

while species competing for similar resources as red snapper could potentially decrease in abundance if food and/or shelter are less available. Efforts to model these interactions are still ongoing [e.g., Ecopath (Walters et al. 2006) and Atlantis[13]), and so predicting possible stresses on the ecosystem in a meaningful way is not possible at this time. As described in Part 4d of this cumulative effects analysis, the Deepwater Horizon MC252 incident has affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the oil spill on the physical and biological environments are expected to be significant and may be long-term. Stressors to the ecosystem could include such factors as year-class failures and damage to reef fish EFH. Climate change may also be a stressor to the ecosystem, but is poorly understood. Hollowed et al. (2013) outlined the difficulties in understanding the effects of climate change and developed a conceptual pathway of direct and indirect effects of climate change and other anthropogenic factors on marine ecosystems. They suggest integrated interdisciplinary research teams be used better understand the effects.

Administrative Environment

The stresses to the administrative environment from these actions would likely focus on the setting of annual quotas, ACTs, as well as monitoring landings to determine if AMs have been triggered. However, these stresses are not expected to significantly differ from the current stresses. In 2013, several states established recreational red snapper regulations that were inconsistent with federal regulations. This caused additional stress on the administrative environment requiring additional regulations, analysis, presence of law enforcement, and increased confusion among the fishing public. The actions in this amendment would allow regions to adjust regulations to meet their regional needs while maintaining consistency with the FMP and likely reduce stress in this environment. It is unknown whether the regions would be able to constrain harvest to the quota. However, with the current federal management, the recreational sector has exceeded the allocation in 14 of 22 years in which an allocation was specified. The stock could likely withstand some overages without jeopardizing the rebuilding plan; however, continuous overages could result in a change of the stock status. However, the regions have indicated they intend to establish new monitoring procedures, which could improve the estimations for landings, but the SEFSC would need to review the sampling designs and data to insure compatibility with the current methods.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

This section examines whether resources, ecosystems, and human communities are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA should address whether thresholds could be exceeded because of the contribution of the proposed actions to other cumulative activities affecting resources.

[13] NOAA's Integrated Ecosystem Assessment Program (https://www.st.nmfs.noaa.gov/iea/gulfofmexico.html)

Reef Fish Fishery

As indicated above, both commercial and for-hire fisheries are subject to stress as a result of increases in fishing costs, increases in harvesting efficiency, more restrictive regulations (particularly for red snapper), and changes in the stock status of certain species (effort shifting). Reductions in dollars generated by these entities would likely be felt in the fishery infrastructure. For the reef fish fishery, an indicator of stress would be a decline in the number of permitted vessels. For the commercial sector, the number of vessels and trips landing red snapper initially declined after the IFQ program went into effect in 2007 (419 vessels and 4,714 trips in 2006 compared to 319 vessels and 2,578 trips in 2007; GMFMC 2013b). However, the number of vessels and trips landing red snapper has increased in recent years (368 vessels and 3,389 trips in 2011) demonstrating that conditions in commercial red snapper sector are improving. GMFMC (2013b) also cites other factors such as pricing, fleet and effort consolidation, and market conditions that also support an improved socioeconomic environment. As mentioned in Step 5 of this CEA, the number of vessels in the commercial sector has declined (Table 4.4.1); however, with the shift towards IFQ management, it is difficult to determine if this reflects stress in the sector or is a result of overcapacity reduction - an expected result of IFQ management. Five-year reviews similar to the one conducted for red snapper are planned for the grouper and tilefish IFQ programs after the 2014 fishing year (year 5 of the) is complete.

Analyses conducted on the effects of a limited access program for for-hire vessels indicated operations were generally profitable (GMFMC 2005a). However, testimony from for-hire operators in light of recent red snapper regulations have suggested some for-hire operators may go out of business, particularly in the northeastern Gulf. This may be reflected in the declines in the numbers of permitted vessels shown in Table 1.1.2, Table 4.4.1, and Figure 1.1.1. Creating a for-hire component through Amendment 40 could help design red snapper regulations that could help this part of the fishery. Other reasonably foreseeable actions listed in Step 4c of this analysis are not expected to adversely affect the for-hire component and so should not place additional stress to the recreational sector. Non-FMP actions (see Step 4d) may place added stress on the for-hire component of the recreational sector (e.g., hurricanes and higher fuel costs). However, timing and magnitude of the potential negative cumulative the effects from these events are difficult to predict.

Little information is available on the stresses on the private angler sector. Because private angling is an optional activity, likely factors that affect a person's involvement are likely economic. Therefore, costs such as fuel, marina fees, and boat upkeep are likely to affect a person's decision to go red snapper fishing or not, particularly within the current short recreational red snapper season. As a result, more red snapper trips could be taken if there are gains in pounds for this component. Other reasonably foreseeable actions listed in Step 4c of this analysis are not expected to adversely affect the private angling component and so should not place additional stress to the recreational sector as a whole. Non-FMP actions (see Step 4d) may place added stress on the private angling component (e.g., hurricanes, higher fuel costs, and climate change). However, timing and magnitude of the potential negative cumulative the effects from these events are difficult to predict (see steps 4 and 6).

Red Snapper

Amendment 1 to the Reef Fish FMP (GMFMC 1989), implemented in 1990 before the Sustainable Fisheries Act (SFA) was passed, established the minimum spawning stock biomass at 20 percent SPR for all reef fish species. A 1991 regulatory amendment (GMFMC 1991) established a commercial quota and a 1997 regulatory amendment established a recreational quota. The quotas were set based on the 51:49 commercial:recreational allocation being applied to the total allowable catch. The Generic Sustainable Fisheries Act (SFA) Amendment (GMFMC 1999) proposed SFA definitions for optimum yield, minimum stock size threshold and maximum fishing mortality threshold for three reef fish species and generic definitions for all other reef fish. The definition of maximum fishing mortality threshold for red snapper, $F_{26\%SPR}$, was approved and implemented. Definitions for optimum yield and minimum stock size threshold were disapproved because they were not biomass-based. ACLs were not implemented for red snapper as the commercial and recreational quotas were considered functional equivalents; however, ACLs are currently being defined by the Council in a Generic Status Determination Criteria Amendment (see 4c of this CEA).

A benchmark assessment was conducted for red snapper in 2013 under the SEDAR stock assessment process (see Section 3.3 for a summary of the assessment). Based on the parameter estimates through 2011, the red snapper stock was found to be overfished, but that overfishing had ended. A brief description of the stock and its status can be found in Section 3.3 and step 5 of this CEA. Measures proposed in this amendment are mostly administrative and not likely to adversely affect the red snapper stock status as long as landings do not exceed OFLs. At this time, it is unclear how climate change may affect these regulatory thresholds (see steps 4 and 5).

Ecosystem

The stresses associated with the proposed actions in relation to regulatory thresholds are not likely to cause beneficial or adverse effects on the ecosystem. The actions would not change the way the fishery is prosecuted. Thus, significant effects on the ecosystem are not expected. The overall Gulf-wide fishing effort would remain constrained by the recreational quota. Climate change is likely to affect the Gulf ecosystem; however, as described in steps 4 and 5, these effects are poorly understood.

Administrative Environment

The stresses associated with the proposed actions in relation to regulatory thresholds are not likely to cause beneficial or adverse effects on the administrative environments. Activities such as monitoring landings, setting quotas, and enforcing fisheries regulations will continue as before. If the creating two components of the recreational sector result in more satisfying management measures for each component, this should reduce stresses on managers to respond complaints by stakeholders on red snapper management.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed actions is to establish a point of reference for evaluating the extent and significance of expected cumulative effects.

Reef Fish Fishery

As noted in Section 3.1, a description of the fishery and affected environment relative to red snapper was last fully discussed in joint Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007). Red snapper landings for the recreational sector are not available at the community level, making it difficult to identify communities as dependent on recreational fishing for red snapper. Data reflecting commercial landings of red snapper may or may not reflect areas of importance for recreational fishing of red snapper. It cannot be assumed that the proportion of commercial red snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because of sector differences in fishing practices and preferences. Thus, in addition to communities with the greatest commercial red snapper landings, the referenced analysis identifies communities with the greatest recreational fishing engagement, based on numbers of: 1) federal for-hire permits, 2) vessels designated recreational by owner address, and 3) vessels designated recreational by homeport, plus availability of recreational fishing infrastructure. The Gulf communities to score highest for recreational fishing engagement based on the described analysis Section 3.4.1.

Information is lacking on the social environment of these fisheries, although some economic data are available, although primarily for the commercial sector. Fishery-wide ex-vessel revenues are available dating to the early 1960s, and individual vessel ex-vessel revenues are available from 1993 when the logbook program was implemented for all commercial vessels.

Red Snapper

The first stock assessment of red snapper was conducted in 1986 and has been assessed periodically since then (see Section 3.1). The most recent assessment (see Section 3.3 for a summary) occurred in 2013 through the SEDAR process and included data through 2011. The assessment shows trends in biomass, fishing mortality, fish weight, and fish length dating to the earliest periods of data collection. For this assessment, reliable commercial landings data were estimated back to 1963 and projected landings were estimated back to 1872 (Porch et al. 2004). Recreational data were available since 1981. Beginning with the 1988 assessment (Goodyear 1988), red snapper have been considered overfished and undergoing overfishing. However, the most recent assessment (SEDAR 31 2013) showed that overfishing had ended and that the stock condition, although still overfished, was improving. At this time, it is unknown what affects non-FMP actions (beneficial or adverse) such as the Deepwater Horizon MC252 oil spill or climate change may have on the health of red snapper stocks.

Ecosystem

A baseline for analysis of the physical environment, as discussed in Section 3.2, was conducted in the EIS for the Generic EFH Amendment (GMFMC 2004a). Detailed information pertaining to the closures and preserves is provided in the February 2010 Regulatory Amendment (GMFMC 2010). In the Gulf, fish habitat for adult red snapper consists of submarine gullies and depressions; natural vertical relief structures such as coral reefs, rock outcroppings, and gravel bottoms; and artificial structures such as oilrigs and artificial reefs (GMFMC 2004a). Many of these vertical relief areas are identified as protected areas.

Other species in the ecosystem are discussed in Section 3.3. The Reef Fish FMP currently encompasses 31 species (Table 3.3.2). Eleven other species were removed from the FMP in 2012 through the Generic ACL/AM Amendment (GMFMC 2011b). Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) websites.

Administrative Environment

The administrative environment is described in Section 3.6. Responsibility for federal fishery management is shared by the Secretary of Commerce (Secretary) and the Council for the 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 state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf states exercise legislative and regulatory authority over their respective state's 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.

Regulations contained within FMPs are enforced through actions of NOAA's Office of Law Enforcement, the United States Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee, which have developed a 5-year "Gulf of Mexico Cooperative Law Enforcement Strategic Plan – 2008-2012."

The ability of the regions to constrain harvest causes uncertainty surrounding the effects of implementing regional management. The federal management has experienced overages of the quota or allocation in 14 of the last 22 years. However, the methods for estimating landings and projecting the season have improved consistently over time. The question remains if regions could constrain the harvest within the regional quotas; however, the regions have indicated they intend to improve monitoring for their specific regions under this plan, which should ameliorate any concerns about overages being worse. Nevertheless, NMFS would need to continue analyzing the catch rates and landings to determine whether the regional management measures constrain the harvest. If the quota is exceeded for Gulf recreational red snapper harvest, then NMFS would be required to prohibit harvest in the EEZ regardless of the regional management plans.

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Cause-and–effect relationships are presented in Tables 4.4.3.

Table 4.4.3. The cause and effect relationship of fishing and regulatory actions for red snapper within the time period of the CEA.

Time periods	Cause	Observed and/or expected effects
1800-2016	Climate change	Changes ocean acidity and temperature modifies fish and prey distributions and productivity; threaten fishing communities through sea level rise and changing weather patterns
1962-1983	Growth and recruitment overfishing	Declines in mean size and weight
1984	13-inch minimum size limit for the recreational and commercial fisheries	Slowed rate of overfishing
1990	3.1 mp quota for commercial fishery and 7 fish bag limit	Further slow rate of overfishing
1991-1992	2.04 mp commercial quota	Continue to slow rate of overfishing
1992	Establish red snapper Class 1 and 2 endorsements and respective trip limits	Begin derby fishery
1993-1998	3.06 mp commercial quota	Continue to slow rate of overfishing
1994	Increase minimum size to 14 inches in the commercial and recreational fisheries	Increase yield per recruit, increase the chance for spawning, and slow rate of overfishing
1995-1997	Increase minimum size to 15 inches in the commercial and recreational fisheries and reduce the bag limit to 5 fish	Increase yield per recruit, increase the chance for spawning, and slow rate of overfishing
1997-2005	Reduce recreational season length	Constrain harvest in recreational fishery
1998	Shrimp trawls in the EEZ required to use NMFS-certified BRDs west of Cape San Blas	Reduce fishing mortality rate on age 0 and age 1 red snapper
1998-2005	Reduce bag limit to 4 fish	Reduce fishing mortality rate in recreational fishery
1999-2005	Raise total quota to 9.12 mp	Reduce rebuilding rate for fishery
2000-2014	Raise recreational minimum size limit to 16 inches	Increase yield per recruit, increase the chance for spawning, slow rate of overfishing
2004	Shrimp trawls in the EEZ required to use NMFS-certified BRDs east of Cape San Blas	Further reduce fishing mortality rate on age 0 and age 1 red snapper
2004	Implement red snapper rebuilding plan	Provide mechanism to monitor harvest for rebuilding
2007-2016	Commercial- Established Individual Fishing Quota Program (IFQ)	Constrain commercial harvests within the limits set by the rebuilding plan; IFQ to further control commercial sector to prevent overages; increase in administrative work to manage the IFQ.
2007-2014	Recreational - Reduction of bag limit to 2 fish and adjustment of season length	Constrain recreational harvest to the quota. Progressively shorter seasons as average size of landed fish increases.
2013-2016	Overfishing has ended, but the stock remains overfished.	Continue stock rebuilding

9. Determine the magnitude and significance of cumulative effects.

The primary objectives of this amendment and associated EIS is to reallocate red snapper resources between the commercial and recreational sectors with the intent to increase the net benefits from red snapper fishing as well as increase the stability of the red snapper component. The short- and long-term direct and indirect effects of each these actions are provided in Section 4.1.

To examine the magnitude and significance of the cumulative effects, important valued environmental components (VECs) were identified for the overall actions to be taken with this amendment. VECs are "any part of the environment that is considered important by the proponent, public, scientists and government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern" (EIP 1998). For purposes of this analysis, an initial 22 VECs were identified, and the consequences of each alternative proposed in this amendment on each VEC were evaluated. Some of these VECs were combined into a revised VEC because many of the past, current, and reasonably foreseeable future actions (RFFA) were similar. Based on this analysis, six VECs were determined to be the most important for further consideration. Note that because 163 vessels have both commercial and for-hire reef fish permits, commercial vessels were included in the analysis of vessel owner, captain, and crew. The six VECs are shown in Table 4.4.4.

VECs not included for further analysis were sharks, protected resources, and Wholesale/retail. Many longline vessels that target reef fish also target sharks. However, sharks were not considered as an important VEC because, as shark stocks have declined, the shark fishery has become more and more regulated, limiting the effects of this fishery and the stock on reef fish stocks. There may be some effort shifting from the shark fishery to the reef fish fishery due to increased restrictions, however, this effect will likely be minor because only a minority of vessels have dual federal reef fish and shark permits. Protected resources were also eliminated from further analyses in this section. As described in Section 3.3, biological opinions have concluded the primary reef fish gear (longline and hook-and-line) were not likely to jeopardize sea turtles or small tooth sawfish. Because actions considered in this amendment are not expected to change how reef fish fishing gear is used in the prosecution of the reef fish fishery, any take associated with reef fish fishing should not exceed that considered in biological opinions. All other Endangered Species Act (ESA)-listed species heave been found not likely to be adversely affected or not affected by the reef fish fishery. For marine mammals, gear used in the reef fish fishery were classified in the as Category III fisheries (see Section 3.3). This means this fishery has minimal impacts on marine mammals. Dealers and consumers (wholesale/retail) were eliminated because this action affects the recreational sector of the reef fish fishery. The actions in this amendment should not affect the IFQ programs and commercial quotas the wholesale/retail business relies on. Thus pounds needed to support dealers and the consumers who rely on obtaining their seafood from dealers should not be affected.

Table 4.4.4. VECs considered, consolidated, or not included for further evaluation.

VECs considered for further evaluation	VECs consolidated for further evaluation	VECs not included for further evaluation
Habitat	Hard bottom EFH	
Managed resources - red snapper - other reef fish species	Red snapper Other reef fish Prey species Competitors Predators	Sharks Protected species
Vessel owner, captain and crew - Commercial - For-hire	Vessel owner Captain Crew	
		Wholesale/retail Dealers and consumers
Anglers		
Infrastructure	Fishing Communities Fishing support businesses (ice and gear suppliers, marinas, fuel docks)	
Administration	Federal Rulemaking Federal Permitting Federal Education State Rulemaking/Framework State Education	

The following discussion refers to the effects of past, present, and RFFAs on the various VECs.

Habitat

Essential fish habitat, as defined in the GMFMC (2004a), for the Reef Fish FMP consists of all Gulf estuaries; Gulf waters and substrates extending from the US/Mexico border to the boundary between the areas covered by the Gulf of Mexico and the South Atlantic fishery management councils from estuarine waters out to depths of 100 fathoms. Section 3.2 and GMFMC (2004a) describe the physical environment inhabited by red snapper as well as reef fish in general. Red snapper is a carnivorous bottom dweller, generally associated (as adults) with hard-bottom substrates, submarine gullies and depressions, and oilrigs and other artificial structures (GMFMC 2004a). Eggs and larvae are pelagic while juveniles are found associated with bottom features or over barren bottom.

From fishing, the most sensitive gear/habitat combinations include EFH for reef fish species. These include fish otter trawls, shrimp otter trawls, roller frame trawls, and pair trawls over coral reefs; crab scrapes over coral reefs; oyster dredges over submerged aquatic vegetation (SAV), oyster reefs, or coral reefs; rakes over coral reefs; and patent tongs over SAV, oyster reefs, or coral reefs (GMFMC 2004a). Some of these gear/habitat interactions are unlikely to occur in actual practice (e.g., shrimp trawls towed through hard bottom areas can destroy shrimp nets and so are avoided). In general, gears that are actively fished by towing have the highest potential to alter habitats. However, some habitats, such as coral reefs and hard bottoms are sensitive to interactions with passive gears (e.g. traps) as well. Most directed reef fish fishing activities, as

described in Section 4.1.1, use longlines and handlines, although a few fish are taken by spearfishing gear. These have low levels of impacts compared to other gears.

In the past, some fishing practices have had detrimental effects on the physical environment. Gears such as roller trawls and fish traps damaged habitats while harvesting fish species. As a result of these effects, the Council developed stressed areas to reduce these impacts. Further protections have been developed, primarily by either prohibiting fishing or limiting fishing activities that can occur within certain areas. Detailed information on the the closures and preserves is provided in the February 2010 Regulatory Amendment (GMFMC 2010). In addition, regulatory changes through Generic EFH Amendment 3 (GMFMC 2005b; implemented in 2006) prohibited bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots to protect coral reefs in several HAPCs, and required a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf EEZ to minimize damage done to habitats should the chain get hung up on natural bottom structures.

Current allowable gear types can adversely affect hard bottom areas; however, these impacts are not considered great (See Section 4.1.1). Handline gear and longlines used in the reef fish fishery can damage habitat through snagging or entanglement. Longlines can also damage hard bottom structures during retrieval as the line sweeps across the seafloor. Additionally, anchoring over hard-bottom areas can also affect benthic habitat by breaking or destroying hard bottom structures. However, these gears are not believed to have much negative impact on bottom structures and are considerably less destructive than other commercial gears, such as traps and trawls, which are not allowed for reef fish fishing.

Damage caused from reef fish fishing, although minor, is associated with the level of fishing effort (see Section 4.1.1). Therefore, actions reducing levels of effort would result in greater benefits to the physical environment because fishing related interactions with habitat would be reduced. Thus, actions described in steps 3 and 4 of this CEA which have reduced fishing effort for some species, and possibly the fishery on the whole, have had a positive effect on hard bottom habitats. RFFAs, such as Amendments 28 and 39, should also benefit these habitats as they would also reduce or limit fishing effort. As described in Sections 4.1.1, 4.2.1, and 4.3.1, effects on the physical environment from the proposed actions would likely be minimal because prosecution of the fishery should not be changed.

Reef fish EFH, particularly coral reefs and SAVs, are particularly susceptible to non-fishing activities (GMFMC 2004a). The greatest threat comes from dredge-and-fill activities (ship channels, waterways, canals, and coastal development). Oil and gas activities as well as changes in freshwater inflows can also adversely affect these habitats. As described in Step 4d of this cumulative effects analysis, the potential harm to reef fish habitat was highlighted by the Deepwater Horizon MC252 incident (http://response.restoration.noaa.gov/deepwaterhorizon). Essential fish habitat and HAPC designations cited in Section 3.2, GMFMC (2005b), and GMFMC (2010) and are intended to promote careful review of proposed activities that may affect these important habitats to assure that the minimum practicable adverse impacts occur on EFH. However, NMFS has no direct control over final decisions on such projects. The cumulative effects of these alternatives depend on decisions made by agencies other than NMFS, as NMFS and the Gulf Council have only a consultative role in non-fishing activities. Decisions

made by other agencies that permit destruction of EFH in a manner that does not allow recovery, such as bulkheads on former mangrove or marine vegetated habitats, would constitute irreversible commitments. However, irreversible commitments should occur less frequently as a result of EFH and HAPC designations. Accidental or inadvertent activities such as ship groundings on coral reefs or propeller scars on seagrass could also cause irreversible loss.

At this time, it is unclear what effects climate change will have on red snapper EFH. Factors associated with climate change such as ocean acidification could negatively affect important biotic components of red snapper EFH such as corals (IPCC 2014). Hollowed et al. (2013) has identified important ecosystem paths that deserve future study to determine climate change cause and effects.

Managed Resources

There are 31 species of reef fish managed in the Gulf EEZ, and of the species where the stock status is known, four of the eleven species are considered overfished (gag, greater amberjack, gray triggerfish, and red snapper; see Section 3.3). Recent actions for these overfished stocks have ended overfishing and set or continued rebuilding plans (e.g., Amendments 27, 32, 35, and 37).

In the past, the lack of management of reef fish allowed many stocks to undergo both growth and recruitment overfishing. This has allowed some stocks to decline as indicated in numerous stock assessments (Section 3.3). Red snapper have been considered overfished since the first stock assessment in 1986. For red snapper, management measures including a minimum size limit, commercial quota, and aggregate bag limit were put in place as part of the initial Reef Fish FMP or Amendment 1 (Section 3.1). None of these measures halted increases in landings (Table 3.1.2). However, over time, management measures have become more restrictive and held landings more closely to the quotas.

The present harvest levels are based on a rebuilding plan put in place by Amendment 27 which shifted the plan from a constant catch to a constant fishing mortality plan. The current plan, after an initial reduction in the total allowable catch from 9.12 mp to 5 mp, has allowed harvests to increase as the stock rebuilds. These measures have also limited the red snapper harvest sufficiently to end overfishing on the stock. In addition, the red snapper IFQ program has successfully held landings by the commercial sector below its quota. However, these measures, along with other IFQ programs for grouper and tilefish (Amendment 29) may have, at least for the commercial sector, redirected effort towards other non-IFQ managed reef fish species such as gray triggerfish and greater amberjack by fishermen without IFQ shares or allocation. Landings of these non-IFQ managed species are closely managed to prevent them from exceeding their ACLs and protects them from overharvest. In fact, measures for gray triggerfish and greater amberjack allow the fishery to be closed if the harvest is projected to meet their respective commercial and recreational quotas.

Fishery management RFFAs are expected to benefit managed species. These actions are expected to manage the stocks at OY per National Standard 1 and are described in steps 3 and 4 of this CEA. Although this amendment and Amendments 28, 36, and 39 do not specifically

address overfishing of red snapper, they are intended to improve the management of the commercial and recreational sectors in ways that are likely to better keep harvests within the quotas. Other RFFAs described in steps 3 and 4 similarly do not specifically address overfishing but are intended to improve the management of reef fish stocks either through revising ACLs, improving data reporting, or allowing more flexibility in management.

Non-fishing activities are likely to adversely affect reef fish stocks as listed in Step 4d. For example, LNG facilities are being proposed in the western and northern Gulf. As described in Step 4d, these facilities can have a negative effect on species with pelagic larvae, like most reef fish species. To mitigate the effects of these facilities, closed- rather than open-loop systems are being called for. At this time, the effect of LNG facilities is unknown and is likely to be less for reef fish species than other more coastal species such as red drum. Other factors such as climate change, hurricanes, and oil and gas extraction could have detrimental effects on reef fish species, but these effects are poorly understood.

Vessel Owner, Captain, and Crew (Commercial and For Hire)

Adverse or beneficial effects of actions on vessel owners, captains, and crew are tied to the ability of a vessel to make money. In commercial fisheries, these benefits are usually derived from shares awarded after fishing expenses are accounted for. The greater the difference between expenses and payment (revenue) for harvested fish, the more profit is generated by the fishing vessel. For-hire businesses generate revenue by selling either at the vessel level (charter businesses) or passenger level (headboats)

The commercial fishery has benefited from past actions in the reef fish fishery relative to this action. Prior to 1990, entry into the reef fish fishery was unhindered by regulation. To constrain harvest in order to prevent overexploitation of reef fish in general and red snapper specifically, the Council implemented size limits, quotas, seasonal closures, and a permit moratorium. These measures have produced limited success. For red snapper, the commercial quota was overrun 10 times until the IFQ program established in 2007 (Table 3.1.2).

Current management measures have had an overall positive, short-term impact on the red snapper component of the commercial sector. Landing restrictions were needed to keep the commercial red snapper harvest within its quota and primarily took the form of short mini-seasons (Hood et al. 2007). The mini-seasons kept many commercial vessels from taking more fishing trips during these years limiting fishing effort. With the advent of the IFQ program, fishermen with red snapper allocation were able to haveflexibility in when and where they could fish. It also stopped the commercial quota from being exceeded. However, this program adversely affected fishermen who did not qualify for the initial distribution of IFQ shares. These fishermen have been required to purchase IFQ shares or allocation if they wished to harvest red snapper.

For other overfished reef fish stocks other than red snapper, rebuilding measures required to end this condition and rebuild stocks have constrained the harvest for these species over the short-term and likely increased competition within the commercial sector to harvest other stocks.

However, by using constant fishing mortality rebuilding plans, harvests have been allowed to increase as the stocks recover.

Non-FMP factors have adversely affected the reef fish commercial and for-hire sectors. Imports can cause fishermen to lose markets when fishery closures occur as dealers and processors use imports to meet consumer demand. Consumer comfort with imports can then limit the price fishermen receive when harvest is allowed. Other factors that have had an adverse effect on the commercial fishery include hurricanes and increases in fishing costs, such as fuel, which may have pushed marginal fishing operations out of business (see step 4d). Hurricanes are unpredictable and localized in their effects. Increases in fishing costs, unless accompanied by an increase in prices or harvest quantity, decrease the profitability of fishing.

The for-hire component has benefited from past actions in the reef fish fishery relative to this action. This increase has been fueled by increased interest by the public to go fishing (i.e., more trips sold) as evidenced by an almost three-fold increase in recreational fishing effort since 1986 (SEDAR 12 2007). To constrain harvest in order to prevent overexploitation of reef fish in general and red snapper specifically, NMFS, through the Council, implemented minimum size and bag limits for most species prior to 2000. In addition, a recreational red snapper quota was implemented in 1997 and a permit moratorium to constrain the recreational effort from the for-hire industry in 2003. These measures have met with limited success toward ending overfishing.

Current management measures may have had a negative, short-term impact on the for-hire component of the reef fish fishery. Landing restrictions have been needed to keep the recreational red snapper harvest within its quota. These restrictions include a reduced bag limit and seasonal closures. These measures may have reduced interest by the public to take for-hire fishing trips and possibly resulted in a reduction in the number of trips taken, as shown in Table 4.4.2 (although the Deepwater Horizon MC252 oil spill may also be partly responsible for the decrease in trips). Other factors that have had an adverse effect on the for-hire component of the reef fish fishery include increases in fishing costs, such as fuel, and hurricanes which may have pushed marginal fishing operations out of business (see step 4d). However, these factors may be less important than may seem apparent. For the red snapper for-hire sector, reductions in charter fishing from more restrictive regulations, increased costs, and effects from hurricanes were claimed by the industry (GMFMC 2007). But red snapper data for 2007 found only lingering effects of the 2005 hurricanes; annual average effort for 2004 through 2005 were only slightly greater than in 2007. Although the available data cannot address claims of severe economic losses by individual entities, this data does not support contentions of widespread industry harm. However, for red snapper, effort may have shifted to other species or other charter businesses.

Many RFFAs are likely to have a short-term negative impact on the for-hire component. Red snapper, gray triggerfish, greater amberjack, and gag have experienced overfishing, are considered overfished, and are being managed under stock rebuilding plans. Measures required to end overfishing and rebuild these stocks have constrained the harvest for these species. If these measures result in less interest by the fishing public to take fishing trips on for-hire vessels, then this will adversely affect this sector. However, as mentioned above, this effect has not been apparent for red snapper because the for-hire component has the ability to shift to other species. The ability to shift to other species would be expected to continue in response to subsequent

RFFAs, though the flexibility would be reduced the more species that become subject to increased restrictions. Some short-term beneficial actions include an increase in TAC and relaxation of management measures for red grouper and vermilion snapper, as these stocks have recovered from overfishing and harvest restrictions have been relaxed.

Because many management RFFAs are designed to manage stocks at OY, these actions should be beneficial to the for-hire component. Stocks would be harvested at a sustainable level, and at higher levels for those stocks being rebuilt. If allocation between components, as proposed in this amendment, favors the for-hire sector, this could provide additional red snapper fishing days and allow for more trips for this component. Non-management-related RFFAs that could affect the for-hire sector include hurricanes, oil and gas extraction, and increases in fishing costs. Hurricanes are unpredictable and localized in their effects. Oil spills, which are also unpredictable, can have extensive adverse impacts over large areas as evidenced by the Deepwater Horizon MC252 spill. Increases in fishing costs, unless accompanied by an increase in the price charged per trip or the number of trips, decrease the profitability of fishing.

Anglers

It is estimated that 3.1 million residents of Gulf States participated in marine recreational fishing (NMFS 2013a). Red drum and spotted sea trout are the species most commonly reported as target species by these anglers, with approximately 35 percent and 33 percent of interviewed anglers reporting targeting these species, respectively. The most commonly caught non-bait species across all waters of the Gulf were spotted seatrout, red drum, sand seatrout, Atlantic croaker, and gray snapper. In federal waters, the most commonly harvested species are white grunt, red grouper, red snapper, gag, and yellowtail snapper. As summarized in Holiman (2000), the typical angler in the Gulf is 44 years old, male (80%), white (90%), and employed full-time (92%). They have a mean income of $42,700, and have fished in the state for an average of 16 years. The average number of trips taken in the 12 months preceding the interview was about 38 and these were mostly (75%) one-day trips with average expenditure of less than $50. Seventy-five percent of interviewed anglers reported that they held salt-water licenses, and 59 percent owned boats used for recreational saltwater fishing. More recent comparable statistics are not available.

The effects of various past, present, and RFFAs on anglers are measured through levels of participation in the fishery. Measures that reduce participation are negative and measures that increase participation are positive. However, it is difficult to assess what affects past and present management measures have had on anglers because available data indicates the amount of effort by the private sector has increased. This increase has been from approximately 6.8 million trips in 1981 to over 14 million trips from in 2003 to 2009 (Rios 2013). The number of angler trips declined from 14,356,523 angler trips in 2009, to 13,548,899 in 2010, and 13,874,314 in 2011. The decline in 2010 and 2011 is likely due to the Deepwater Horizon MC252 oil spill. The effects of various management measures on the participation by anglers is likely similar to the effects on the for-hire industry discussed above. This includes factors unrelated to management, such as hurricanes and increasing fuel and other costs. It should be noted that a possible effect of the proposed action could be constraining most of the private angling to state waters if state non-compable seasons continue. If the private angling allocation is too low, then a greater proportion

of private angling fish would be caught in state waters, reducing the days available to fish in federal waters.

Infrastructure

Infrastructure refers to fishing-related businesses and includes marinas, rentals, snorkel and dive shops, boat dockage and repair facilities, tackle and bait shops, fish houses, and lodgings related to recreational fisheries industry. This infrastructure is tied to the commercial and recreational fisheries and can be affected by adverse and beneficial economic conditions in those fisheries. Therefore, the effects of past, present, and RFFAs should reflect responses by the fisheries to these actions. Past actions allowing the recreational and commercial fisheries to expand have had a beneficial effect providing business opportunities to service the need of these industries. Present actions which have constrained the commercial fisheries likely have had an adverse effect because lower revenues generated from the fishery would be available to support the infrastructure. However, as conditions improve for the fishery as described above through RFFAs, similar benefits should be accrued by the businesses comprising the infrastructure. For the recreational sector, as stated above, it is difficult to assess the impact of present and RFFAs since angler participation has increased until recently. Actions enhancing this participation should also be beneficial to the infrastructure. However, it should be noted the Council has been receiving public testimony that participation may be declining as fuel prices increase and may be reflected in the decline in the number of angler trips. It should be noted that non-FMP factors such as the Deepwater Horizon MC252 oil spill (IAI 2012) and climate change (http://www.nefsc.noaa.gov/ecosys/climate_change/implications.html) may adversely affect fishing communities, particularly those communities considered more vulnerable.

Administration

Administration of fisheries is conducted through federal (including the Council) and state agencies which develop and enforce regulations, collect data on various fishing entities, and assess the health of various stocks. As more regulations are required to constrain stock exploitation to sustainable levels, greater administration of the resource is needed. The NMFS Office of Law Enforcement, in cooperation with state agencies, would continue to monitor regulatory compliance with existing regulations and NMFS would continue to monitor both recreational and commercial landings to determine if landings are meeting or exceeding specified quota levels. Further, stock status needs to be periodically assessed to ensure stocks are being maintained at proper levels. Some present actions have assisted the administration of fisheries in the Gulf. In 2007, an IFQ program was implemented for the commercial red snapper fishery, requiring NMFS to monitor the sale of red snapper IFQ shares. Recordkeeping requirements for IFQ shares have improved commercial quota monitoring and prevent or limit overages from occurring. A vessel monitoring system was also implemented for all commercial reef fish vessels in 2007 and is helping enforcement identify vessels violating various fishing closures. The recent implementation of ACLs and AMs for most federally managed species has required close monitoring of landings. For some species, harvest is closed if landings are projected to exceed the ACL within the season. For others, quotas or ACLs need to be adjusted during the following season to account for any ACL overages that occur in the preceding year.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects of allocating recreational red snapper between the for-hire and private angling components on the biophysical environment is likely neutral because it should not have much effect on overall fishing effort. For the socioeconomic environment, depending on the component, some effects would likely be positive and some negative depending on who the allocation favors. However, short-term negative impacts on the fisheries' socioeconomic environment may occur due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized within the recreational sector by using combinations of bag limits, size limits, and closed seasons. Note that by the actions considered in this amendment, impacts of future recreational management measures may be further minimized by directly addressing issues specific for the federal for-hire and private angling components. Also note the commercial sector is managed through individual fishing quota programs, size limits, and season-area closures would not likely be effected by the proposed action.

11. Monitor the cumulative effects of the selected alternative and modify management as necessary.

The effects of the proposed actions are, and will continue to be, monitored through collection of landings data by NMFS, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. Landings data for the recreational sector in the Gulf is collected through MRIP, NMFS' Headboat Survey, and the Texas Marine Recreational Fishing Survey. MRIP replaced the previous MRFSS program. Commercial data is collected through trip ticket programs, port samplers, and logbook programs. Currently, SEDAR assessments of Gulf red snapper are scheduled for 2014 and 2015 (see step 3).

Unavoidable Adverse Effects

Unavoidable adverse effects are described in detail in the cumulative effects analysis of Amendment 30B (GMFMC 2008b) and 32 (GMFMC 2011a) and is incorporated here by reference. Catch quotas, minimum size limits, bag limits, and seasonal closures, are generally effective in limiting total fishing mortality, the type of fish targeted, the number of targeted fishing trips, and/or the time spent pursuing a species. However, these management tools have the unavoidable adverse effect of creating regulatory discards. Discard mortality must be accounted for in a stock assessment as part of the allowable biological catch, and thus restricts total allowable catches.

Many of the current participants in the reef fish fishery may never recuperate losses incurred from the more restrictive management actions imposed in the short-term to end overfishing of red snapper. Because red snapper is but one of the reef fish species managed in the Reef Fish FMP, short-term losses are not expected to be significant, and other species may be substituted to make up for losses to the fishery. With the anticipated recovery of the stock, future participants in the reef fish fishery will benefit. Overall, short-term impacts of actions would be offset with much higher allowable catch levels as the stock recovers and is rebuilt.

The actions considered in this amendment should not have an adverse effect on public health or safety because these measures should not alter actual fishing practices, just which recreational component can harvest what percentage of the overall recreational quota. Unique characteristics of the geographic area are highlighted in Section 3. Adverse effects of fishing activities on the physical environment are described in detail in Section 4.1.1. This section concludes the impact on the physical environment should be minor from actions proposed in this document. Uncertainty and risk associated with the measures are described in detail in the same sections as well as assumptions underlying the analyses.

Relationship between Short-term Uses and Long-term Productivity

The primary objective of this amendment and associated EIS is to define distinct private angling and federal for-hire components of the recreational red snapper fishery and allocate red snapper resources between these recreational components. The relationship between short-term economic uses and long-term economic productivity are discussed in the preceding section. However, because red snapper is but one species in the reef fish complex, these effects may be mitigated through effort shifting to other species and may not be significant.

No alternatives are being considered that would avoid these short-term negative effects because they are a necessary cost associated with rebuilding and protecting the red snapper stock. The range of alternatives has varying degrees of economic costs and administrative burdens. Some alternatives have relatively small short-term economic costs and administrative burdens, but would also provide smaller and more delayed long-term benefits. Other alternatives have greater short-term costs, but provide larger and more immediate long-term benefits.

Mitigation, Monitoring, and Enforcement Measures

Mitigation, monitoring and enforcement measures are described in detail in the cumulative effects analysis of Amendment 30B (GMFMC 2008b) and is incorporated here by reference. The process of reallocating the red snapper resource between components is expected to have a negative short-term effect on the social and economic environment for the for-hire component, and will create a burden on the administrative environment. Given the negative effects described in Sections 4.1 - 4.4, it is difficult to mitigate these measures and managers must balance the costs and benefits when choosing management alternatives for the reef fish fishery. However, these measures are expected to have long-term benefits by helping the red snapper stock recover more quickly.

To ensure the red snapper stock recovers to a level that supports harvests at the optimum yield, periodic reviews of stock status are needed. These reviews are designed to incorporate new information and to address unanticipated developments in the respective fisheries and would be used to make appropriate adjustments in the reef fish regulations should harvest not achieve optimum yield objectives. The details for how assessments are developed, reviewed, and applied are described in Amendment 30B, as are the rule-making options the Council and NMFS have for taking corrective actions (GMFMC 2007).

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

Reef fish management measures include a number of area-specific regulations where reef fish fishing is restricted or prohibited in order to protect habitat or spawning aggregations of fish, or to reduce fishing pressure in areas that are heavily fished. To improve enforceability of these areas, the Council has established a vessel monitoring system program for the commercial reef fish sector to improve enforcement. Vessel monitoring systems allows NMFS enforcement personnel to monitor compliance with these area-specific regulations, and track and prosecute violations.

Irreversible and irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of agency resources proposed herein. The actions to change the red snapper allocation and accountability measures are readily changeable by the Council in the future. There may be some loss of immediate income (irretrievable in the context of an individual not being able to benefit from compounded value over time) to some sectors from the restricted fishing seasons.

Any Other Disclosures

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

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

Items a, b, d, e, f, and h are addressed in Sections 2, 3, 4, and 5. Items a, b, and d are directly discussed in Sections 2 and 4. Item e is discussed in economic analyses (Sections 4.1.4, 4.2.4, and 4.3.4). Alternatives that encourage fewer fishing trips would result in energy conservation. Item f is discussed throughout the document as fish stocks are a natural and depletable resource.

A goal of this amendment is to make this stock a sustainable resource for the nation. Mitigation measures are discussed in Section 4.4. Item h is discussed in Section 4, with particular mention in Section 4.4.

The other elements are not applicable to the actions taken in this document. Because this amendment concerns the management of a marine fish stock, it is not in conflict with the objectives of federal, regional, state, or local land use plans, policies, and controls (Item c). Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures (Item g) is not a factor in this amendment. The actions taken in this amendment will affect a marine stock and its fishery, and should not affect land-based, urban environments. The exception would be the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places. The proposed actions are not likely to increase fishing activity and so no additional impacts to the *U.S.S. Hatteras* would be expected

With regards to the Endangered Species Act (ESA), the most recent biological opinion for the Reef Fish Fishery Management Plan, completed on September 30, 2011, concluded authorization of the Gulf reef fish fishery managed under this management plan is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish (See Section 3.2 for more information on ESA species). An incidental take statement was issued specifying the amount of anticipated take, along with reasonable and prudent measures and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes. Other listed species and designated critical habitat in the Gulf were determined not likely to be adversely affected. NMFS also determined that the reef fish fishery was not likely to adversely affect *Acropora* because of where the fishery operates, the types of gear used in the fishery, and that other regulations protect *Acropora* where they are most likely to occur.

With regards to the Marine Mammal Protection Act, fishing activities under the Reef Fish Fishery Management Plan should have no adverse impact on marine mammals (See Section 3.2). The proposed actions are not expected to substantially change the way the fishery is currently prosecuted (e.g., types of methods, gear used, etc.). Gear used by the reef fish fishery was still classified in the 2014 List of Fisheries as a Category III fishery (79 FR 14418, April 14, 2014) because it is prosecuted primarily with longline and hook-and-line gear. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to one percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population.

CHAPTER 5. REGULATORY IMPACT REVIEW

Not a part of the DEIS

CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS

Not a part of the DEIS

CHAPTER 7. LIST OF PREPARERS

PREPARERS

Name	Expertise	Responsibility	Agency
Assane Diagne	Economist	Co-Team Lead – Amendment development, economic analyses	GMFMC
Peter Hood	Fishery biologist	Co-Team Lead – Amendment development, biological analyses, cumulative effects analysis	SERO
Ava Lasseter	Anthropologist	Social analyses	GMFMC
Stephen Holiman	Economist	Economic analyses	SERO
Christina Package-Ward	Anthropologist	Social analyses	SERO
Andy Strelcheck	Fishery biologist	Data analyses	SERO

REVIEWERS (Preparers also serve as reviewers)

Name	Expertise	Responsibility	Agency
Noah Silverman	Natural resource management specialist	National Environmental Policy Act review	SERO
Mara Levy	Attorney	Legal review	NOAA GC
Steve Branstetter	Biologist	Review	SERO
Tony Lamberte	Economist	Review	SERO
Morgan Kilgour	Biologist	Review	GMFMC
Anik Clemens	Technical writer and editor	Regulatory writer	SERO
Adam Brame	Biologist	Protected Resources review	SERO
David Dale	Biologist	Essential Fish Habitat review	SERO
Carrie Simmons	Biologist	Review	GMFMC
Juan Agar	Economist	Review	SEFSC
David Carter	Economist	Review	SEFSC

GMFMC = Gulf of Mexico Fishery Management Council; NOAA GC = National Oceanic and Atmospheric Administration General Counsel; SEFSC = Southeast Fisheries Science Center; SERO = Southeast Regional Office of the National Marine Fisheries Service.

CHAPTER 8. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM A COPY OF THE EIS WAS SENT

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office
- Office for Law Enforcement

NOAA General Counsel

Environmental Protection Agency
United States Coast Guard
United States Fish and Wildlife Services
United States Department of Interior
United States Department of State
Marine Mammal Commission
United States Coast Guard
Texas Parks and Wildlife Department
Alabama Department of Conservation and Natural Resources/Marine Resources Division
Louisiana Department of Wildlife and Fisheries
Mississippi Department of Marine Resources
Florida Fish and Wildlife Conservation Commission

CHAPTER 9. REFERENCES

Adams, W.F., and C. Wilson. 1995. The status of the smalltooth sawfish, *Pristis pectinata* Latham 1794 (Pristiformes: Pristidae) in the United States. Chondros 6(4):1-5.

Agar, J. S., A. Strelcheck, and A. Diagne. 2014. The Gulf of Mexico Red Snapper IFQ Program: The First Five Years. Marine Resource Economics. 29(2): 177-198.

American Fisheries Society. 2013. Common and Scientific Names of Fishes from the United States, Canada, and Mexico. Seventh Edition. Special Publication 34. Bethesda, MD.

Anderes Alvarez, B. L., and I. Uchida. 1994. Study of hawksbill turtle (*Eretmochelys imbricata*) stomach content in Cuban waters. Pages 27-40 *in* Study of the Hawksbill Turtle in Cuba (I). Ministry of Fishing Industry, CUBA. Ministry of Fishing Industry, Cuba.

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

Barnette, M. C. 2001. A review of the fishing gear utilized within the Southeast Region and their potential impacts on essential fish habitat. NOAA Technical. Memorandum. NMFS-SEFSC-449. National Marine Fisheries Service. St. Petersburg, Florida.

Bigelow, H.B., and W.C. Schroeder. 1953. Sawfishes, guitarfishes, skates and rays, pp. 1-514. *In:* Tee-Van, J., C.M Breder, A.E. Parr, W.C. Schroeder and L.P. Schultz (eds). Fishes of the Western North Atlantic, Part Two. Mem. Sears Found. Mar. Res. I.

Bjorndal, K. A. 1997. Foraging ecology and nutrition of sea turtles. P. L. Lutz, and J. A. Musick, editors. The Biology of Sea Turtles. CRC Press, Boca Raton.

Bjorndal, K. A. 1980. Nutrition and grazing behavior of the green turtle, Chelonia mydas. Marine Biology 56:147-154.

Bohnsack, J. 2000. Report on Impacts of Recreational Fishing on Essential Fish Habitat. In: Hamilton, A. N., Jr., ed. Gear impacts on essential fish habitat in the Southeastern Region. National Marine Fisheries Service, Southeast Fisheries Science Center. Pascagoula, Mississippi.

Bolten, A. B., and G. H. Balazs. 1995. Biology of the early pelagic stage - the 'lost year'. Pages 579-581 *in* K. A. Bjorndal, editor. Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington, DC.

Brongersma, L. D. 1972. European Atlantic turtles. Zoologische Verhandelingen (121):1-318.

Burke, V. J., S. J. Morreale, and A. G. J. Rhodin. 1993. Lepidochelys kempii (Kemp's ridley sea turtle) and Caretta caretta (loggerhead sea turtle): diet. Herpetological Review 24(1):31-32.

Burton, M. 2008. Southeast U.S. Continental Shelf, Gulf of Mexico, and U.S. Caribbean. In: Osgood, K. E., ed. Climate Impacts on U.S. Living Marine Resources: National Marine Fisheries Service Concerns, Activities and Needs. U.S. Dep. Commerce, NOAA Tech. Memo. NMFSF/SPO-89, 118 p.

Byles, R. 1988. Satellite Telemetry of Kemp's Ridley Sea Turtle, *Lepidochelys kempi*, in the Gulf of Mexico. Report to the National Fish and Wildlife Foundation:40 pp.

Carr, A. F. 1986. RIPS, FADS, and little loggerheads. BioScience 36(2):92-100.

Carr, A. 1987. New perspectives on the pelagic stage of sea turtle development. Conservation Biology 1(2):103-121.

Carter, D.W. and C. Liese. 2012. "The Economic Value of Catching and Keeping or Releasing Saltwater Sportfish in the Southeast USA." *North American Journal of Fishery Management* 23: 613-625.

Cass-Calay, S. L., and M. Bahnick. 2002. Status of the yellowedge grouper fishery in the Gulf of Mexico. Contribution SFD 02/03 – 172. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

CEQ. 1997. Considering cumulative effects under the National Environmental Policy Act. Council on Environmental Policy, Executive Office of the President. 64 pp. + appendices. Available at http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm.

Chester, W. 2001. Full box! One hundred years of fishing and boat building in Bay County. Fire in the Water Publishing Company, South port, Florida. 314 p.

Doerpinghaus, J., K. Hentrich, A. Stavrinaky, and M. Troup. 2013. The Snapper Saga: An Assessment of Sector Separation on the Gulf of Mexico Recreational Red Snapper Fishery. Master of Environmental Science and Management submitted to the Bren School of Environmental Science & Management

Eckert, S. A., K. L. Eckert, P. Ponganis, and G. L. Kooyman. 1989. Diving and foraging behavior of leatherback sea turtles (Dermochelys coriacea). Canadian Journal of Zoology 67(11):2834-2840.

Eckert, S. A., D. W. Nellis, K. L. Eckert, and G. L. Kooyman. 1986. Diving patterns of two leatherback sea turtles (Dermochelys coriacea) during internesting intervals at Sandy Point, St. Croix, U.S. Virgin Islands. Herpetologica 42(3):381-388.

Environmental Information Partnership (EIP). 1998. Cumulative Effects Assessment in the Moose River Basin - Background Literature Review. Ministry of Natural Resources, Northeast Region. Ontario. http://www.mnr.gov.on.ca/en/index.html?CSB_ic-name=topMenu&CSB_ic-info=home_Eng

EPA. 1999. EPA Region 4: Interim Policy to Identify and Address Potential Environmental Justice Areas. EPA-904-R-99-004.

Feeny, David, Fikret Berkes, Bonnie J. McCay, and James M. Acheson. 1990. The Tragedy of the Commons: Twenty-Two Years Later, Human Ecology 18:1-19.

Fischer, A. J., M. S. Baker, Jr., and C. A. Wilson. 2004. Red snapper (*Lutjanus campechanus*) demographic structure in the northern Gulf of Mexico based on spatial patterns in growth rates and morphometrics. Fishery Bulletin 102:593–603.

Frick, J. 1976. Orientation and behavior of hatchling green turtles Chelonia mydas in the sea. Animal Behavior 24(4):849-857.

Gannon, D. P., E. J. Berens McCabe, S. A. Camilleri, J. G., Gannon, M. K. Brueggen, A. A. Barleycorn, V. I. Palubok, G. J. Kirkpatrick, and R. S. Wells. 2009. Effects of *Karenia brevis* harmful algal blooms on nearshore fish communities in southwest Florida. Mar. Ecol. Prog. Ser. 378:171–186.

GMFMC. 1981. Environmental impact statement and fishery management plan for the reef fish resources of the Gulf of Mexico and environmental impact statement. Gulf of Mexico Fishery Management Council, Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20FMP%20and%20EIS%201981-08.pdf

GMFMC. 1989. Amendment 1 to the reef fish fishery management plan including environmental assessment, regulatory impact review, and regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20Amend-01%20Final%201989-08-rescan.pdf

GMFMC. 1991. Regulatory amendment to the reef fish fishery management plan for setting the 1991 red snapper total allowable catch. Gulf of Mexico Fishery Management Council, Tampa, Florida. 46 p. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Reef%20Fish%20Reg%20Amend%20-%201991-03.pdf

GMFMC. 1995. Regulatory amendment to the reef fish fishery management plan to set 1996 red snapper total allowable catch. Gulf of Mexico Fishery Management Council, Tampa, Florida. 49 p. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20RegAmend%20-%201995-12.pdf

GMFMC. 2003. Corrected amendment for a charter/vessel headboat permit moratorium amending the fishery management plans for: reef fish (Amendment 20) and coastal migratory pelagics (Amendment 14) including environmental assessment, regulatory impact review, and

initial regulatory flexibility act. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/CBAmendmentFINAL-corrected.pdf

GMFMC. 2004a. Final environmental impact statement for the generic essential fish habitat amendment to the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, stone crab fishery of the Gulf of Mexico, coral and coral reef fishery of the Gulf of Mexico, spiny lobster fishery of the Gulf of Mexico and South Atlantic, coastal migratory pelagic resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf

GMFMC. 2004b. Amendment 22 to the fishery management plan for the reef fish fishery of the Gulf of Mexico, U.S. waters, with supplemental environmental impact statement, regulatory impact review, initial regulatory flexibility analysis, and social impact assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amend%2022%20Final%2070204.pdf

GMFMC. 2005a. Final amendment 18A to the fishery management plan for the reef fish resources of the Gulf of Mexico, including environmental assessment, regulatory impact review, and initial regulatory flexibility analyses. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amendment_18A_Final.pdf

GMFMC. 2005b. Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Waters, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico, and South Atlantic, Stone Crab Fishery of the Gulf of Mexico, Spiny Lobster in the Gulf of Mexico and South Atlantic, and Coral and Coral Reefs of the Gulf of Mexico.

GMFMC. 2006. Final amendment 26 to the Gulf of Mexico reef fish fishery management plan to establish a red snapper individual fishing quota program, including supplemental environmental impact statement, initial regulatory flexibility analysis, and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amend26031606FINAL.pdf

GMFMC. 2007. Final amendment 27 to the reef fish fishery management plan and amendment 14 to the shrimp fishery management plan including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. 490 pp with appendices. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf

GMFMC. 2008a. Final reef fish amendment 30A: greater amberjack – revised rebuilding plan, accountability measures; gray triggerfish – establish rebuilding plan, end overfishing, accountability measures, regional management, management thresholds and benchmarks including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Amend-30A-Final%20208.pdf

GMFMC. 2008b. Final Amendment 30B: gag – end overfishing and set management thresholds and targets. Red grouper – set optimum yield, TAC, and management measures, time/area closures, and federal regulatory compliance including environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Amendment%2030B%2010_10_08.pdf

GMFMC. 2009. Final amendment 31 to the fishery management plan for reef fish resources in the Gulf of Mexico addresses bycatch of sea turtles in the bottom longline component of the Gulf of Mexico reef fish fishery, includes draft environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. 261 pp with appendices. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Draft%20RF%20Amend%2031%206-11-09.pdf

GMFMC. 2010. Final regulatory amendment the reef fish fishery management plan to set total allowable catch for red snapper including revised environmental assessment, regulatory impact review, and regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Regulatory%20Amendment%203_26_10.pdf

GMFMC. 2011a. Final reef fish amendment 32 – gag grouper – rebuilding plan, annual catch limits, management measures, red grouper – annual catch limits, management measures, and grouper accountability measures. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20RF32_EIS_October_21_2011[2].pdf

GMFMC. 2011b. Final generic annual catch limits/accountability measures amendment for the Gulf of Mexico fishery management council's red drum, reef fish, shrimp, coral and coral reefs fishery management plans, including environmental impact statement, regulatory impact review, regulatory flexibility analysis, and fishery impact statement. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf

GMFMC. 2011c. Regulatory amendment to the reef fish fishery management plan to set 2011 total allowable catch for red snapper. Gulf of Mexico Fishery Management Council. Tampa, Florida.

http://www.gulfcouncil.org/docs/amendments/Red%20Snapper%202011%20Regulatory%20Amendment%20-%201-11.pdf

GMFMC. 2012a. Final regulatory amendment to the fishery management plan for the reef fish resources of the Gulf of Mexico, revise fall recreational fixed closed season and set 2012 and 2013 quotas for red snapper. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Red%20Snapper%20Fall%20Season%20and%20Quota%20RegAmend%20-%2003-20-2012.pdf

GMFMC. 2012b. Final amendment 38 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – modifications to the shallow-water grouper accountability measures, including an environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20Amendment%2038%2009-12-2012.pdf

GMFMC. 2012c. Final amendment 37 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – Modifications to the gray triggerfish rebuilding plan including adjustments to the annual catch limits and annual catch targets for the commercial and recreational sectors. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final_Reef_Fish_Amend_37_Gray_Triggerfish_12_06_12[1].pdf

GMFMC. 2013a. Red snapper 2013 quota increase and supplemental recreational season, including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Framework action to the fishery management plan for the reef fish resources of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Framework%20Action%20Set%202013%20Quotas%2008-01-13.pdf

GMFMC. 2013b. Red snapper individual fishing quota program 5-year review. Jointly prepared by Gulf of Mexico Fishery Management Council and NMFS Southeast Regional Office. Tampa and St. Petersburg, FL. http://www.gulfcouncil.org/docs/amendments/Red%20Snapper%205-year%20Review%20FINAL.pdf

GMFMC. 2013c. Framework action to set the 2013 red snapper commercial and recreational quotas and modify the recreational bag limit, including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://gulfcouncil.org/docs/amendments/Red%20Snapper%20Framework%20Action%20to%20Set%202013%20Quotas.pdf

GMFMC and SAFMC. 1982. Fishery management plan final environmental impact statement for coral and coral reefs. Gulf of Mexico Fishery Management Council. Tampa, Florida; and South Atlantic Fishery Management Council. Charleston, South Carolina. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Coral%20FMP.pdf

Goodyear, C. P. 1988. The Gulf of Mexico fishery for reef fish species, a descriptive profile. Unpublished report. National Marine Fisheries Service, Southeast Fisheries Center, Miami Laboratory, CRD 87/88-19. https://grunt.sefsc.noaa.gov/P_QryLDS/DisplayDocuments.jsp?min_series_code=CR&min_record_id=935&direction=next&total_rows=2955&description=SEFSC%20Technical%20Memorandum#

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

Holiman, Stephen. 2000. Summary report of methods and descriptive statistics for the 1997-1998 southeast region marine recreational economics survey. NMFS Southeast Regional Office. SERI-ECON-00-11.

Holland, S. M.,A. J. Fedler, and J. W. Milon. 1999. The operations and economics of the charter and head boat fleets of the eastern Gulf of Mexico and South Atlantic Coasts. University of Florida 178 pp.

Hollowed, A. B., Barange, M., Beamish, R., Brander, K., Cochrane, K., Drinkwater, K., Foreman, M., Hare, J., Holt, J., Ito, S-I., Kim, S., King, J., Loeng, H., MacKenzie, B., Mueter, F., Okey, T., Peck, M. A., Radchenko, V., Rice, J., Schirripa, M., Yatsu, A., and Yamanaka, Y. 2013. Projected impacts of climate change on marine fish and fisheries. ICES Journal of Marine Science 70: 1023–1037.

Hood, P. B., A. J. Strelcheck, and P. Steele. 2007. A history of red snapper management in the Gulf of Mexico. Pages 267-284. in W. F. Patterson, III, J. H. Cowan, G. R. Fitzhugh, and D. L.

Holzer, J. and K. McConnell. 2014. Harvest Allocation without Property Rights. Journal of the Association of Environmental and Resource Economics 1(1):209-232

Hughes, G. R. 1974. Is a sea turtle no more than an armored stomach? Bulletin of the South African Association for Marine Biological Research 11:12-14.
Impact Assessment, Inc. 2005. Identifying Communities Associated with the Fishing Industry Along the Florida Gulf Coast. Impact Assessment, Inc. La Jolla, CA. Volumes 1-3 646 pp.

Impact Assessment, Inc. 2006. Identifying Communities Associated with the Fishing Industry in Alabama and Mississippi -Final Report. Prepared under Contract WC133F-03-SE-0603. http://sero.nmfs.noaa.gov/sf/socialsci/pdfs/AlaMiss_PublicReleaseVersion_pdf_Feb06.pdf

Impact Assessment, Inc. (IAI) 2012. Small Business Impacts Associated with the 2010 Oil Spill and Drilling Moratorium in the Gulf of Mexico - Final Technical Report. Prepared for the U.S. Small Business Administration, Office of Advocacy. La Jolla, CA. 134 p.

IPCC. 2014. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley

(eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA.
Kennedy, V. S., R. R. Twilley, J. A. Kleypas, J. H. Cowan, Jr., S. R. Hare. 2002. Coastal and Marine Ecosystems and Global Climate Change: Potential Effects on U.S. Resources. Pew Center on Global Climate Change.

Keinath, J. A., and J. A. Musick. 1993. Movements and diving behavior of leatherback turtle. Copeia 1993(4):1010-1017.

Landsberg, J.H., L.J. Flewelling, and J. Naar. 2009. *Karenia brevis* red tides, brevetoxins in the food web, and impacts on natural resources: Decadal advancements. Harmful Algae 8:598–607.

Lanyon, J.M., C.J. Limpus, and H., Marsh. 1989. Dugongs and turtles: grazers in the seagrass system. *In:* Larkum, A.W.D, A.J., McComb and S.A., Shepard (eds.) Biology of Seagrasses. Elsevier, Amsterdam, 610.

Limpus, C.J., and N., Nichols. 1988. The southern oscillation regulates the annual numbers of green turtles (*Chelonia mydas*) breeding around northern Australia. Australian Journal of Wildlife Research 15:157.

Limpus, C.J., and N., Nichols. 1994. Progress report on the study of the interaction of El Niño Southern Oscillation on annual *Chelonia mydas* numbers at the southern Great Barrier Reef rookeries. *In:* Proceedings of the Australian Marine Turtle Conservation Workshop, Queensland Australia.

Lutz, P. L., and J. A. Musick, editors. 1997. The biology of sea turtles. CRC Press, Boca Raton, Florida.

Lutz, P. L., J. A. Musick, and J. Wyneken. 2003. The Biology of Sea Turtles. Volume II. CRC Press, Inc., Washington, D.C.

Márquez M, R. 1994. Synopsis of biological data on the Kemp's ridley turtle, *Lepidochelys kempii* (Garman 1880). U. S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center, Miami, Florida.

McCay, Bonnie J., and James M. Acheson. 1987. Human Ecology of the Commons In The Question of the Commons: The Culture and Ecology of Communal Resources. B.J. McCay and J.M. Acheson, eds. Pp. 1-34. Tucson: The University of Arizona Press.

McEachran, J.D. and J.D. Fechhelm. 2005. Fishes of the Gulf of Mexico, Vol. 2. University of Texas Press. Austin, Texas.

Mendonca, M. T., and P. C. H. Pritchard. 1986. Offshore movements of post-nesting Kemp's ridley sea turtles (Lepidochelys kempii). Herpetologica 42:373-380.

Meylan, A. 1984. Feeding ecology of the hawksbill turtle (Eretmochelys imbricata) spongivory as a feeding niche in the coral reef community. University of Florida.

Meylan, A. 1988. Spongivory in hawksbill turtles: a diet of glass. Science 239:393-395.

Meylan, A. B., and M. Donnelly. 1999. Status justification for listing the hawksbill turtle (Eretmochelys imbricata) as critically endangered on the 1996 IUCN Red List of Threatened Animals. Chelonian Conservation and Biology 3(2):200-204.

Methot, R. D. 2010. User manual for stock synthesis, model version 3.10b. Seattle, Washington The most recent version of this manual and software is available at http://nft.nefsc.noaa.gov/Download.html

Moran, D. 1988. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Gulf of Mexico) -- Red Snapper. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Gulf of Mexico), U.S. Army Corps of Engineers. U.S. Fish and Wildlife Service Biological Report 82(11.83): 19.

Mortimer, J. A. 1981. The feeding ecology of the west Caribbean green turtle (Chelonia mydas) in Nicaragua. Biotropica 13(1):49-58.

Mortimer, J. A. 1982. Feeding ecology of sea turtles. Pages 103-109 *in* K. A. Bjorndal, editor. Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington D.C.

Muller, R. G., M. D. Murphy, J. de Silva, and L. R. Barbieri. 2003. Final report submitted to the national marine fisheries service, the Gulf of Mexico fishery management council, and the South Atlantic fishery management council as part of the southeast data, assessment, and review (SEDAR) iii. Florida Fish and Wildlife Conservation Commission, FWC-FMRI Report: IHR 2003-10. Florida Fish and Wildlife Research Institute. St. Petersburg, Florida.

Murawski, S, A., W. T. Hogarth, E. B. Peebles, and L. Barbeiri. 2014. Prevalence of External Skin Lesions and Polycyclic Aromatic Hydrocarbon Concentrations in Gulf of Mexico Fishes, Post-Deepwater Horizon, Trans. Amer. Fish. Soc., 143(4):1084-1097.

National Commission. 2010. The use of surface and subsea dispersants during the BP Deepwater Horizon oil spill. National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (National Commission). Staff Working Paper No. 4. http://www.oilspillcommission.gov/sites/default/files/documents/Updated%20Dispersants%20Working%20Paper.pdf

National Ocean Service, NOAA. 2011. The Gulf of Mexico at a Glance: A Second Glance. Washington, DC: U.S. Department of Commerce.

Nieland, D. L., C. A. Wilson III, and A. J. Fischer. 2007. Declining size-at-age among red snapper in the Northern Gulf of Mexico off Louisiana, USA: recovery or collapse? Pages 329-336 in W. F. Patterson, III, J. H. Cowan, Jr., G. R. Fitzhugh and D. L. Nieland, editors. Red

snapper ecology and fisheries in the U.S. Gulf of Mexico. American Fisheries Society, Symposium 60, Bethesda, Maryland.

NMFS. 2002. Status of red grouper in United States waters of the Gulf of Mexico during 1986-2001, revised. Contribution No. SFD-01/02-175rev. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

NMFS. 2005. Endangered Species Act – Section 7 consultation on the continued authorization of reef fish fishing under the Gulf of Mexico reef fish fishery management plan and proposed amendment 23. February 15, 2005. National Marine Fisheries Service. St. Petersburg, Florida.

NMFS. 2009. Biological Opinion - the continued authorization of reef fish fishing under the Gulf of Mexico reef fish fishery management plan, including Amendment 31, and a rulemaking to reduce sea turtle bycatch in the Eastern Gulf bottom longline component of the fishery. October 13, 2009. National Marine Fisheries Service. St. Petersburg, Florida. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/2009%20GOM%20Reef%20Fish%20Re-in%20BO.pdf

NMFS. 2011a. Biological opinion on the continued authorization of Reef Fish fishing under the Gulf of Mexico Reef Fish Fishery Management Plan. September 30, 2011. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/03584%20GOM%20Reef%20Fish%20BiOp%202011%20final.pdf

NMFS. 2011b. Fisheries Economics of the United States, 2009. U.S. Department of Commerce, NOAA Technical Memorandum. National Marine Fisheries Service-F/SPO-118. Available at: http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html

NMFS. 2012a. Gulf of Mexico 2011 red snapper individual fishing quota annual report. SERO-LAPP-2012-04. Southeast Regional Office, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, FL 33701. 42 pp. http://sero.nmfs.noaa.gov/sf/ifq/2011_RS_AnnualReport_Final.pdf.

NMFS. 2013a. Fisheries of the United States 2012. National Marine Fisheries Service, Silver Spring, MD. 124 pp.

NMFS. 2013b. 2012 Gulf of Mexico Red Snapper Individual fishing quota annual report. SERO-LAPP-2013-6. Southeast Regional Office, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, FL 33701. http://sero.nmfs.noaa.gov/sustainable_fisheries/lapp_dm/documents/pdfs/2013/2012_rs_annualreport.pdf

NMFS. 2014. Emergency action to set red snapper accountability measures for the recreational secotr of the Gulf of Mexico reef fish fishery. Southeast Regional Office, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, FL 33701.

NOAA. 2010. Deepwater Horizon Oil: Characteristics and Concerns. NOAA Office of Response and Restoration, Emergency Response Division. 2 pp. http://www.noaa.gov/deepwaterhorizon/publications_factsheets/documents/OilCharacteristics.pdf

Norman, J. R., and F. C. Fraser. 1938. Giant Fishes, Whales and Dolphins. W. W. Norton and Company, Inc, New York, NY. 361 pp.

OECD. 2014. Integrating Recreational Fisheries into Fisheries Management: Challenges and Opportunities – Report prepared for the Organization for Economic Cooperation and Development by Joshua Abbott. TAD/FI(2014)5. 39 pp.

Ogren, L. H. 1989. Distribution of juvenile and subadult Kemp's ridley sea turtles: preliminary results from 1984-1987 surveys. Pages 116-123 *in* C. W. Caillouet Jr., and J. A.M. Landry, editors. Proceedings of the First International Symposium on Kemp's Ridley Sea Turtle Biology, Conservation, and Management. Texas A&M University Sea Grant College, Galveston, Texas.

O'Hop, J., M. Murphy, and D. Chagaris. 2012. The 2012 stock assessment report for yellowtail snapper in the south Atlantic and Gulf of Mexico. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute. St. Petersburg, Florida.

Osgood, K. E. (editor). 2008. Climate Impacts on U.S. Living Marine Resources: National Marine Fisheries Service Concerns, Activities and Needs. U.S. Dep. Commerce, NOAA Tech. Memo. NMFSF/SPO-89, 118 pp.

Paredes, R.P. 1969. Introduccion al Estudio Biologico de *Chelonia mydas agassizi* en el Perfil de Pisco, Master's thesis, Universidad Nacional Federico Villareal, Lima, Peru.

Parrack, N.C. and D.B. McClellan. 1986. Trends in Gulf of Mexico red snapper population dynamics, 1979-85. National Marine Fisheries Service, Southeast Fisheries Center, Miami, Florida. Coastal Resources Division Contribution No. CRD-86/87-4. 116 pp.

Porch, C. E., and S. L. Cass-Calay. 2001. Status of the vermilion snapper fishery in the Gulf of Mexico – assessment 5.0. Sustainable Fisheries Division Contribution No. SFD-01/01-129. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Porch, C. E., A. M. Eklund, and G. P. Scott. 2003. An assessment of rebuilding times for goliath grouper. Contribution: SFD 2003-0018. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Porch, C. E. and S. C. Turner. 2004. Reconstructed time series of shrimp trawl effort in the Gulf of Mexico and the associated bycatch of red snapper from 1948 to 1972. Southeast Fisheries Science Center, Miami, FL. SFD-2004-055. 13 pp.

Porch, C. E., S. C. Turner and M. J. Schirripa. 2004. The commercial landings of red snapper in the Gulf of Mexico from 1872 to 1962. Southeast Fisheries Science Center, Miami, FL. SFD-2004-054. 12 pp.

Rico-Martínez, R., T.W. Snell, and T.L. Shearer. 2013. Synergistic toxicity of Macondo crude oil and dispersant Corexit 9500A® to the *Brachionus plicatilis* species complex (Rotifera). Environmental Pollution 173:5-10.

Rios, A. 2013. Estimating historical recreational angler effort in the Gulf of Mexico for the private, charter, and headboat fishing modes. SEDAR31-AW11. SEDAR, North Charleston, SC. 11 pp.

Savolainen, M. A., R. H. Caffey, and R. F. Kazmierczak, Jr. 2012. Economic and Attitudinal Perspectives of the Recreational For-hire Fishing Industry in the U.S. Gulf of Mexico. Center for Natural Resource Economics and Policy, LSU AgCenter and Louisiana Sea Grant College Program, Department of Agricultural Economics and Agribusiness, Louisiana State University, Baton Rouge, LA. 171 p. Available at: http://www.laseagrant.org/pdfs/Gulf-RFH-Survey-Final-Report-2012.pdf

SEA (Strategic Environmental Assessment Division, NOS). 1998. Product overview: Products and services for the identification of essential fish habitat in the Gulf of Mexico. NOS, Page 7-62 DEIS for EFH for the Gulf of Mexico FMPs July 2003 Silver Spring MD; National Marine Fisheries Service, Galveston, Texas; and Gulf of Mexico Fishery Management Council. Tampa, Florida.

SEDAR 3. 2003. Complete stock assessment report of yellowtail snapper in the southeastern United States – SEDAR 3, Assessment report 1. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 6. 2004a. SEDAR report 1 the goliath grouper in southern Florida: Assessment review and advisory report. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 6. 2004b. SEDAR report 2 the hogfish in Florida: Assessment review and advisory report. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 7. 2005. Stock assessment report of SEDAR 7 Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 7 Update. 2009. Update stock assessment report of SEDAR 7 Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006a. Stock assessment report 1 of SEDAR 9: Gulf of Mexico gray triggerfish. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006b. Stock assessment report 2 of SEDAR 9: Gulf of Mexico greater amberjack. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006c. Stock assessment report 3 of SEDAR 9: Gulf of Mexico vermilion snapper assessment report 3. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2010. SEDAR 9 stock assessment update report, Gulf of Mexico greater amberjack. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2011a. SEDAR update stock assessment of vermilion snapper in the Gulf of Mexico. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2011b. SEDAR update stock assessment of gray triggerfish in the Gulf of Mexico. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 10. 2006. Gulf of Mexico Gag Grouper Stock Assessment Report 2. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 10 Update. 2009. Stock assessment of gag in the Gulf of Mexico. – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

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

SEDAR 12 Update. 2009. Stock assessment of red grouper in the Gulf of Mexico – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 15A. 2008. Stock assessment report 3 (SAR 3) South Atlantic and Gulf of Mexico mutton snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 19. 2010. Stock assessment report Gulf of Mexico and South Atlantic black grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 22. 2011a. Stock assessment report Gulf of Mexico tilefish. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 22. 2011b. Stock assessment report Gulf of Mexico yellowedge grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 23. 2011. Stock assessment report South Atlantic and Gulf of Mexico goliath grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 31. 2013. Stock assessment report Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SERO. 2011. An evaluation of Gulf of Mexico red snapper landings by sector and days fished with and without sector separation. SERO-LAPP-2011-02. National Marine Fisheries Service, St. Petersburg, FL.

SERO. 2012. Estimated Reduction in Gulf of Mexico Recreational Red Snapper Harvest Associated with Various Bag Limits. NOAA Fisheries, Southeast Regional Office, St. Petersburg, FL. SERO-LAPP-2012-11 6 pp.

Shaver, D. J. 1991. Feeding Ecology of Wild and Head-Started Kemp's Ridley Sea Turtles in South Texas Waters. Journal of Herpetology 25(3):327-334.

Shipp, R.L. 2001. The snapper fishery in the Gulf of Mexico, an historical perspective, and management implications. PowerPoint presentation to the Gulf of Mexico Fishery Management Council, January 2001.

Shipp, R. L. and S. A. Bortone. 2009. A prospective of the importance of artificial habitat on the management of red snapper in the Gulf of Mexico. Reviews in Fisheries Science 17: 41-47.

Simpfendorfer, CA. 2001. Essential habitat of the smalltooth sawfish, *Pristis pectinata*. Report to the National Fisheries Service‘s Protected Resources Division. Mote Marine Laboratory, Technical Report (786) 21pp.

Simpfendorfer, C.A., and T.R., Wiley. 2004. Determination of the distribution of Florida‘s remnant sawfish population, and identification of areas critical to their conservation. Mote Marine Laboratory, Technical Report July 2, 2004, 37 pp.

Soma, M. 1985. Radio biotelemetry system applied to migratory study of turtle. Journal of the Faculty of Marine Science and Technology, Tokai University, Japan, 21:47.

Standora, E. A., J. R. Spotila, J. A. Keinath, and C. R. Shoop. 1984. Body temperatures, diving cycles, and movement of a subadult leatherback turtle, Dermochelys coriacea. Herpetologica 40:169-176.

Sutinen, J. G. and R. J. Johnston. 2003. Angling management organizations: integrating the recreational sector into fishery management. Marine Policy 27(6):471-487.

Sutton, S. G., R. B. Ditton, J. R. Stoll, and J. W. Milon. 1999. A cross-sectional study and longitudinal perspective on the social and economic characteristics of the charter and party boat fishing industry of Alabama, Mississippi, Louisiana, and Texas. Report by the Human Dimensions of Recreational Fisheries Research Laboratory, Texas A&M University, MARFIN program grant number NA77FF0551.

Szedlmayer, S. T. and R. L. Shipp. 1994. Movement and growth of red snapper, *Lutjanus campechanus*, from an artificial reef area in the northeastern Gulf of Mexico. Bulletin of Marine Science 55: 887-896.

Szedlmayer, S. T. and J. C. Howe. 1997. Substrate preference in age-0 red snapper, *Lutjanus campechanus*. Environmental biology of fishes 50: 203-207.

Szedlmayer, S. T. and J. Conti. 1998. Nursery habitat, growth rates, and seasonality of age-0 red snapper, *Lutjanus campechanus*, in the northeast Gulf of Mexico. Fishery Bulletin. 97:626-635.

Thayer, G.W., K.A., Bjorndal, J.C., Ogden, S.L., Williams, and J.C., Zieman. 1984. Role of large herbivores in seagrass communities. Estuaries 7:351.

Topping, D.T. and S.T. Szedlmayer. 2011. Home range and movement patterns of red snapper (*Lutjanus campechanus*) on artificial reefs. Fisheries Research. 112: 77-84.

Turner, S. C., N. J. Cummings, and C. P. Porch. 2000. Stock assessment of Gulf of Mexico greater amberjack using data through 1998. SFD-99/00-100. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Turner, S. C., C. E. Porch, D. Heinemann, G. P. Scott, and M. Ortiz. 2001. Status of the gag stocks of the Gulf of Mexico: assessment 3.0. August 2001. Contribution: SFD-01/02-134. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Valle, M., C. Legault, and M. Ortiz. 2001. A stock assessment for gray triggerfish, *Balistes capriscus*, in the Gulf of Mexico. Contribution: SFD-01/02-124. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

van Dam, R. P., and C. E. Díez. 1998. Home range of immature hawksbill turtles (Eretmochelys imbricata (Linnaeus) at two Caribbean islands. Journal of Experimental Marine Biology and Ecology 220(1):15-24.

Walker, B. M., R. F. Zales II, and B. W. Rockstall. 2006. Charter fleet in peril: losses to the Gulf of Mexico charter fleet from hurricane storms during 2005. National Association of Charterboat Operators. 208 pp.

Walker, T. 1994. Post-hatchling dispersal of sea turtles. Proceedings of the Australian Marine Turtle Conservation Workshop 1994:79-94.

Walters, C., S. J. D. Martell, and B. Mahmoudi. 2006. An Ecosim model for exploring ecosystem management options for the Gulf of Mexico: implications of including multistanza life history models for policy predictions. Mote Symp. #6.

Weisberg, R.H., Zheng, L., Liu, Y., Murawski, S., Hu, C., and Paul, J. 2014. Did Deepwater Horizon Hydrocarbons Transit to the West Florida Continental Shelf?, Deep Sea Research Part II: Topical Studies in Oceanography, Available online 17 February 2014, ISSN 0967-0645, http://dx.doi.org/10.1016/j.dsr2.2014.02.002.

Wilson, C.A. and D.L. Nieland. 2001. Age and growth of red snapper, *Lutjanus campechanus*, from the northern Gulf of Mexico off Louisiana. Fishery Bulletin 99:653-664. http://fishbull.noaa.gov/994/wil.pdf

Witzell, W. N. 2002. Immature Atlantic loggerhead turtles (Caretta caretta): suggested changes to the life history model. Herpetological Review 33(4):266-269.

Woods, M. K. 2003. Demographic differences in reproductive biology of female red snapper (*Lutjanus campechanus*) in the northern Gulf of Mexico. Master's thesis. University of South Alabama, Mobile, Alabama.

CHAPTER 10. INDEX

Accountability measure, iii, xvii, 20, 30, 54, 87, 92, 93, 115, 125, 126, 130, 158, 165, 169, 170, 184
Allocation, i, xiv, xv, xvi, xviii, 2, 14, 15, 21, 26, 28, 32, 33, 34, 35, 36, 37, 52, 73, 76, 78, 80, 81, 82, 83, 84, 87, 91, 92, 94, 98, 99, 101, 103, 108, 109, 111, 113, 115, 141, 147, 151, 157, 158, 162, 164, 165, 166, 167, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 187, 188, 189
Allowable biological catch, 113
Annual catch limit, iii, 6, 92, 93, 125, 126, 164, 169, 170
Bag limit, ix, xv, xviii, 15, 16, 30, 32, 35, 52, 54, 73, 81, 82, 93, 94, 104, 108, 110, 113, 126, 146, 157, 158, 159, 172, 191, 197, 198
Biomass, 41, 42, 101, 102
Bycatch mortality, xviii, 113, 145, 158, 166, 167
Bycatch reduction, 146, 164
Climate change, 95, 98, 99, 100, 101, 102, 108, 109, 112, 127
Closed season, 157, 158
Commercial allocation, 165
Compliance, 112
Council on Environmental Quality (CEQ), 89, 96, 99, 115, 122
Cumulative effects, xviii, 50, 72, 89, 99, 101, 105, 107, 113, 114, 119, 122, 140
Deepwater Horizon MC252 oil spill, 25, 34, 49, 50, 51, 72, 95, 97, 98, 99, 102, 107, 110, 111, 112, 129, 131, 136, 140
Direct effects, xiii, xvi, xvii, 79, 84, 86
Discard, 73, 96, 150, 151, 152, 160, 161, 162, 167, 189
Discard mortality, 72, 96, 150, 151, 152, 160, 161, 162, 167, 189
Economic benefits, xiii, xviii, 76, 77, 78, 79, 84, 87
Economic efficiency, xvi, 84
Environmental impact statement (EIS), i, 15, 31, 123, 124, 125, 126, 144, 168, 169, 170, 184
Environmental justice, iii, 61, 142
Essential fish habitat (EFH), iii, 106, 107, 121, 124, 132, 144
Fishing mortality, 32, 41, 42, 101, 102, 104, 108, 110, 113, 146, 159, 164, 165
Fishing mortality (F), 165
For-hire component, i, ix, x, xi, xii, xiii, xiv, xvi, 1, 2, 10, 16, 17, 18, 19, 20, 21, 22, 26, 28, 29, 30, 52, 71, 74, 75, 76, 78, 79, 83, 84, 98, 100, 110, 111, 114, 164, 165, 166, 176, 177, 178, 179, 180, 181, 182, 183
Fuel, 110, 111, 112
IFQ, 146, 158
Indirect effects, 72, 75, 80, 81, 89, 99, 105
Individual fishing quota, iii, xviii, 31, 90, 113, 124, 126, 130, 146, 166, 170, 172
Individual fishing quota (IFQ), 112
M, 168
Marine mammals, 45, 105, 116, 141, 145, 156, 165, 195
Maximum sustainable yield, 42, 70
National Environmental Policy Act (NEPA), i, iii, 89, 119, 122
Natural mortality, 160
Optimum yield (OY), iii, x, 101, 111, 114, 125, 169
Overfished, 32, 42, 44, 70, 101, 102, 104, 108, 109, 110, 146, 156, 157, 165
Overfishing, iii, x, 41, 42, 44, 70, 92, 93, 98, 101, 102, 104, 108, 109, 110, 113, 125, 156, 157, 165, 169
Private angler component, xviii
Private angling component, xi, xii, xiii, xiv, xv, xvi, xvii, xviii, 14, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 73, 74, 75, 76, 77, 78, 81, 83, 84, 86, 87, 97, 100, 113, 164, 165, 166, 167, 177, 178, 181, 182, 183, 185
Quota, i, x, xi, xii, xiv, xv, xvi, xvii, xviii, 2, 3, 14, 15, 16, 20, 21, 22, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 42, 49, 53, 55, 72, 73, 74, 76, 78, 80, 81, 82, 83, 84, 86, 87, 88, 90, 91, 92, 94, 98, 99, 101, 103, 104, 108, 109, 110, 112, 113, 114, 124, 126, 130, 146, 156, 157, 158, 160,

164, 165, 166, 167, 177, 178, 179, 180, 181, 184, 185, 188, 189, 198
Reallocation, 111, 187, 188
Rebuilding plan, 32, 54, 70, 82, 99, 104, 108, 110, 125, 126, 146, 157, 165, 169, 170
Recreational allocation, 16, 32, 33, 93, 94, 101, 164
RIR, 15, 16
Sea turtles, 37, 47, 48, 50, 72, 105, 116, 125, 140, 156, 161, 165, 169, 192
Sector separation, xiii, xvii, xviii, 1, 2, 3, 14, 19, 21, 25, 76, 77, 87, 134, 185
Shrimp fishery, 158
Size limit, ix, xviii, 14, 15, 32, 34, 35, 75, 77, 87, 90, 104, 108, 109, 113, 146, 157, 158, 159, 160, 161, 162, 164, 185, 197
Stock assessment, 21, 32, 41, 43, 50, 73, 90, 93, 94, 96, 98, 101, 102, 103, 108, 113, 121, 131, 132, 133, 135, 141, 150, 151, 164, 171
Stock recovery, 158, 160, 167
TAC, 15, 164
Total allowable catch, iii, 15, 32, 33, 91, 101, 108, 113, 123, 125
Total allowable catch (TAC), 110, 111
Venting tool, 164

APPENDIX A. OTHER APPLICABLE LAW

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. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making are summarized below.

Administrative Procedures Act

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

Coastal Zone Management Act

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

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

Data Quality Act

The Data Quality Act (DQA) (Public Law 106-443) effective October 1, 2002, requires the government to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the DQA directs the Office of Management and Budget 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 Office of Management and Budget on the number and nature of complaints received.

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

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. Section 1531 et seq.) requires federal agencies use their authorities to conserve endangered and threatened species. The ESA requires 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.

On September 30, 2011, the Protected Resources Division released a biological opinion which, after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent Deepwater Horizon MC 252 oil release event in the northern Gulf of Mexico), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf of Mexico reef fish fishery is also not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011a). On December 7, 2012, NMFS published a proposed rule to list 66 coral species under the ESA and reclassify *Acropora* from threatened to endangered (77 FR 73220). In a memorandum dated February 13, 2013, NMFS determined the reef fish fishery was not likely to adversely affect *Acropora* because of where the fishery operates, the types of gear used in the fishery, and that other regulations protect *Acropora* where they are most likely to occur.

Marine Mammal Protection Act

The Marine Mammal Protection Act (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 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 List of Fisheries 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. The primary gears used in the Gulf of Mexico reef fish fishery are still classified in the proposed 2014 MMPA List of Fisheries as Category III fishery (December 6, 2013; 78 FR 73477). The conclusions of the most recent List of Fisheries for gear used by the reef fish fishery can be found in Section 3.3.

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure the public is not overburdened with information requests, the federal government's information collection procedures are efficient, and federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires NMFS to obtain approval from the Office of Management and Budget before requesting most types of fishery information from the public. Setting red snapper allocation would likely not have PRA consequences.

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 National Oceanic and Atmospheric Administration 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 Regulatory Impact Review (RIR) for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan (See Chapter 5). 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 will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Analysis. 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.

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

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. The Executive Order is described in more detail relative to fisheries actions in Section 3.5.1.

E.O. 12962: Recreational Fisheries

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

E.O. 13158: Marine Protected Areas

This Executive Order requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. There are several marine protected areas, habitat areas of particular concern, and gear-restricted areas in the eastern and northwestern Gulf of Mexico.

Essential Fish Habitat

The amended Magnuson-Stevens Act included a new habitat conservation provision known as essential fish habitat (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 Environmental Impact Statement (GMFMC 2004) 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.

References

GMFMC. 2004. Final environmental impact statement for the generic essential fish habitat amendment to the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, stone crab fishery of the Gulf of Mexico, coral and coral reef fishery of the Gulf of Mexico, spiny lobster fishery of the Gulf of Mexico and South Atlantic, coastal migratory pelagic resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf

NMFS. 2011. Biological opinion on the continued authorization of Reef Fish fishing under the Gulf of Mexico Reef Fish Fishery Management Plan. September 30, 2011. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/03584%20GOM%20Reef%20Fish%20BiOp%202011%20final.pdf

APPENDIX B. BYCATCH PRACTICABILITY ANALYSIS

Introduction

Bycatch is defined as fish harvested in a fishery, but not sold or retained for personal use. This definition includes both economic and regulatory discards, and excludes fish released alive under a recreational catch-and-release fishery management program. Economic discards are generally undesirable from a market perspective because of their species, size, sex, and/or other characteristics. Regulatory discards are fish required by regulation to be discarded, but also include fish that may be retained but not sold.

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

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

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

Bycatch practicability analyses of the reef fish fishery have been provided in several reef fish amendments and focused to some degree on the component of the fishery affected by the actions covered in the amendment. For red snapper, bycatch practicability analyses were completed for Amendments 22 and 27 to the Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf of Mexico (GMFMC 2004a and 2007). Other bycatch practicability analyses were conducted in the following amendments (component of the fishery affected by the actions): Amendment 23 (vermilion snapper; GMFMC 2004b), Amendment 30A (greater amberjack and gray triggerfish; GMFMC 2008a), Amendment 30B (gag, red grouper, and other shallow-water grouper; GMFMC 2008b), Amendment 31 (longline sector; GMFMC 2009), Amendment 32 (gag and red grouper; GMFMC 2011a), Amendment 35 (greater amberjack; GMFMC 2012a); Amendment 37 (gray triggerfish; GMFMC 2012b), and Amendment 38 (shallow-water grouper; GMFMC 2012c). In addition, a bycatch practicability analysis was conducted for the Generic

Annual Catch Limits/Accountability Measures Amendment (GMFMC 2011b) that covered the Reef Fish, Coastal Migratory Pelagics, Red Drum, and Coral FMPs. In general, these analyses found that reducing bycatch provides biological benefits to managed species as well as benefits to the fishery through less waste, higher yields, and less forgone yield. However, in some cases, actions are approved that can increase bycatch through regulatory discards such as increased minimum sizes and closed seasons. In these cases, there is some biological benefit to the managed species that outweighs any increases in discards.

Red Snapper Bycatch

The Gulf of Mexico (Gulf) reef fish fishery directed at red snapper has been regulated to limit harvest in order for the stock to recover from an overfished condition. Regulations for the recreational sector include catch quotas, minimum size limits, bag limits, and seasonal closures. These are used to limit the harvest to levels allowed under the rebuilding plan. For the commercial sector, regulations previously included quotas, minimum size limits, seasonal closures, and trip limits. Now the sector is managed under an individual fishing quota (IFQ) program that was established in 2007. The program eliminates the need for seasonal closures and trip limits. Red snapper regulations have been generally effective in limiting fishing mortality, the size of fish targeted, the number of targeted fishing trips, and/or the time fishermen spend pursuing a species. However, these management tools have the unavoidable adverse effect of creating regulatory discards, which makes reducing bycatch challenging, particularly in the recreational sector.

An important aspect to red snapper bycatch is the penaeid shrimp fishery as previously described in Amendment 27/14 (GMFMC 2007). The shrimp fishery catches primarily 0-2 year old red snapper. To reduce red snapper bycatch, the Gulf of Mexico Fishery Management Council (Council) implemented regulations requiring the use of bycatch reduction devices (GMFMC 2002) and setting bycatch reduction targets (currently a 67% reduction from the baseline years 2001-2003; GMFMC 2007). Between the use of bycatch reduction devices and reductions in shrimp effort due to economic factors (Figure 1), the target reductions have been met.

Although red snapper bycatch in the shrimp fishery is an important source of mortality for this stock, this bycatch practicability analysis will focus on the directed reef fish fishery managed under the FMP for Reef Fish Resources of the Gulf of Mexico. Bycatch from the shrimp fishery has been and will be analyzed in the FMP for the Shrimp Fishery of the Gulf of Mexico, U.S. Waters.

Figures 2 and 3 show the relative number of discards for the recreational and commercial sectors as estimated by SEDAR 31 (2013). For the recreational sector, open season discards estimated through the Marine Recreational Information Program (MRIP) (charter and private angler) declined around 2007 as the recreational season got shorter due lower quotas. This trend is also apparent in the headboat data for the western Gulf. However, with shorter seasons of the past few years, the number of discards during the longer closed seasons increased (Figure 2). For the commercial sector, discards in the eastern handline and longline sectors have increased since the implementation of the IFQ program relative to the western Gulf (Figure 3). This may reflect a shift in fishing effort that has resulted in the program. Note that for the commercial sector,

closed season discards after the IFQ program was implemented refers to vessels with little or no red snapper allocation (see SEDAR 31 2013).

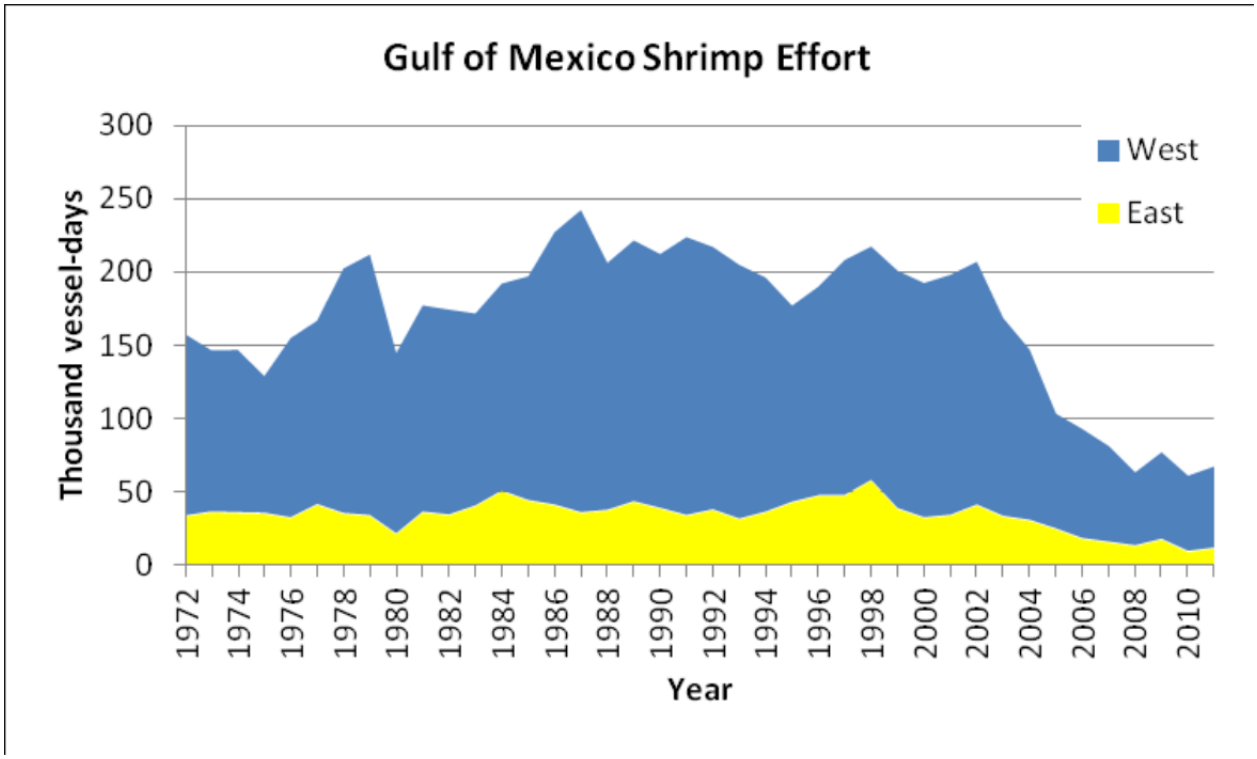

Figure 1. Gulf shrimp fishery effort (thousand vessel-days) provided by the National Marine Fisheries Service Galveston Lab. The reported effort does not include the average effort values used to fill empty cells. Source: Linton 2012.

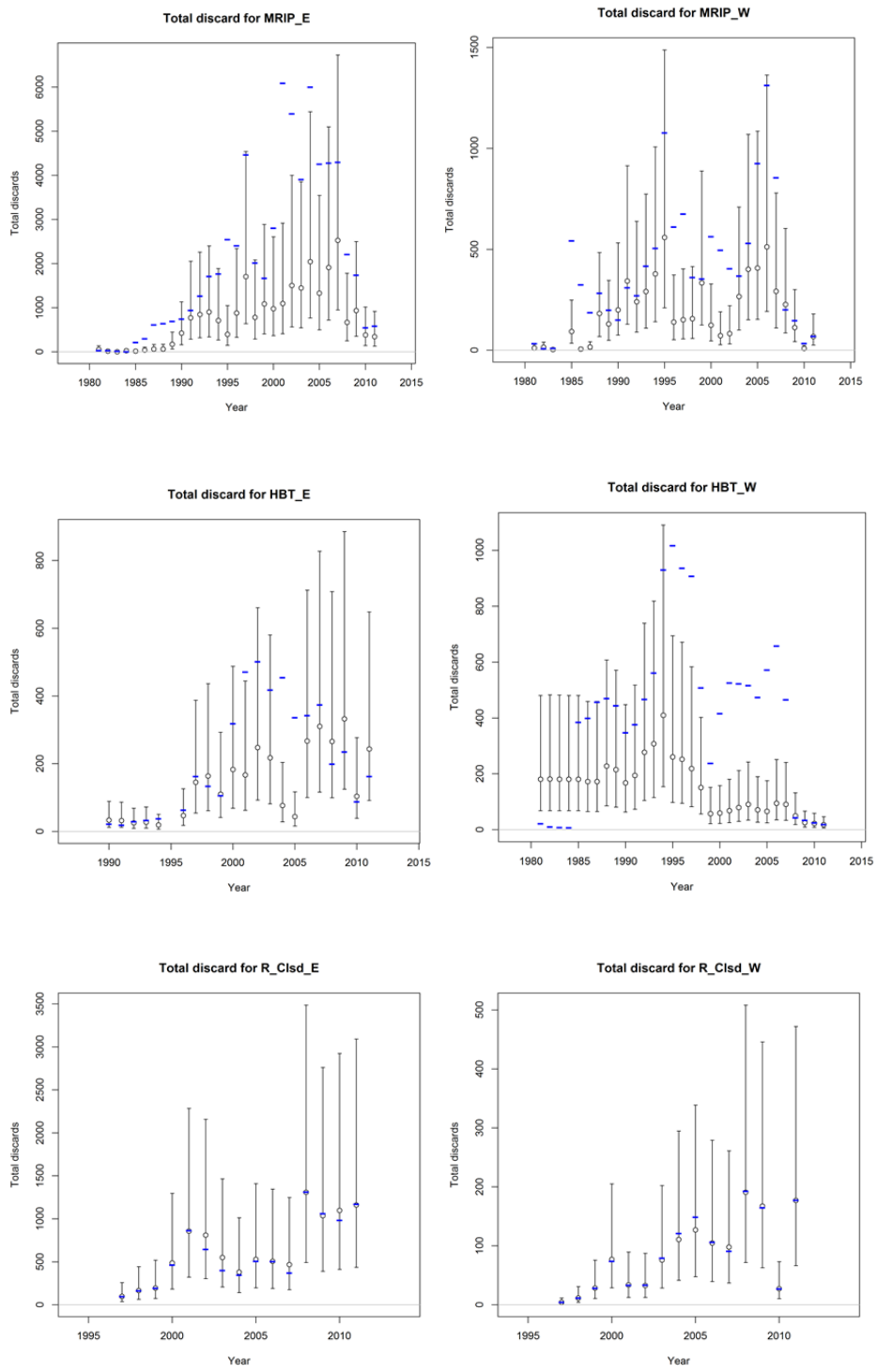

Figure 2. Observed (open circles) and predicted total discards (blue dashes) of red snapper from the private angler open season (top), headboat open season (middle), and recreational closed season in the eastern (left) and western (right) Gulf, 1997-2011. Source: SEDAR 31 2013.

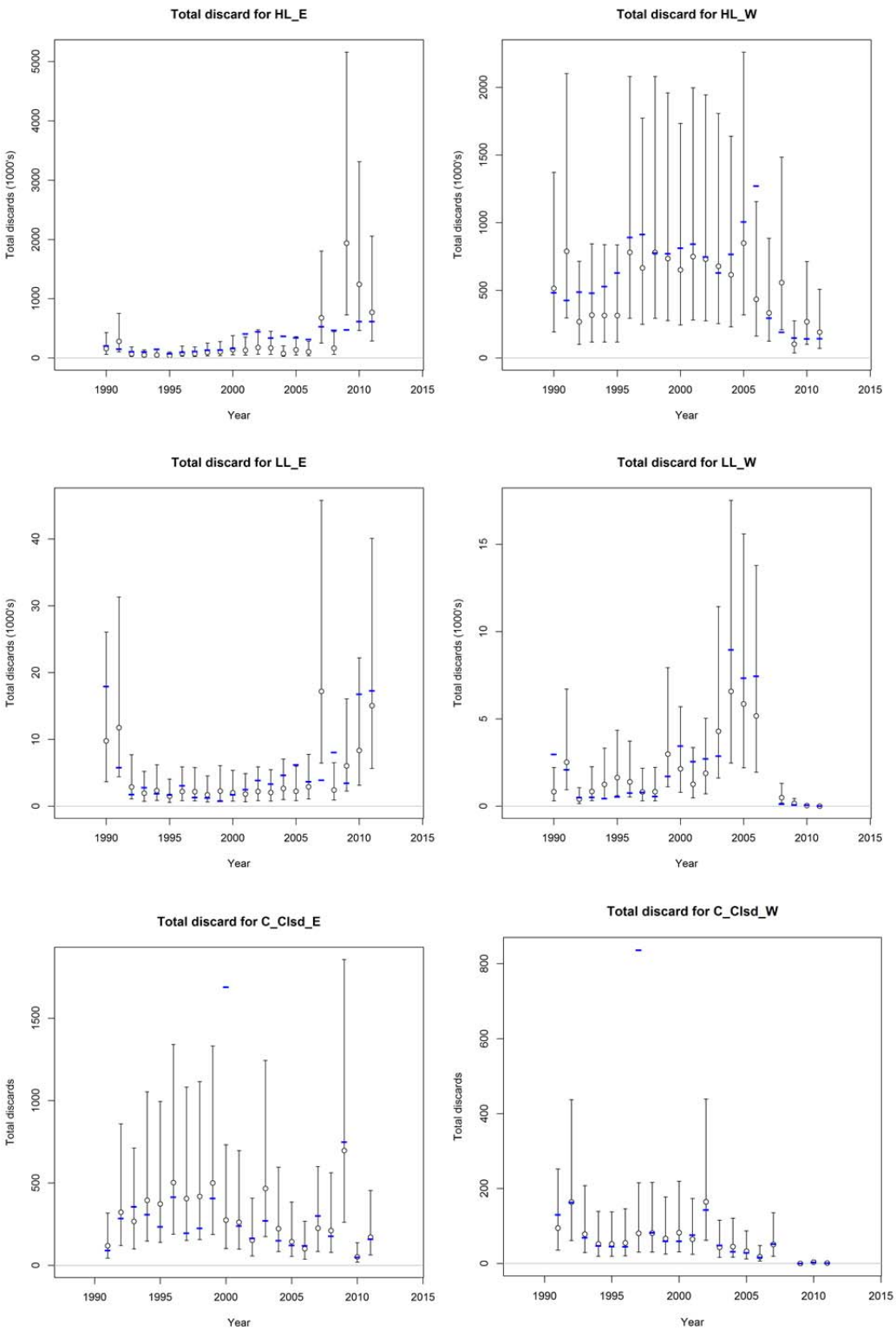

Figure 3. Observed (open circles) and predicted total discards (blue dashes) of red snapper from the commercial handline open season (top), longline open season (middle), and commercial closed season in the eastern (left) and western (right) Gulf, 1997-2011. Source: SEDAR 31 2013.

Campbell et al. (2012) identified several causes of red snapper discard mortality in their review of discard mortality in the directed reef fish fishery. These included hooking injuries, thermal stress, and barotrauma. Campbell et al. (2012) reviewed 11 studies that listed discard (release) mortality rates ranging from 0 to 79%. They reported that mortality tended to increase with capture depth, increasing water temperature, or from some compounding effect of these two factors. Burns et al. (2004) and Burns and Froeschke (2012) examined the feeding behavior of red snapper and found red snapper quickly chew and swallow their prey. As a result, there is less time to set a hook while fishing, resulting in greater probability of hooking related injuries. Burns et al. (2004) concluded hook-related trauma accounted for a greater portion of discard mortality than depth, despite catching red snapper at depths ranging from 90 to 140 feet.

Although Campbell et al. (2012) did not specifically address surface interval and predation, these factors were identified in GMFMC (2007) as contributing to discard mortality. Burns et al. (2002) found survival of red snapper increased the faster red snapper were returned to the water, thus they considered any reductions in surface interval/handling time an important way to reduce discard mortality. Several studies have documented predation on released red snapper. Dolphins and pelicans are the two most commonly observed predators and are known to pursue released fish, as well as fish before they are landed (SEDAR 7 2005). Several studies, which assessed discard mortality through surface observations, accounted for predation when estimating discard mortality (Patterson et al. 2001; Burns et al. 2004; Wilson et al. 2004).

A variety of discard mortality rates have been used in different stock assessment. The 1999 red snapper stock assessment (Schirripa and Legault 1999) assumed discard mortality rates of 33 percent for the commercial fishery and 20 percent for the recreational fishery. These discard mortality rates were derived from the literature and were determined by the Council's Reef Fish Stock Assessment Panel to be the best available estimates at the time (RFSAP 1999). During development of the 2005 red snapper stock assessment, the SEDAR 7 data workshop panel (SEDAR 7 2005) reviewed available information on depth of fishing and discard mortality by depth to produce fishery specific discard mortality rates by region (eastern and western Gulf), season (open and closed), and by sector (commercial and recreational). Applied estimates of discard mortality rates ranged 15% for recreationally caught and released red snapper in the eastern Gulf to 88% for commercially caught and released red snapper in the western Gulf caught during a season closure (Table 1).

Table 1. Mean/median depth of fishing and corresponding discard mortality rates for red snapper by fishery, region, and season.

Fishery	Region	Season	Depth of Capture	Release Mortality
Commercial	East	Open	180 ft (55 m)	71%
	East	Closed	180 ft (55 m)	71%
	West	Open	190 ft (58 m)	82%
	West	Closed	272 ft (83 m)	88%
Recreational	East	Open	65-131 ft (20-40 m)	15%
	East	Closed	65-131 ft (20-40 m)	15%
	West	Open	131 ft (40 m)	40%
	West	Closed	131 ft (40 m)	40%

Source: SEDAR 7 2005.

In the most recent benchmark stock assessment (SEDAR 31, 2013), a meta-analysis was used to estimate red snapper discard mortality using the 11 studies reviewed by Campbell et al. (2012). A venting/no venting component was added to account for the requirement to vent reef fish put in place through Amendment 27 (GMFMC 2007) as well as a gear component. For the commercial sector, average depths at which discards occurred for each gear (handline or long line), region (eastern or western Gulf), and season (open or closed) were calculated using commercial observer program data. Consistent with how commercial discards have been treated in other parts of the assessment, discards from trips with IFQ allocation were considered open season discards, while discards from trips with no IFQ allocation were considered closed season discards. For the recreational sector, average depths at which discards occurred for each region (eastern or western Gulf) and season (open or closed) were calculated using self-reported data from the iSnapper program. Estimated discard mortality rates ranged from 10 to 95% with commercial discard mortality rates greater than recreational discard mortality rates (Tables 2 and 3).

SEDAR 31 (2013) estimated the total number of fish killed (landed and discarded dead) by the commercial and recreational sectors from 1983 to 2011 (Table 4). For the recreational sector, the percentage of dead discards to total fish killed has declined since a peak in 2001. However, it was not until 2007 that the number of dead discards was consistently less than the number of landed fish. For the commercial sector, the percentage of dead discards peaked in 2000, but it was not until 2010 that the number of dead discards declined to less than 40% of the total fish killed.

Since 1996, more red snapper have been landed in the eastern Gulf than the western Gulf by the recreational sector (Table 5). A drop in the percentage of dead discards relative to the total number of fish killed occurred in both regions in 2008. The percentage of dead discards fell from 49.4% to 36.7% between 2007 and 2008 for the eastern Gulf and from 50.0% to 20.3% between 2007 and 2008 in the western Gulf. For the commercial sector, in the eastern Gulf the number of dead discards has generally been above 50% indicating that there are more discards were killed than landed (Table 5). In contrast, in the western Gulf there has been a falling off in the percentage of dead discards relative to the total number of killed fish since 2006 to well below 50%.

Table 2. Average depths and associated discard mortality rates for commercial discards of red snapper in the Gulf.

Gear	Handline				Longline			
Region	**East**		**West**		**East**		**West**	
Season	**Closed**	**Open**	**Closed**	**Open**	**Closed**	**Open**	**Closed**	**Open**
Average Depth (m)	24	45	84	53	66	62	132	104
Disc Mort - no venting	0.74	0.75	0.87	0.78	0.82	0.81	0.95	0.91
Disc Mort - venting	0.55	0.56	0.74	0.60	0.66	0.64	0.88	0.81

Source: SEDAR 31 2013.

Table 3. Average depths and associated discard mortality rates for recreational discards of red snapper in the Gulf.

Gear	Recreational			
Region	**East**		**West**	
Season	**Open**	**Closed**	**Open**	**Closed**
Average Depth (m)	33	34	36	35
Disc Mort - no venting	0.21	0.21	0.22	0.22
Disc Mort - venting	0.10	0.10	0.11	0.10

Source: SEDAR 31 2013.

Table 4. Estimates of the total number of red snapper landed, the number of dead discards, and percent dead discards for all killed fish for the recreational and commercial sectors by year in the Gulf.

	Recreational			Commercial		
Year	Landed	Dead Discards	Percent dead discards	Landed	Dead Discard	Percent dead discards
1983	3,314,185	8,599	0.3%	4,559,794	80,758	1.7%
1984	1,232,024	2,699	0.2%	2,775,042	33,579	1.2%
1985	1,427,026	255,716	15.2%	1,234,986	351,105	22.1%
1986	1,265,955	223,079	15.0%	875,494	304,026	25.8%
1987	1,022,844	271,426	21.0%	661,469	277,787	29.6%
1988	1,241,859	302,800	19.6%	950,904	366,876	27.8%
1989	1,060,456	289,201	21.4%	742,388	296,024	28.5%
1990	625,933	270,824	30.2%	703,020	549,250	43.9%
1991	1,060,610	353,327	25.0%	691,943	635,961	47.9%
1992	1,609,040	434,448	21.3%	995,013	817,581	45.1%
1993	2,202,931	581,455	20.9%	1,011,914	781,941	43.6%
1994	1,615,241	695,102	30.1%	869,075	796,390	47.8%
1995	1,384,049	1,008,873	42.2%	698,404	767,187	52.3%
1996	1,180,361	859,431	42.1%	1,011,328	1,120,205	52.6%
1997	1,547,317	1,342,121	46.4%	1,122,447	1,674,115	59.9%
1998	1,235,683	679,689	35.5%	1,167,877	949,481	44.8%
1999	1,031,284	549,708	34.8%	1,190,580	1,063,684	47.2%
2000	1,002,899	985,281	49.6%	1,088,667	2,065,579	65.5%
2001	1,075,115	1,792,155	62.5%	1,030,580	1,214,566	54.1%
2002	1,372,415	1,586,095	53.6%	1,145,169	1,171,069	50.6%
2003	1,224,547	1,204,754	49.6%	1,080,662	996,171	48.0%
2004	1,365,946	1,677,071	55.1%	1,036,860	1,027,510	49.8%
2005	1,024,641	1,433,508	58.3%	973,109	1,170,293	54.6%
2006	1,196,183	1,533,800	56.2%	1,193,134	1,343,644	53.0%
2007	1,397,237	1,370,519	49.5%	851,537	903,242	51.5%
2008	821,804	417,509	33.7%	671,979	481,599	41.7%
2009	979,945	339,988	25.8%	656,148	772,463	54.1%
2010	447,991	170,959	27.6%	833,253	472,930	36.2%
2011	670,910	220,515	24.7%	808,582	533,198	39.7%

Source: Recreational data is from MRIP; headboat and commercial data is from the logbook and SEDAR 31 2013; Jacob Tetzlaff, pers. comm. Southeast Fisheries Science Center, Miami, Florida.

Table 5. Estimates of the total number of red snapper landed the number of dead discards, and percent dead discards for all killed fish for the recreational and commercial sectors by year and region of the Gulf.

	Recreational						Commercial					
	East			West			East			West		
Year	Landed	Dead Discard	Percent dead discards	Landed	Dead Discard	Percent dead discards	Landed	Dead Discard	Percent dead discards	Landed	Dead Discard	Percent dead discards
1983	1,055,691	4,455	0.4%	2,258,494	4,144	0.2%	1,851,965	23,983	1.3%	2,707,829	56,775	2.1%
1984	192,098	332	0.2%	1,039,926	2,367	0.2%	1,077,487	5,872	0.5%	1,697,555	27,707	1.6%
1985	482,587	51,497	9.6%	944,439	204,219	17.8%	575,540	109,179	15.9%	659,446	241,926	26.8%
1986	574,495	63,839	10.0%	691,460	159,240	18.7%	237,499	31,193	11.6%	637,996	272,833	30.0%
1987	548,813	129,871	19.1%	474,031	141,555	23.0%	179,088	35,679	16.6%	482,381	242,108	33.4%
1988	524,591	137,182	20.7%	717,268	165,618	18.8%	197,784	72,004	26.7%	753,120	294,872	28.1%
1989	474,670	147,657	23.7%	585,786	141,544	19.5%	166,355	59,518	26.4%	576,033	236,506	29.1%
1990	314,036	161,286	33.9%	311,897	109,538	26.0%	208,799	169,101	44.7%	494,221	380,150	43.5%
1991	548,912	202,238	26.9%	511,698	151,089	22.8%	156,339	187,293	54.5%	535,604	448,669	45.6%
1992	886,594	272,181	23.5%	722,446	162,267	18.3%	155,044	294,315	65.5%	839,969	523,266	38.4%
1993	1,336,961	366,226	21.5%	865,970	215,229	19.9%	160,428	346,349	68.3%	851,486	435,592	33.8%
1994	819,900	379,092	31.6%	795,341	316,010	28.4%	161,842	341,927	67.9%	707,233	454,464	39.1%
1995	664,786	547,997	45.2%	719,263	460,876	39.1%	47,994	234,693	83.0%	650,411	532,493	45.0%
1996	608,817	519,005	46.0%	571,544	340,426	37.3%	66,458	384,466	85.3%	944,870	735,739	43.8%
1997	966,914	992,702	50.7%	580,403	349,419	37.6%	52,616	231,911	81.5%	1,069,832	1,442,204	57.4%
1998	814,811	485,790	37.4%	420,872	193,899	31.5%	112,125	271,377	70.8%	1,055,751	678,104	39.1%
1999	788,097	413,395	34.4%	243,187	136,313	35.9%	148,788	407,417	73.2%	1,041,792	656,267	38.6%
2000	741,378	753,560	50.4%	261,521	231,721	47.0%	169,886	1,375,667	89.0%	918,781	689,912	42.9%
2001	858,210	1,559,948	64.5%	216,905	232,208	51.7%	209,036	487,449	70.0%	821,544	727,118	47.0%
2002	1,137,262	1,374,869	54.7%	235,153	211,226	47.3%	300,706	459,631	60.5%	844,463	711,438	45.7%
2003	956,693	992,640	50.9%	267,854	212,113	44.2%	281,921	459,040	62.0%	798,741	537,130	40.2%
2004	1,128,710	1,429,531	55.9%	237,236	247,540	51.1%	251,425	392,841	61.0%	785,435	634,669	44.7%
2005	759,036	1,071,240	58.5%	265,605	362,268	57.7%	220,412	352,853	61.6%	752,697	817,440	52.1%

2006	839,855	1,076,677	56.2%	356,328	457,123	56.2%		212,766	329,879	60.8%	980,368	1,013,764	50.8%
2007	1,087,060	1,059,975	49.4%	310,177	310,544	50.0%		311,729	626,004	66.8%	539,808	277,238	33.9%
2008	642,570	371,930	36.7%	179,233	45,579	20.3%		284,937	366,341	56.2%	387,042	115,258	22.9%
2009	773,394	303,722	28.2%	206,551	36,266	14.9%		302,568	682,585	69.3%	353,579	89,878	20.3%
2010	360,404	162,119	31.0%	87,587	8,840	9.2%		413,808	384,519	48.2%	419,445	88,411	17.4%
2011	552,878	192,184	25.8%	118,032	28,331	19.4%		423,809	445,771	51.3%	384,773	87,427	18.5%

Source: Recreational data is from MRIP; headboat and commercial data is from the logbook and SEDAR 31 2013; Jacob Tetzlaff, pers. comm. Southeast Fisheries Science Center, Miami, Florida.

Other Bycatch

Species incidentally encountered by the directed red snapper fishery include sea turtles, sea birds, and reef fishes. The primary gears of the Gulf reef fish fishery (longline and handline) are classified in the List of Fisheries for 2014 (79 FR 14418, April 14, 2014) as Category III gear. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to one percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population.

The most recent biological opinion for the Reef Fish FMP was completed on September 30, 2011 (NMFS 2011). The opinion determined the continued authorization of the Gulf reef fish fishery managed under this FMP is not likely to adversely affect Endangered Species Act-listed marine mammals or coral, and would not likely jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback), or smalltooth sawfish. However, in the past, actions have been taken by the Council and NMFS to increase the survival of incidentally caught sea turtle and smalltooth sawfish by the commercial and recreational sectors of the fishery. These include the requirements for permitted vessels to carry specific gear and protocols for the safe release in incidentally caught endangered sea turtle species and smalltooth sawfish (GMFMC 2005) as well as restrictions on the longline portion of the commercial sector. Restrictions for longlines in the reef fish fishery include a season-area closure, an endorsement to use longline gear, and a restriction on the total number of hooks that can be carried on a vessel (GMFMC 2009).

Three primary orders of seabirds are represented in the Gulf, Procellariiformes (petrels, albatrosses, and shearwaters), Pelecaniformes (pelicans, gannets and boobies, cormorants, tropic birds, and frigate birds), and Charadriiformes (phalaropes, gulls, terns, noddies, and skimmers) (Clapp et al., 1982; Harrison, 1983) and several species, including: piping plover, least tern, roseate tern, bald eagle, and brown pelican (the brown pelican is endangered in Mississippi and Louisiana and delisted in Florida and Alabama) are listed by the U.S. Fish and Wildlife Service as either endangered or threatened. Human disturbance of nesting colonies and mortalities from birds being caught on fishhooks and subsequently entangled in monofilament line are primary factors affecting sea birds. Oil or chemical spills, erosion, plant succession, hurricanes, storms, heavy tick infestations, and unpredictable food availability are other threats. There is no evidence that the directed red snapper fishery is adversely affecting seabirds. However, interactions, especially with brown pelicans consuming red snapper discards and fish before they are landed, are known to occur (SEDAR 7 2005).

Other species of reef fish are also incidentally caught when targeting red snapper. In the western Gulf, vermilion snapper and some deep-water groupers are incidentally caught as bycatch when harvesting red snapper. In the eastern Gulf, various species of shallow-water grouper and vermilion snapper are the primary species caught as bycatch when targeting red snapper. Vermilion snapper are not overfished or undergoing overfishing (SEDAR 9 Update 2011) and bycatch is not expected to jeopardize the status of this stock. Deep-water groupers are caught both in the eastern and western Gulf primarily with longline gear (> 80 percent). The deep-water grouper fishery was managed with a 1.02 million pound quota. From 2004 until the

implementation of the grouper/tilefish IFQ program in 2010 (SERO 2012a), the fishery met their quota and closed no later than July 15 each year. Deep-water grouper closures during this time period may have resulted in some additional discards of grouper by longliners targeting red snapper. Since the IFQ program was implemented, deep-water grouper species are landed year-round by holders of IFQ allocation and the quota has not been exceeded. Longliners account for approximately 5% of the annual commercial red snapper landings since 2000 (SEDAR 31 2013). It is unknown how increases in closed season discards might have affected the status of deep-water grouper stocks or the change to an IFQ managed sector. An updated assessment for yellowedge grouper found the stock was not overfished or undergoing overfishing (SEDAR 22 2011).

Red grouper and gag are the two most abundant shallow-water grouper species in the Gulf and primarily occur on the west Florida shelf. Gag was recently assessed (SEDAR 10 Update 2009) and determined to be overfished and undergoing overfishing. A rebuilding plan that takes into account gag dead discards was implemented through Amendment 32 (GMFMC 2011a). Red grouper were found not to be in an overfished condition and not undergoing overfishing (SEDAR 12 Update 2009). Within the reef fish fishery, discards represent a large and significant portion of mortality for gag and red grouper. In the past, these species were managed under a shallow-water grouper quota which was met prior to the end of the 2004 and 2005 fishing years. For the recreational sector, shallow-water grouper including gag and red grouper are managed with size limits, bag limits, and season and area closures. The recreational gag season begins July 1 and extends until the catch target is projected to be caught. Since 2010, the commercial harvest of gag, red grouper, and other shallow-water grouper are managed under an IFQ program and the commercial sector has not exceeded its quota under the program. Prior to the IFQ program, quota closures at the end of the year have likely resulted in some additional commercial discards when the red snapper fishery is open. However, most commercial landings of red snapper occur in the western Gulf where gag and red grouper are less abundant or infrequently caught.

Practicability of current management measures in the directed red snapper fishery relative to their impact on bycatch and bycatch mortality.

The bycatch practicability analysis in Amendment 27 (GMFMC 2007) indicated directed fishery bycatch was believed to have a greater effect on red snapper stock recovery than the shrimp fishery. Although shrimp bycatch still accounts for a majority of bycatch, bycatch from the directed fishery is now known to have a greater effect on stock recovery. A quota, 16-inch total length (TL) minimum size limit, 2-fish bag limit, closed season, and gear restrictions are presently used to manage the recreational fishery. The commercial fishery is managed with an IFQ program, a quota, a 13-inch TL minimum size limit, and gear restrictions. Prior to 2007 when the red snapper IFQ program was implemented, the commercial fishery was also managed with closed seasons and trip limits. The following discusses current and historic management measures with respect to their relative impacts on bycatch.

Closed Seasons

Prior to 1997, the recreational sector was able to fish for red snapper year round. To prevent the recreational quota from being exceeded, recreational fishing for red snapper was closed on November 27, 1997, September 30, 1998, and August 29, 1999. In 2000, an April 21 through October 31 red snapper season was established. This was modified to a June 1 through October 31 season in 2008 by Amendment 27 (GMFMC 2007). Currently, the recreational directed red snapper fishery is closed in the exclusive economic zone from January 1 through May 31 each year through a 2012 framework action. However, since 2008, the sector has been closed early when the quota is projected to be caught. In addition, since 2008, the length of time red snapper fishing has been open has become increasingly shorter such that for 2011, 2012, and 2013, the season length has shrunk to 48, 46, and 42 days, respectively. With these shorter seasons, the number of released fish has decreased during the open season, but the number of releases during the closed season has increased (Figure 2; SEDAR 31 2013). Reflected in this trend is that although the estimated number of dead discards has decreased during the fishing season, the number of dead discards has increased during the longer closed periods (Figure 4). For 2014, the season length was decreased to 9 days. This was in response to a decision by the U.S. District Court for the District of Columbia (Court) in Guindon v. Pritzker, 2014 WL 1274076 (D.D.C. Mar. 26, 2014). NMFS, at the request of the Council, took emergency action to implement an in-season accountability measure for the recreational harvest of red snapper in the Gulf. The action set an annual catch target (ACT) equal to 80% of the 5.390 mp quota (ACT = 4.312 mp). The resultant 9-day season was based on the ACT and has only a 15% probability of exceeding the quota.

With the implementation of the IFQ program, there is no closed season for the commercial sector. However, commercial vessels with little or no red snapper allocation cannot land red snapper on most or all their trips. Thus, they effectively operate under closed season conditions. GMFMC (2013) indicated most discards were likely due to insufficient allocation, rather than the minimum size limit, especially in the longline fleet. Most of these discards were recorded as released alive.

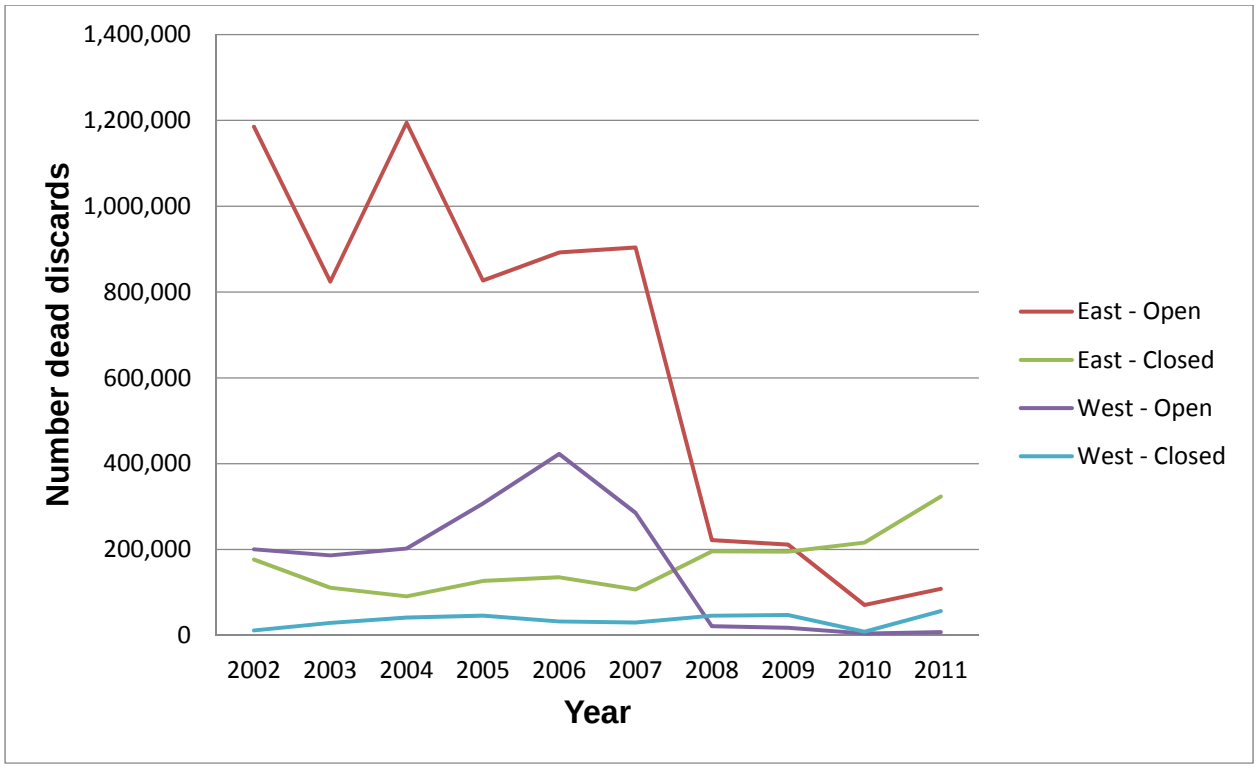

Figure 4. The number of Gulf red snapper dead discards from the recreational sector by year and by area. Source: Jakob Tetzlaff., pers. comm. Southeast Fisheries Science Center, Miami, Florida.

Bag Limits

The recreational fishery is regulated by a 2-red snapper daily bag limit per person. Red snapper discards while harvesting the daily bag limit are a result of incidental capture of undersized fish prior to reaching the bag limit and targeting of other reef fish residing in similar habitat as red snapper after bag limits have been reached. SERO (2012b) reported for-hire anglers, on average, landed 1.23 red snapper per trip and private anglers landed 1.58 red snapper per trip when the season is open. Based on average catch rates, the current two red snapper bag limit is not a limiting factor for some trips, but likely occurs on others. Therefore, the release of undersized fish while harvesting the bag limit is still an important factor contributing to discards in addition to the release of legal-sized red snapper after the bag limit is reached.

Size limits

The 16-inch recreational and 13-inch commercial TL minimum size limits are important factors when considering bycatch in the directed fishery. Size limits are intended to protect immature fish and reduce fishing mortality. The recreational minimum size limit is above the size at 50% maturity and the commercial size limit is near the size at 50% maturity. Size-at-maturity varies by region, with 75% of eastern Gulf female red snapper mature by 12-inches TL and 50% of western Gulf red snapper mature by 13-14-inches TL (Fitzhugh et al. 2004).

Several yield-per-recruit (YPR) analyses have previously been conducted to identify the size that balances the benefits of harvesting fish at larger sizes against losses due to natural mortality. Goodyear (1995) concluded YPR was maximized in the red snapper fishery between 18 and 21-inches TL, assuming 20 and 33% discard mortality in the recreational and commercial red snapper fisheries, respectively. A subsequent YPR analysis by Schirripa and Legault (1997) indicated increasing the minimum size limit above 15-inches TL would result in no gains in yield. Analyses of minimum size limits conducted for Amendment 27 (GMFMC 2007) indicated red snapper projected recovery rates are slightly faster if the commercial minimum size limit is reduced or eliminated, but increasingly slowed by smaller recreational minimum size limits (Porch 2005). Decreasing the recreational and commercial minimum size limits was projected to increase stock recovery slightly over the short term, but stock recovery would be increasingly slowed if the recreational size limit were lowered over the long term (Porch 2005). However, as discussed in Amendment 27, changes in spawning potential and the rate of stock recovery were found to be negligible for recreational size limits ranging from 13 to 15-inches TL. An YPR analysis conducted by SERO (2006), using current fishery selectivities and discard mortality rates from SEDAR 7 (2005) supported Porch's (2005) findings. SERO (2006) examined four commercial minimum size limits (12-, 13-, 14-, and 15-inches TL) and five recreational minimum size limits (6-, 13-, 14-, 15-, and 16-inches TL). Based on the range of size limits analyzed, YPR was maximized at 16-inches TL in both the eastern and western Gulf recreational fisheries, 12-inches TL in the western Gulf commercial fishery, and 15-inches TL in the eastern Gulf commercial fishery. However, there was virtually no difference in maximum YPR (< 0.3 percent) for any of the eastern Gulf commercial size limits analyzed. In a study by Wilson et al. (2004) aboard commercial vessels using bandit rigs, 61% of red snapper released were greater than 13 inches and 86% were greater than 12 inches.

For Amendment 39 (still under development; GMFMC 2014a), an YPR analysis was applied to the recreational sector (SERO 2013). This analysis indicates the Gulf-wide YPR is maximized at a recreational size limit of 15-inches TL. However, there was not much of a change in YPR between lengths of 13- and 18-inches TL. Thus, if the minimum size limit were changed from 16- to 15-inches TL, any gain in YPR would be minimal. SERO (2013) also showed than any increase in the minimum size limit would reduce the number of fish landed. This would probably result in more regulatory discards and an increase in the number of dead discards.

Given the above discussion, a larger recreational minimum size limit is considered to be more effective than a similar sized commercial minimum size limit because of lower discard mortality rates in the recreational fishery (Tables 2 and 3). High discard mortality rates in the commercial fishery provide little, if any, protection to the stock because the released fish mostly die rather than contribute to filling the quota. In contrast, the current 16-inch TL minimum recreational size limit was found to afford some protection to the stock, because a greater percentage of discarded fish will survive to spawn and later contribute to the quota as larger animals.

Area closures

Although the Council has not developed area closures specifically for red snapper, the Council has created areas to protect other species. For example, two restricted fishing areas were developed to specifically protect spawning aggregations of gag in 2000 (GMFMC 1999). The

Madison-Swanson and Steamboat Lumps marine restricted fishing areas are located in the northeastern Gulf at a depth of 40 to 60 fathoms. Both areas prohibit bottom fishing. Bottom fishing is also prohibited in the Tortugas North and South marine reserves in the southern Gulf near the Dry Tortugas. Marine reserves and time/area closures benefit fish residing within reserve boundaries by prohibiting their capture during part or all of the year. Within marine reserves, fish that are undersized potentially have an opportunity to grow to legal size and are no longer caught as bycatch. If these fish emigrate from the marine reserve (i.e., spillover effect), then they may be caught as legal fish outside the reserve, thereby reducing bycatch. However, anglers and commercial fishermen may redistribute their effort to areas surrounding the area closure. If fishing pressure in these areas is increased, then any benefits of reduced bycatch of fish in the marine reserve will likely be offset by increases in bycatch of fish residing outside the marine reserve. Within restricted fishing areas or time/area closures, fishing is allowed under restrictions that are intended to protect certain components of the populations within the area (e.g., prohibitions on bottom fishing gear), or to protect populations during a critical phase of their life history, such as during spawning.

The Council did develop a season area closure to reduce bycatch of sea turtles for the longline component of the commercial sector. The use of longlines had been prohibited from waters less than 20 fathoms east of Cape San Blas, Florida, and 50 fathoms west of Cape San Blas; however, due to higher estimates of sea turtles caught in longline gear, measures were put in place through Amendment 31 (GMFMC 2009) to reduce this bycatch. One of these measures was the prohibition of the use of bottom longline gear in the Gulf reef fish fishery, shoreward of a line approximating the 35-fathom contour east of Cape San Blas, Florida from June through August. Most sea turtle takes by longline occur during the summer months.

Allowable gear

Vertical hook-and-line gear (bandit rigs, manual handlines) is the primary gear used in the commercial fishery (> 96% of annual landings). Longlines, spears, and fish traps account for a small portion of the commercial harvest (< 5%). Longlines account for only a small fraction of red snapper dead discards as most of the landings come from handline-caught fish (Table 6). In addition, longlines are fished in deeper water, particularly in the west, and select for larger, legal-sized red snapper. Longline vessels east of Cape San Blas, Florida are also restricted to carrying 1,000 hooks onboard (only 750 rigged for fishing at any given time) as part of a suite of measures put in place through Amendment 31 (GMFMC 2009) to reduce sea turtle bycatch.

Rod-and-reel is the primary gear used in the recreational fishery. Recreational anglers also use spears to capture red snapper. Spearfishing does not affect discard mortality since all fish caught are killed. Only undersized red snapper mistakenly killed while spearfishing would contribute to discard mortality. During the red snapper recreational fishing season, discards are primarily due to the recreational size limit; however, allowable gears can affect discard mortality rates.

Fishermen in both the commercial and recreational sectors are required to use non-stainless steel circle hooks, if using natural baits, to reduce discard mortality. The size of circle hooks used in the fishery varies by manufacturer, gear type, and species targeted (i.e., if targeting vermilion snapper, smaller circle hooks may be used). Although circle hooks may not work as well to

reduce red snapper discard mortality, they are effective in reducing mortality in other species such as red grouper (Burns and Froeschke 2012).

In addition to the circle hook requirement, Amendment 27 (GMFMC 2007) also put in place requirements for both commercial and recreational fishermen in the reef fish fishery to carry onboard dehooking devices. These gears are all intended to reduce bycatch and discard mortality. A dehooking device is a tool intended to remove a hook embedded in a fish. It reduces the handling time releasing a fish from a hook and allows a fish to be released with minimum damage.

IFQ program

The commercial sector was previously regulated by 2,000-lb and 200-lb trip limits. With the establishment of the red snapper IFQ program, red snapper discards after a trip limit was reached are no longer a factor. However, reef fish observer data since the IFQ program was implemented indicate a large proportion of legal-sized red snapper continue to be discarded by both the handline and longline fleets (2013). Discard rates do vary by gear. In 2011, 3.5 red snapper were landed for every fish released in the vertical line fleet compared to a 0.5 red snapper landed for each fish released in the longline fleet (SERO 2012b). Discard rates greatly varied by region. In 2011, 87% of observed red snapper caught in the Florida Panhandle were landed, compared to 79% off Louisiana and Texas, and 47% off the Florida Peninsula. There was also a noticeable difference in the size of red snapper caught, with red snapper along the Florida Peninsula (mostly19-24-inches TL) generally larger than fish caught in other areas of the Gulf (mostly 15-21-inches TL). Most discards were estimated to be released alive, regardless of gear type used. Discards were likely due to insufficient allocation, rather than the minimum size limit, especially in the longline fleet. In a study by Wilson et al. (2004) aboard commercial vessels using bandit rigs, 61% of red snapper released were greater than 13-inches TL, the minimum size limit.

Table 6. Commercial red snapper landings and dead discards in the Gulf by year and area.

	Eastern Gulf				Western Gulf			
	Landings		Dead discards		Landings		Dead discards	
Year	Handline	Longline	Handline	Longline	Handline	Longline	Handline	Longline
1983	1,646,550	205,415	1,587	1,237	2,698,740	9,089	56,690	85
1984	949,341	128,146	309	388	1,625,800	71,755	27,160	547
1985	550,063	25,477	79,906	2,239	608,624	50,822	233,753	8,173
1986	222,738	14,761	21,314	646	564,277	73,719	261,093	11,740
1987	168,788	10,300	20,091	743	412,668	69,713	229,400	12,708
1988	186,924	10,860	51,433	738	686,680	66,440	285,429	9,443
1989	156,071	10,284	32,961	1,714	531,066	44,967	230,318	6,188
1990	198,778	10,021	94,242	4,552	482,224	11,997	377,444	2,706
1991	152,971	3,368	79,800	1,647	527,667	7,937	332,927	1,905
1992	153,940	1,104	54,930	484	837,699	2,270	380,571	460
1993	157,367	3,061	57,447	843	849,065	2,421	375,085	471
1994	160,369	1,473	87,448	568	705,354	1,879	412,546	407
1995	46,528	1,466	54,453	658	648,399	2,012	491,941	501
1996	65,129	1,329	62,736	925	941,768	3,102	695,812	699
1997	51,767	849	79,005	515	1,066,360	3,472	713,290	729
1998	111,068	1,057	99,004	494	1,052,750	3,001	605,570	522
1999	147,499	1,289	102,825	340	1,032,070	9,722	602,380	1,564
2000	168,301	1,585	107,368	556	899,899	18,882	634,841	3,146
2001	207,257	1,779	278,236	894	809,218	12,326	658,252	2,334
2002	297,471	3,235	319,910	1,555	830,146	14,317	584,024	2,481
2003	279,295	2,626	235,502	1,190	782,006	16,735	492,094	2,618
2004	247,833	3,592	251,909	1,633	741,737	43,698	598,933	8,157
2005	216,596	3,816	230,654	2,081	725,819	26,878	785,721	6,686
2006	209,704	3,062	221,631	1,394	955,637	24,731	992,193	6,781
2007	308,237	3,492	949,770	14,520	521,931	17,877	231,164	443
2008	277,716	7,221	660,738	24,096	381,349	5,693	115,150	108
2009	299,480	3,088	748,261	10,548	347,913	5,666	89,641	68
2010	398,806	15,002	1,111,727	53,620	415,081	4,364	85,851	56
2011	408,346	15,463	1,274,735	60,252	382,630	2,143	86,460	18

Source: SEDAR 31 2013; Jacob Tetzlaff, pers. comm. Southeast Fisheries Science Center, Miami, Florida)

Alternatives being considered and bycatch minimization

The proposed establishment of private and federal for-hire components, allocation between components, and quota closures for the recreational red snapper sector are discussed in Amendment 40 (GMFMC 2014b) can indirectly affect bycatch in the Gulf reef fish fishery. These actions are primarily administrative. They would establish the components, set up an allocation and adjustments of the allocation based on fisher participation as well as provide separate seasonal closure provisions for the components. Depending on which alternatives are selected for each action, they could either reduce or increase bycatch in the reef fish fishery.

Practicability Analysis

Criterion 1: Population effects for the bycatch species

This action would establish a federal for-hire and private angling component to the red snapper recreational as well as create an allocation of the red snapper recreational quota between the two components. As discussed in Section 4.1.2 of Amendment 40 (GMFMC 2014b), the number of dead discards is estimated to be lower if the allocation (Action 2; allocation between components) favors the federal for-hire component because discards relative to landings are less than those found in the private angling component. Therefore, the greater the allocation favors the private angling component, the greater number of fish are likely to be dead discards. These fish would be added to the number of fish killed by the recreational sector (landings and dead discards) and would have an adverse effect on the stock (Action 2, Alternatives 3-8). Actions 1 (establish components), and 3 (Component closures) do not affect how the recreational sector is prosecuted and so should have no effects on discards. These actions do not affect the commercial sector and so should have not effects on commercial discards.

As described earlier in this bycatch practicability analysis, the Council and NMFS have developed a variety of management measures to reduce red snapper bycatch and these measures are thought to benefit the status of the stock. These include bycatch reduction devices and effort targets in the shrimp fishery, size limit reductions and the IFQ program for the commercial sector, and gear requirements, such as dehooking devices and the use of circle hooks by the reef fish fishery. In addition, any increases in bycatch resulting from proposed management actions are accounted for when reducing directed fishing mortality. Any reductions in bycatch not achieved must be accounted for when setting the annual catch limits; the less bycatch is reduced, the more the annual catch limits must be reduced.

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

The relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict with any accuracy. The most recent red snapper stock assessment (SEDAR 31 2013) indicated the stock is rebuilding. Consequently, it is possible that forage species and competitor species could decrease in abundance in response to an increase in red snapper abundance. Changes in the bycatch of red snapper are not expected to directly affect other species in the ecosystem.

Although birds, dolphins, and other predators may feed on red snapper discards, there is no evidence that any of these species rely on red snapper discards for food.

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

Population and ecosystem effects resulting from changes in the bycatch of other species of fish and invertebrates are difficult to predict. As discussed in Amendment 27 (GMFMC 2007), groupers, snappers, greater amberjack, gray triggerfish and other reef fishes are commonly caught in association with red snapper. Many of these species are in rebuilding plans (gag, gray triggerfish, and greater amberjack) with the stocks improving. Regulatory discards significantly contribute to fishing mortality for all of these reef fish species, with the exceptions of gray triggerfish and vermilion snapper.

No measures are proposed in this amendment to directly reduce the bycatch of other reef fish species. Bycatch minimization measures implemented through Amendment 18A (GMFMC 2005), Amendment 27 (GMFMC 2007), and Amendment 31 (GMFMC 2009) are expected to benefit reef fish stocks, sea turtles, and smalltooth sawfish. As mentioned, Amendment 40 (GMFMC 2014b) would establish a federal for-hire and private angling component to the red snapper recreational as well as create an allocation of the red snapper recreational quota between the two components. For species with quotas (greater amberjack, gray triggerfish, and recreational red snapper), this could lead to a shift in fishing effort during recreational red snapper season closures and negatively impact reef fish stocks not currently constrained by annual quotas or IFQ programs. The magnitude of this impact would depend on the size of the resultant quotas, the length of the red snapper closure, and the amount of effort shifting that occurs. Annual catch limits and accountability measures are now in effect for species not considered undergoing overfishing or overfished, thus potential for effort shifting and changes in bycatch may be lessened for these species.

Criterion 4: Effects on marine mammals and birds

The effects of current management measures on marine mammals and birds are described above. Bycatch minimization measures evaluated in this amendment are not expected to significantly affect marine mammals and birds. There is no information to indicate marine mammals and birds rely on red snapper for food, and the measure in this amendment is not anticipated to alter the existing prosecution of the fishery, and thus interactions with marine mammals or birds.

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

Establishing a private angling and federal for-hire component to the recreational sector should not affect fishing, processing, disposal, and marketing costs in the commercial sector. This action also would not be expected to result in any changes in fishing, processing, disposal, or marketing costs of recreationally harvested red snapper because these fish may not be sold.

Criterion 6: Changes in fishing practices and behavior of fishermen

This action should not change fishing practices or behavior of recreational fishermen. As described in Criterion 1, the only action that would cause a shift between how the two components fish is Action 2 that allocates the recreational red snapper quota between the two components. If the allocation provides more fish to the private angling component rather than towards the federal for-hire component, then it is likely the number of discards could go up. This is because discards relative to the harvest is greater for the private angling component (see Section 4.2.2 in GMFMC 2014b). However, this action would only affect how many fish are available to each component and should not change fishing practices or behavior of recreational fishermen in general. Because the commercial sector is not affected by this action, there should be no change in commercial fishing practices or behavior as a result of this action.

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

The proposed management measures are not expected to significantly impact administrative costs. Quotas based on stock allocation measures are currently used to regulate the commercial and recreational sectors harvesting red snapper. None of the resultant recreational subquotas from this action are expected to diminish regulatory effectiveness. All of these measures will require additional research to determine the magnitude and extent of impacts to bycatch and bycatch mortality. Administrative activities such as quota monitoring and enforcement should not be affected by the proposed management measures.

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

The proposed creation of two recreational components and allocation of the red snapper recreational quota between the two components are unlikely to cause much change in the economic, social, or cultural value of fishing activities. However, this action is the first step towards future actions that could affect activities and resources through separate management of each component. At this time, it is unknown what these changes might be, but they will be evaluated in a future bycatch practicability analysis as those actions are developed. Because the commercial sector is not affected by this action, there should be no change in the economic, social, or cultural value of fishing activities. No effects would be expected on the non-consumptive uses of fishery resources as a result of this action.

Criterion 9: Changes in the distribution of benefits and costs

The net effects of the proposed management measures in this amendment on bycatch are unknown because the resultant allocation between components is unknown at this time. As explained in Criterion 1, only Acton 2 would have any effect on bycatch – allocations favoring the private angling component would be expected to result in more discards. The proposed management measures would not be expected to affect the amount of red snapper harvest normally harvested by anglers in the Gulf as the recreational sector would still be managed under the recreational quota. However, the ability in the future to manage each component of the

recreational sector under a regime tailored to each component would be expected to increase the benefits, and possibly decrease the costs, associated with the recreational harvest of red snapper. Because the commercial sector is not affected by this action, there should be no change in the distribution of benefits and costs to this sector.

Criterion 10: Social effects

Bycatch is considered wasteful by fishermen and it reduces overall yield obtained from the fishery. Minimizing bycatch to the extent practicable will increase efficiency, reduce waste, and benefit stock recovery, thereby resulting in net social benefits. It is expected that these actions would result in benefits for the recreational sector and adverse effects for the commercial sector.

Conclusion

Analysis of the ten bycatch practicability factors indicates there would be positive biological impacts associated with further reducing bycatch and bycatch mortality in the reef fish fishery. The main benefits of reducing red snapper bycatch are: 1) less waste and 2) increased yield in the directed fishery. Reducing discards and discard mortality rates would result in less forgone yield.

When determining reductions associated with various management measures, release mortality is factored into the analyses in order to adjust the estimated reductions for losses due to dead discards. The increases in discards associated with each of these management measures varies and is contingent on assumptions about how fisherman's behavior and fishing practices will change. In this action, establishing a federal for-hire and private angling component to the red snapper recreational sector as well as create an allocation of the red snapper recreational quota between the two components would indirectly affect discards and bycatch. Discards and bycatch would be affected depending on the application of allocation allowed under Action 2 of Amendment 40 (GMFMC 2014b).

The Council needed to consider the practicability of implementing the bycatch minimization measures discussed above with respect to the overall objectives of the Reef Fish Fishery Management Plan and Magnuson-Stevens Act. Therefore, given actions in this amendment combined with previous actions, management measures, to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of that bycatch.

References

Burns, K. M., C. C. Koenig, and F. C. Coleman. 2002. Evaluation of multiple factors involved in release mortality of undersized red grouper, gag, red snapper, and vermilion snapper. Mote Marine Laboratory Technical Report No. 814. (MARFIN grant #NA87FF0421). 53 pp.

Burns, K. M., N. F. Parnell, R. R. Wilson. 2004. Partitioning release mortality in the undersized red snapper bycatch: Comparison of depth vs. hooking effects. Final Report MARFIN Grant No. NA97FF0349 36 pp.

Burns, K. M., and J. T. Froeschke. 2012. Survival of red grouper (*Epinephalus morio*) and red snapper (*Lutjanus campechanus*) caught on J-hooks and circle hooks in the Florida recreational and recreational-for-hire fisheries. Bull. Mar. Sci. 88(3):633-646.

Campbell, M.D., W.B. Driggers, and B. Sauls. 2012. Release mortality in the red snapper fishery: a synopsis of three decades of research. SEDAR31-DW22. SEDAR, North Charleston, SC. 25 pp.

Clapp, R. B., R. C. Banks, D. Morgan-Jacobs, and W. A. Hoffman. 1982. Marine birds of the southeastern United States and Gulf of Mexico. U.S. Dept. of Interior, Fish and Wildlife Service, Office of Biological Services, Washington D.C. FWS/OBS-82/01. 3 vols.

Fitzhugh, G. R., M. S. Duncan, L. A. Collins, W. T. Walling, and D. W. Oliver. 2004. Characterization of red snapper (*Lutjanus campechanus*) reproduction: for the 2004 Gulf of Mexico SEDAR. NOAA, NMFS, SEFSC, 3500 Delwood Beach Road, Panama City, Florida 32409. Contribution 04-01. 29 pp + addendum.

GMFMC. 1999. Regulatory amendment to the reef fish fishery management plan to set 1999 gag/black grouper management measures (revised), includes environmental assessment, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council, Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20RegAmend%20-%201999-08.pdf

GMFMC. 2002. Amendment number 10 to the fishery management plan for the shrimp fishery of the Gulf of Mexico, U.S. Waters with environmental assessment, regulatory impact review, initial regulatory flexibility analysis, and social impact assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf

GMFMC. 2004a. Amendment 22 to the fishery management plan for the reef fish fishery of the Gulf of Mexico, U.S. waters, with supplemental environmental impact statement, regulatory impact review, initial regulatory flexibility analysis, and social impact assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida.

http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amend%2022%20Final%2070204.pdf

GMFMC. 2004b. Final amendment 23 to the reef fish fishery management plan to set vermilion snapper sustainable fisheries act targets and thresholds and to establish a plan to end overfishing and rebuild the stock, including a final supplemental environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/VS%2023%20Oct%20Final%2010-21-04%20with%20Appendix%20E.pdf

GMFMC. 2005. Final amendment 18A to the fishery management plan for the reef fish resources of the Gulf of Mexico, including environmental assessment, regulatory impact review, and initial regulatory flexibility analyses. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amendment_18A_Final.pdf

GMFMC. 2007. Final amendment 27 to the reef fish fishery management plan and amendment 14 to the shrimp fishery management plan including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. 490 pp with appendices. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf

GMFMC. 2008a. Final reef fish amendment 30A: greater amberjack – revised rebuilding plan, accountability measures; gray triggerfish – establish rebuilding plan, end overfishing, accountability measures, regional management, management thresholds and benchmarks including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Amend-30A-Final%20208.pdf

GMFMC. 2008b. Final reef fish amendment 30B: gag – end overfishing and set management thresholds and targets. Red grouper – set optimum yield, TAC, and management measures, time/area closures, and federal regulatory compliance. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Amendment%2030B%2010_10_08.pdf

GMFMC. 2009. Final amendment 31 to the fishery management plan for reef fish resources in the Gulf of Mexico addresses bycatch of sea turtles in the bottom longline component of the Gulf of Mexico reef fish fishery, includes draft environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. 261 pp with appendices. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Draft%20RF%20Amend%2031%206-11-09.pdf

GMFMC. 2011a. Final reef fish amendment 32 – gag grouper – rebuilding plan, annual catch limits, management measures, red grouper – annual catch limits, management measures, and grouper accountability measures. Gulf of Mexico Fishery Management Council. Tampa,

Florida.
http://www.gulfcouncil.org/docs/amendments/Final%20RF32_EIS_October_21_2011[2].pdf

GMFMC. 2011b. Final generic annual catch limits/accountability measures amendment for the Gulf of Mexico fishery management council's red drum, reef fish, shrimp, coral and coral reefs fishery management plans, including environmental impact statement, regulatory impact review, regulatory flexibility analysis, and fishery impact statement. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf

GMFMC. 2012a. Final amendment 35 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – modifications to the greater amberjack rebuilding plan and adjustments to the recreational and commercial management measures, including an environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final_Amendment_35_Greater_Amberjack_Rebuilding_8_May_2012.pdf

GMFMC. 2012b. Final amendment 37 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – Modifications to the gray triggerfish rebuilding plan including adjustments to the annual catch limits and annual catch targets for the commercial and recreational sectors. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/docs/amendments/Final_Reef_Fish_Amend_37_Gray_Triggerfish_12_06_12[1].pdf

GMFMC. 2012c. Final amendment 38 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – modifications to the shallow-water grouper accountability measures, including an environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis.
http://www.gulfcouncil.org/docs/amendments/Final%20Amendment%2038%2009-12-2012.pdf

GMFMC. 2013. Red snapper individual fishing quota program 5-year review. Gulf of Mexico Fishery Management Council. Tampa, Florida. 94 p.

GMFMC. 2014a. Regional Management of Recreational Red Snapper Amendment 39 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, including a Draft Environmental Impact Statement. Gulf of Mexico Fishery Management Council. Tampa, Florida.

GMFMC. 2014b. Red Snapper Allocation Amendment 28 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, including a Draft Environmental Impact Statement. Gulf of Mexico Fishery Management Council. Tampa, Florida.

Goodyear, C. P. 1995. Red snapper in U.S. waters of the Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: MIA 95/96-05. 171 pp.

Harrison, P. 1983. Seabirds: an identification guide. Houghton Mifflin Company, Boston, MA. Field Notes 48: 976-978.

Linton, B. 2012. Shrimp fishery bycatch estimates for Gulf of Mexico red snapper, 1972-2011. SEDAR31-DW30. SEDAR, North Charleston, SC. 11 pp.

NMFS. 2011. Biological opinion on the continued authorization of Reef Fish fishing under the Gulf of Mexico Reef Fish Fishery Management Plan. September 30, 2011. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/03584%20GOM%20Reef%20Fish%20BiOp%202011%20final.pdf

Patterson, W. F. III, J. C. Watterson, R. L. Shipp, and J. H. Cowan, Jr. 2001. Movement of tagged red snapper in the northern Gulf of Mexico. Transactions of the American Fisheries Society 130: 533-545.

Porch, C. E. 2005. Projected effects of changes in minimum size regulations on the future status of the red snapper (*Lutjanus campechanus*) fishery in the U. S. Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Contribution: SFD-2005-009. 7 pp.

RFSAP. 1999. September 1999 Report of the Reef Fish Stock Assessment Panel. Gulf of Mexico Fishery Management Council. Tampa, FL.

Schirripa, M. J. and C. M. Legault. 1997. Status of the red snapper in U.S. waters of the Gulf of Mexico: Executive summary updated through 1996. MIA-97/98-05. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida. 37 pp.

Schirripa, M. J., and C. M. Legault. 1999. Status of the red snapper fishery in the Gulf of Mexico: Updated through 1998. SFD-99/00-75. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida. 44pp. with appendices

SEDAR 7. 2005. Stock assessment report of SEDAR 7 Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2011. SEDAR update stock assessment of vermilion snapper in the Gulf of Mexico. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 10 Update. 2009. Stock assessment of gag in the Gulf of Mexico. – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/

SEDAR 12 Update. 2009. Stock assessment of red grouper in the Gulf of Mexico – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 22. 2011. Stock assessment report Gulf of Mexico yellowedge grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 31. 2013. Stock assessment report Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SERO. 2006. Red snapper yield-per-recruit analyses. NOAA, NMFS, SERO, 263 13th Ave. South, St. Petersburg, Florida 33701. 13 pp.

SERO. 2012a. 2011 Gulf of Mexico grouper-tilefish individual fishing quota annual report. SERO-LAPP-2012-09. Southeast Regional Office. St. Petersburg, Florida. 49 p.

SERO. 2012b. Southeast Regional Office National Marine Fisheries Service. Estimated reduction in Gulf of Mexico recreational red snapper harvest associated with various bag limits. Southeast Regional Office, St. Petersburg, Florida.

SERO 2013 (see A39)

Wilson, C. A., D. L. Nieland, A. J. Fischer, and M. S. Baker, Jr. 2004. Red snapper *Lutjanus campechanus* in the northern Gulf of Mexico: Age and size composition of the commercial harvest and mortality of regulatory discards. NOAA, NMFS, SERO, 263 13th Ave. South, St. Petersburg, Florida 33701. MARFIN grant #NA17FF2007. 55 pp.

APPENDIX C. SUMMARY OF HABITAT UTILIZATION BY LIFE HISTORY STAGE FOR SPECIES IN THE REEF FISH FMP.

Common name	Eggs	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 Snapper	Pelagic	Pelagic	Unknown	Unknown	Hard bottoms	
Mutton Snapper	Reefs	Reefs	Mangroves, Reefs, SAV, Emergent marshes	Mangroves, Reefs, SAV, Emergent marshes	Reefs, SAV	Shoals/ Banks, Shelf edge/slope
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 Snapper	Pelagic, Reefs	Pelagic, Reefs	Mangroves, Emergent marshes, Seagrasses	Mangroves, Emergent marshes, SAV	Emergent marshes, Hard bottoms, Reefs, Sand/ shell bottoms, Soft bottoms	
Lane Snapper	Pelagic		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	Unknown	Unknown	Unknown	Unknown	Shelf edge	
Yellowtail Snapper	Pelagic		Mangroves, SAV, Soft bottoms	Reefs	Hard bottoms, Reefs, Shoals/ Banks	

Common name	Eggs	Larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
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, *Sargassum*	Drift algae, *Sargassum*	Drift algae, Reefs, *Sargassum*	Reefs, Sand/ shell bottoms	Reefs, Sand/ shell bottoms
Greater Amberjack	Pelagic	Pelagic	Drift algae	Drift algae	Pelagic, Reefs	Pelagic
Lesser Amberjack			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	
Tilefish (golden)	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	
Goldface Tilefish	Unknown					
Speckled Hind	Pelagic	Pelagic			Hard bottoms, Reefs	Shelf edge/slope
Yellowedge Grouper	Pelagic	Pelagic		Hard bottoms	Hard bottoms	

Common name	Eggs	Larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Atlantic Goliath Grouper	Pelagic	Pelagic	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	
Warsaw Grouper	Pelagic	Pelagic		Reefs	Hard bottoms, Shelf edge/slope	
Snowy Grouper	Pelagic	Pelagic	Reefs	Reefs	Hard bottoms, Reefs, Shelf edge/slope	
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

Source: Adapted from Table 3.2.7 in the final draft of the EIS from the Generic EFH Amendment (GMFMC 2004a) and consolidated in this document.

APPENDIX D. ALTERNATIVES CONSIDERED BUT REJECTED

Action 1 – Establishment of Private Angling and Federal For-hire Components 2.2.2

When Amendment 40 was intitially taken out to scoping, the Council looked at three alternatives for this action. One was a no action alternative to not split the recreational sector, a second was a two-way partition of the recreational sector that would result in a private angling component and a for-hire component, and the third was a three-way split that would further divide the for hire component into a separate charterboat and headboat component (GMFMC 2013). The Council also looked at two options for inclusion in the for-hire component – just federally permitted for-hire vessels or both federally permitted and state permitted for-hire vessels.

In their discussion of the amendment, the Council determined to limit the scope of the action to just two components of the recreational sector – private angling and for-hire. This determination was made inpart because of difficulties separating what is a headboat and what is a charter vessel because the same for-hire permit applies to both types of vessels. Also, the Council determined this would give them more flexibility in addressing for-hire management issues in future actions as they could develop options to apply to both charter vessels and headboats or each type individually. The Council also determined that adding state-permitted vessels to the for-hire component would be unmanageable because of difficulties in enforcing federal regulations on vessels that are limited to state waters when for-hire fishing for reef fish. Thus, the Council limited the scope of the for-hire component to just federally permitted for-hire vessels.

Action 2.2 – Headboat allocation adjustment to the baseline allocation under a voluntary federal for-hire component.

As mentioned in Section 2.2, Action 1, Alternative 2 was selected as preferred, which establishes a mandatory sector separation where all federal for-hire vessels would be in the federal for-hire component. As a result, there is no need to adjust the baseline allocation determined in Action 2 for vessel operators who decide to opt out of the for-hire component. Thus, on August 28, 2014, the Council removed Action 2.2 from consideration and put it in the considered but rejected section because this action would only apply if one of the Action 1 voluntary sector separation alternatives (Alternatives 3 and 4) were selected as preferred. The following are the alternatives considered in this action and a discussion of the alternatives.

Note: Headboats are defined as for-hire vessels that currently participate in the Southeast Region Headboat Survey administered by the Southeast Fishery Science Center. As of April 2014, 67 vessels met this definition (K. Brennan, Southeast Fisheries Science Center (SEFSC), pers. comm.).

Alternative 1. No Action. Do not adjust the baseline allocation for the federal for-hire component if headboats opt not to join.

Alternative 2. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for headboats not opting to join the federal for-hire component. The number of pounds to be redistributed would be based on the number of headboats not opting to join the federal for-hire component multiplied by the average landings per headboat. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. Average landings per headboat would be based on the **proportion of the recreational quota harvested by all headboats divided by the total number of headboats** based on:

> **Option a.** the most recent year that headboat logbook landings data are available.
> **Option b.** the two most recent years that headboat logbook landings data are available.
> **Option c.** the three most recent years that headboat logbook data landings are available

Alternative 3. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for headboats not opting to join the federal for-hire component. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. For **each** non-participating headboat, the number of pounds to be redistributed would be determined by **the average proportion of the recreational quota harvested by that vessel during:**

> **Option a.** the most recent year that headboat logbook landings data are available.
> **Option b.** the two most recent years that headboat logbook landings data are available.
> **Option c.** the three most recent years that headboat logbook data landings are available

Discussion

Baseline allocations of the recreational red snapper quota between the federal for-hire and private angling sectors considered in Action 2.1 assume that all federally permitted for-hire operators would join the federal for-hire component. However, Action 1, which would partition the recreational sector into two distinct components, includes voluntary options to allow for-hire operators to join or decide to be excluded from the federal for-hire component. Should some federally permitted for-hire operators elect to remain in the private angling component, allocation adjustments would be necessary. To account for the federally permitted for-hire operators who did not join the federal for-hire component, adjustments would redistribute a portion of the for-hire quota to the private angling component. Action 2.2 addresses allocation adjustments to account for headboat operators who are not part of the federal for-hire component. Adjustments to the baseline allocations to account for charter operators who are not included in the federal for-hire component are addressed in Action 2.3. Catch histories for headboats are available because headboat landings are recorded electronically and submitted on a weekly basis through the Southeast Region Headboat Survey. However, catch histories for individual charter vessels are not available.

Alternative 1 would not adjust the baseline allocation selected in Action 2.1 even if some headboat operators decide to remain in the private angling component. As a result, if a number of headboat operators are excluded from the federal for-hire component, **Alternative 1** would

consistently overestimate the proportion of the recreational red snapper quota allocated to the federal for-hire component (and underestimate the percentage allocated to the private angling sector).

Alternative 2 would adjust the baseline allocation between the components to account for headboat operators who decide to remain in the private angling component. For each headboat that does not join the federal for-hire component, **Alternative 2** would redistribute the average landings per headboat from the federal for-hire component to the private angling component. **Options a-c** provide alternative time intervals that could be used to determine the average landings per headboat, e.g., the three most recent years that headboat logbook data landings are available (**Option c).** For a given time interval, average landings per headboat are estimated by dividing the average amount of red snapper harvests attributed to headboats by the number of headboats. The average amount of red snapper attributed to headboats would be a function of the baseline federal for-hire allocation and of the percentage of for-hire landings assigned to headboats. Percentages of for-hire landings between 1986 and 2012 for federal for-hire charter boats and headboats are provided in Figure 2.2.2.1; averages over different time periods are provided in Table 2.2.2.1.

Table 2.2.2.1. Average annual percentages of for-hire landings attributed to federally permitted headboats and charter vessels for different time intervals. All time intervals exclude landings from 2010.

Time Intervals	Charter Vessels	Headboats
1986-2013	65%	35%
1991-2013	66%	34%
1996-2013	69%	31%
2001-2013	71%	29%
2006-2013	70%	30%
2011-2013	67%	33%
2012	64%	36%
2013	77%	23%

Source: NMFS SERO.

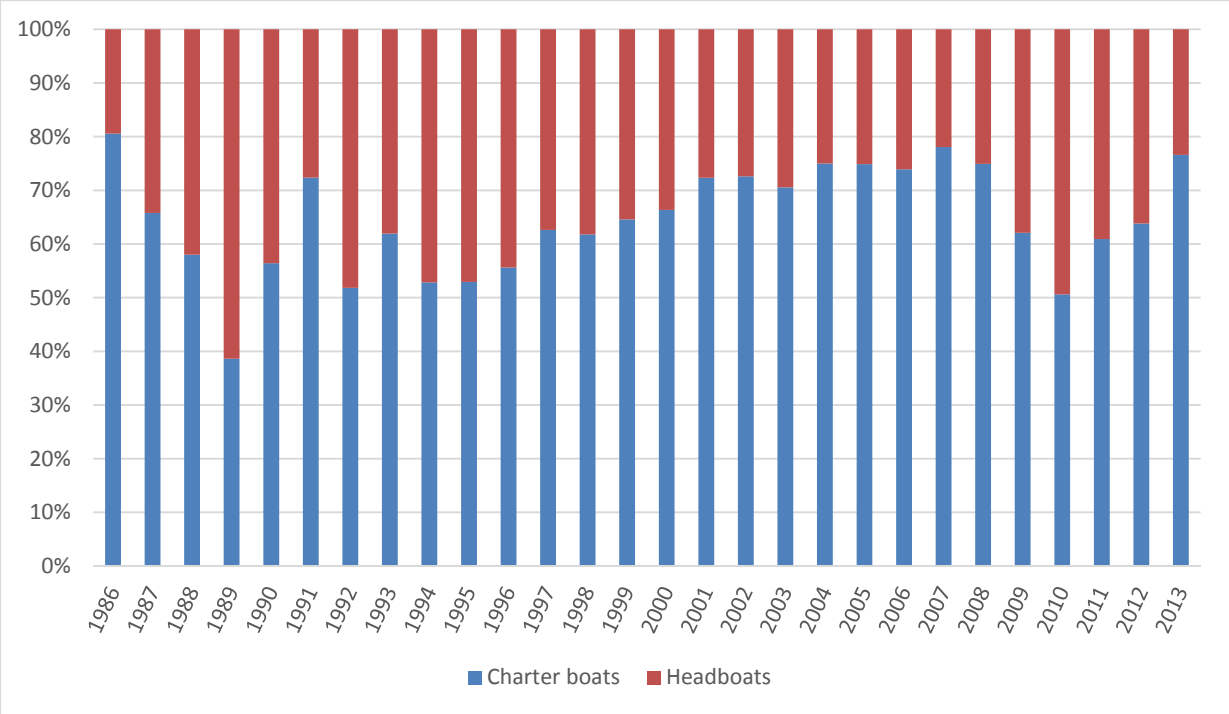

Figure 2.2.2.1. Percentages of for-hire landings attributed to federally permitted headboats and charter boats (1986-2013). Source: NMFS SERO.

Alternative 3 would also adjust the baseline allocation between the components to account for headboats who do not join the federal for-hire component. **Alternative 3** would adjust the baseline allocation by calculating the sum of the landings from the non-participating headboats, and redistributing this quota from the federal for-hire component to the private angling component. Headboat catch histories, which are collected by NMFS through the Southeast Headboat Survey, would be used to determine the harvest for each headboat. **Options a-c** consider different time periods for the determination of headboat landings to use. To determine landings for a given headboat, **Option a** would only consider the most recent year that logbook data are available for that headboat. **Options b** and **c** would use the two most recent years and the three most recent years that logbook data are available for that headboat, respectively.

2.2.3 Action 2.3 – Charter vessel allocation adjustment to the baseline allocation under a voluntary for-hire component.

As mentioned in Section 2.2, Action 1, Alternative 2 was selected as preferred, which establishes a mandatory sector separation where all federal for-hire vessels would be in the federal for-hire component. As a result, there is no need to adjust the baseline allocation determined in Action 2.1 for vessel operators who decide to opt out of the for-hire component. Thus, on August 28, 2014, the Council removed Action 2.3 from consideration and put it in the considered but rejected section because this action would only apply if one of the Action 1 voluntary sector separation alternatives (Alternatives 3 and 4) were selected as preferred. The following are the alternatives considered in this action and a discussion of the alternatives.

Alternative 1. No Action. Do not adjust the baseline allocation for charter vessels not opting to join the federal for-hire component.

Alternative 2. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for federally-permitted reef fish charter vessels not opting to join the federal for-hire component. The number of pounds to be redistributed would be based on the number of charter vessels not opting to join the federal for-hire component multiplied by the average landings per charter vessel. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. Average landings per charter vessel would be based on the **proportion of the recreational quota harvested by all charter vessels divided by the total number of charter vessels** using:

> **Option a.** the most recent year that charter landings data are available.
> **Option b.** the two most recent years that charter landings data are available.
> **Option c.** the three most recent years that charter landings data are available.

Alternative 3. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for federally-permitted reef fish charter vessels not opting to join the federal for-hire component. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. For **each** non-participating charter vessel, the number of pounds to be redistributed would be determined by **the average proportion of the recreational quota harvested by a charter vessel, weighted by the baseline passenger capacity listed on that vessel's federal for-hire reef fish permit**. The average charter vessel harvest would be based on:

> **Option a.** the most recent year that charter landings data are available.
> **Option b.** the two most recent years that charter landings data are available.
> **Option c.** the three most recent years that charter landings data are available.

Alternative 4. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for federally-permitted reef fish charter vessels not opting to join the federal for-hire component. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. For **each** non-

participating charter vessel, the number of pounds to be redistributed would be determined by **the average proportion of the recreational quota harvested by a charter vessel in that vessel's homeport region.** The average charter vessel harvest would be based on:

> **Option a.** the most recent year that charter landings data are available.
> **Option b.** the two most recent years that charter landings data are available.
> **Option c.** the three most recent years that charter landings data are available.

Alternative 5. Adjust the baseline allocation by redistributing pounds from the federal for-hire component to the private angler component to account for federally-permitted reef fish charter vessels not opting to join the federal for-hire component. These pounds would be subtracted from the baseline federal for-hire quota and added to the private-angler quota. For **each** non-participating charter vessel, the number of pounds to be redistributed would be determined by **the average proportion of the recreational quota harvested by a charter vessel in that vessel's homeport region, weighted by the baseline passenger capacity listed on that vessel's federal for-hire reef fish permit**. The average charter vessel harvest would be based on:

> **Option a.** the most recent year that charter landings data are available.
> **Option b.** the two most recent years that charter landings data are available.
> **Option c.** the three most recent years that charter landings data are available.

Discussion

Alternative 1 would not adjust the baseline allocation selected in Action 2.1 even if some charter operators decide to remain in the private angling component. As a result, if a number of charter vessels are excluded from the federal for-hire component, **Alternative 1** would consistently overestimate the proportion of the recreational red snapper quota allocated to the federal for-hire component (and underestimate the percentage allocated to the private angling sector).

Alternative 2 would adjust the baseline allocation between the private angling and federal for-hire components to account for charter vessels excluded from the federal for-hire component. Adjustments would redistribute the average harvest per federally permitted reef fish charter vessel multiplied by the number of charter vessels not opting to join the federal for-hire component from the federal for-hire component to the private angling component. **Alternative 2** considers different time periods for the determination of the average harvest per federally permitted reef fish charter vessel. To estimate average landings per charter vessel, **Option a** would use the most recent year that charter landings data are available. **Options b** and **c** would use the two most recent years and the three most recent years that charter landings data are available, respectively.

Alternative 3 would adjust the baseline allocation between the private angling and federal for-hire components to account for charter vessels who did not join the federal for-hire component but would also consider variations in average harvest rates of charter vessels based on passenger

capacity. **Alternative 3** would redistribute the average harvest per charter vessel multiplied by the number of charter vessels not included in the federal for-hire component from the federal for-hire component to the private angling component. The harvest for each charter vessel would be weighted by the baseline passenger capacity listed on the vessel's federal for-hire reef fish permit. Vessels with higher passenger capacities would be weighted higher than vessels with lower passenger capacities. The distribution of charter vessels by passenger capacity is provided in Table 2.2.3.1.

Table 2.2.3.1. Federally permitted reef fish charter boats (excluding headboats) by passenger capacity, as of March 2014.

Passenger Capacity	Charter Boats	
	Number	Percent
6	1,087	85.5
7 to 20	63	5.0
21 to 40	76	6.0
41 to 60	27	2.1
61 to 100	9	0.7
100+	9	0.7
Total	1,271	100

Source: NMFS-SERO.

Alternative 3 considers different time periods for the determination of the average harvest per federally permitted reef fish charter vessel. To estimate average landings per charter vessel, **Option a** would use the most recent year that charter landings data are available. **Options b** and **c** would use the two most recent years and the three most recent years that charter landings data are available, respectively.

Alternative 4 would adjust the baseline allocation between the private angling and federal for-hire components to account for charter vessels who did not join the federal for-hire component but would also consider regional variations in average harvest rates of charter vessels. **Alternative 4** would redistribute the average harvest per charter vessel multiplied by the number of charter vessels not included in the federal for-hire component from the federal for-hire component to the private angling component. The harvest for each charter vessel would be weighted by landings from the region of the vessel's homeport. Vessels from regions with higher landings would be weighted higher than vessels from regions with lower landings.

Alternative 4 considers different time periods for the determination of the average harvest per federally permitted reef fish charter boat. The number of charter boats by region and average proportions of the federal charter boats' harvests attributed to each region are provided in Table 2.2.3.2. To estimate average landings per charter boat, **Option a** would use the most recent year that charter landings data are available. **Options b** and **c** would use the two most recent years and the three most recent years that charter landings data are available, respectively.

Table 2.2.3.2. Average landings of red snapper attributed to each region for 2004-2012 (Percent Landings) and number of charter boats by region, as of March 2014. Headboats have been excluded.

Region	Percent Landings	Charter Boats
Alabama	27.0	151
W Florida - Keys	0.2	101
W Florida - Panhandle	54.3	276
W Florida - Peninsula	2.4	362
Louisiana	12.5	116
Mississippi	0.3	42
Texas	3.4	199
Out of Gulf	0.0	24
Total	100	1,271

Source: NMFS-SERO.

Alternative 5 would adjust the baseline allocation between the federal for-hire and private angling components to account for charter vessels who did not join the federal for-hire component but would consider the passenger capacity and regional variations in average harvest rates of charter vessels. Vessels with higher passenger capacities and from regions with higher landings would be weighted higher than vessels with low passenger capacities and from regions with lower landings. To estimate average landings per charter vessel, **Option a** would use the most recent year that charter landings data are available. **Options b** and **c** would use the two most recent years and the three most recent years that charter landings data are available, respectively.

GMFMC. 2013. Reef Fish Amendment 40 Sector Separation Guide. http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/reef_fish/2013/am40/documents/pdfs/am40_sector_separation_guide.pdf

APPENDIX E. SUMMARIES OF PUBLIC COMMENTS RECEIVED

This section provides summaries of four sets of public comments received on Reef Fish Amendment 40: Sector Separation, since November 2013.

I. Summary of public comments received by the Council since the October 2013 Council meeting through January 27, 2014.
II. Summary of scoping comments received by NOAA Fisheries on the Notice of Intent to prepare an environmental impact statement (EIS)
III. Summary of public comments received by the Council since the February 2014 Council meeting. [*To be added after the August 2014 Council meeting.*]
IV. Summary of Public Hearings, conducted during August 2014. [*To be added after the August 2014 Council meeting.*]

Comments received prior to ---- can be read online at the following two links:
http://www.gulfcouncil.org/fishery_management_plans/Public%20Comment/Sector_Separation/Comments.pdf

http://www.gulfcouncil.org/fishery_management_plans/Public%20Comment/Sector_Separation/Sector%20Allocation/Sector%20Allocation/Amendment%2028%20-%20Sector%20Allocation/Comments.pdf

I. Summary of public comments received by the Council since the October 2013 Council meeting, through January 27, 2014.

- Action 1 – Favors a definition of the recreational component that would put the non-federally permitted for-hire boats into the same category as private recreational anglers.
- Action 2 – Favors an allocation of the recreational quota based on the historical percentage distribution when the moratorium on new permits was issued in 2004 when 55% of the recreational quota was caught by federally permitted for-hire vessels.
- Action 2 – Allocation should be based on historical landings of each set of user groups – 1986 – 2011.
- Action 3 – If you hold a valid federal reef permit, you should be counted as part of the reef fish fishery.
- Action 4 -there should be separate accountability measures for each component of the recreational sector.
- Recreational anglers are recreational anglers regardless of how they access the fishery
- Sector separation will create smaller groups and further divide anglers creating adverse social impacts within the angling community.
- Sector separation would be unfair to the recreational fisherman
- Would unfairly distribute red snapper quotas away from private recreational anglers.
- Sector separation would take away half the recreational red snapper catch opportunity.
- Sector separation will grant one sector access at the expense of another.

- Sector separation would result in the growth of the CFH allocation and the demise of the private recreational angler.
- Public resource should not be allocated to a select few for profit.
- CFH are more efficient at catching red snapper, and therefore have a greater impact on the fishery, and they don't contribute as much to the economy.
- Sector separation will force small businesses to close, as what happened in the Alaska crab fishery.
- Tourism is a huge part of the economy and allowing sector separation will preserve the right for tourists to fish and help all tourism based businesses survive.
- For-hire boats will have such a high percentage of the quota that the private anglers' window to fish could be further diminished.
- There is no analysis that sector separation will provide more days to the for-hire fleet or that it will benefit the resource.
- The CFH industry as a whole will suffer while a handful of individuals will greatly benefit.
- Without massive consolidation in the for-hire sector, there will not be enough allocation to benefit anyone.
- Without a new FMP for each sector, there will be no improvement in data collection.
- CFH and private recreational anglers are different and should be managed as such.
- Sector separation would allow for flexible management plans, resulting in greater opportunities for the general public to access the fishery.
- Require CFH to use a strict reporting system, which would provide better data and allow them to remain within their quota.
- Will allow for 100% accountability in the CFH sector.
- Action 4 would implement the biggest for-hire red snapper derby fishing season ever seen in the Gulf.
- Sector separation should not be initiated into the Council process unless and until existing allocations are reexamined and alternatives to sector separation are fully evaluated.
- Move forward to at least work out the details to see how it will affect the fishery.
- Favors a more flexible harvest period for all anglers – even if it means a reduced limit.
- Set the quotas based on location instead of separating the sectors.
- Each person should have a size limit and quota regardless of whether fishing from a CFH or a private boat.

II. Summary of Scoping Comments received by NOAA Fisheries on the Reef Fish Amendment 40 Notice of Intent to prepare an Environmental Impact Statement (EIS)

The comment period was open from December 24, 2013, through January 23, 2014, and nine comments were received. These comments may be viewed at http://www.regulations.gov/#!documentDetail;D=NOAA-NMFS-2013-0178-0001

There were four comments in support of sector separation and five that were against it. Comments in support of sector separation cited different management needs between the for-hire and private angling components of the recreational sector as well as

providing a route to achieving better accountability in for-hire landings as reasons to support the amendment. Comments against sector separation cited taking fishing days away from the private angling component, the action amounted to a grab for fish by the for-hire sector, and that most participants in the recreational sector are against sector separation.

APPENDIX F. FISHERY ALLOCATION POLICY

Gulf of Mexico Fishery Management Council Fishery Allocation Policy

This allocation policy was developed by the Gulf of Mexico Fishery Management Council to provide principles, guidelines, and suggested methods for allocation that would facilitate future allocation and reallocation of fisheries resources between or within fishery sectors.

Issues considered in this allocation policy include principles based on existing regulatory provisions, procedures to request and initiate (re)allocation, (re)allocation review frequency, tools and methods suggested for evaluating alternative (re)allocations.

1. Principles for Allocation

   a. Conservation and management measures shall not discriminate between residents of different states.

   b. Allocation shall:

      (1) be fair and equitable to fishermen and fishing sectors;
      (i) fairness should be considered for indirect changes in allocation
      (ii) any harvest restrictions or recovery benefits be allocated fairly and equitably among sectors

      (2) promote conservation
      (i) connected to the achievement of OY
      (ii) furtherance of a legitimate FMP objective,
      (iii) promotes a rational, more easily managed use

      (3) ensure that no particular individual, corporation, or other entity may acquire an excessive share.

   c. Shall consider efficient utilization of fishery resources but:
      (1) should not just redistribute gains and burdens without an increase in efficiency

      (2) prohibit measures that have economic allocation as its sole purpose.

   d. Shall take into account: the importance of fishery resources to fishing communities by utilizing economic and social data in order to:
      (1) provide for the sustained participation of fishing communities

      (2) minimize adverse economic impacts on fishing communities.

e. Any fishery management plan, plan amendment, or regulation submitted by the Gulf Council for the red snapper fishery shall contain conservation and management measures that:
   (1) establish separate quotas for recreational fishing (including charter fishing) and commercial fishing.

   (2) prohibit a sector (i.e., recreational or commercial) from retaining red snapper for the remainder of the season, when it reaches its quota.

   (3) ensure that the recreational and commercial quotas reflect allocation among sectors and do not reflect harvests in excess of allocations.

2. Guidelines for Allocation

   a. All allocations and reallocations must be consistent with the Gulf of Mexico Fishery Management Council's principles for allocation.

   b. An approved Council motion constitutes the only appropriate means for requesting the initiation of allocation or reallocation of a fishery resource. The motion should clearly specify the basis for, purpose and objectives of the request for (re)allocation.

   c. The Council should conduct a comprehensive review of allocations within the individual FMPs at intervals of no less than five years.

   d. Following an approved Council motion to initiate an allocation or reallocation, the Council will suggest methods to be used for determining the new allocation. Methods suggested must be consistent with the purpose and objectives included in the motion requesting the initiation of allocation or reallocation.

   e. Changes in allocation of a fishery resource may, to the extent practicable, account for projected future socio-economic and demographic trends that are expected to impact the fishery.

   f. Indirect changes in allocation, i.e., shifts in allocation resulting from management measures, should be avoided or minimized to the extent possible.

3. Suggested Methods for Determining (Re)Allocation

   a. Market-based Allocation

      (1) Auction of quota

      (2) Quota purchases between commercial and recreational sectors
         (i) determine prerequisites and conditions:
            (a) quota or tags or some other mechanism required in one or both sectors
            (b) mechanism to broker or bank the purchases and exchanges

(c) annual, multi-year, or permanent
(d) accountability for purchased or exchanged quota in the receiving sector

b. Catch-Based (and mortality) Allocation

(1) historical landings data
(i) averages based on longest period of credible records
(ii) averages based on a period of recent years
(iii) averages based on total fisheries mortality (landings plus discard mortality) by sector
(iv) allocations set in a previous FMP
(v) accountability (a sector's ability to keep within allocation)

c. Socioeconomic-based Allocation

(1) socio-economic analyses
(i) net benefits to the nation
(ii) economic analysis limited to direct participants
(iii) economic impact analysis (direct expenditures and multiplier impacts)
(iv) social impact analysis
(v) fishing communities
(vi) participation trends
(vii) "efficiency" analysis
(a) lowest possible cost for a particular level of catch;
(b) harvest OY with the minimum use of economic inputs

d. Negotiation-Based Allocation

(1) Mechanism for sectors to agree to negotiation and select representatives

(2) Mechanism to choose a facilitator

(3) Negotiated agreement brought to Council for normal FMP process of adoption and implementation.

APPENDIX G. CURRENT FEDERAL REGULATIONS FOR GULF OF MEXICO RECREATIONAL RED SNAPPER MANAGEMENT

1. § 622.9 Prohibited gear and methods--general.

(e) Use of Gulf reef fish as bait prohibited. Gulf reef fish may not be used as bait in any fishery, except that, when purchased from a fish processor, the filleted carcasses and offal of Gulf reef fish may be used as bait in trap fisheries for blue crab, stone crab, deep-water crab, and spiny lobster.

2. § 622.20 Permits and endorsements

(b) Charter vessel/headboat permits. For a person aboard a vessel that is operating as a charter vessel or headboat to fish for or possess Gulf reef fish, in or from the EEZ, a valid charter vessel/headboat permit for Gulf reef fish must have been issued to the vessel and must be on board.

(1) Limited access system for charter vessel/headboat permits for Gulf reef fish. No applications for additional charter vessel/headboat permits for Gulf reef fish will be accepted. Existing permits may be renewed, are subject to the restrictions on transfer in paragraph (b)(1)(i) of this section, and are subject to the renewal requirements in paragraph (b)(1)(ii) of this section.

(i) Transfer of permits--(A) Permits without a historical captain endorsement. A charter vessel/headboat permit for Gulf coastal migratory pelagic fish or Gulf reef fish that does not have a historical captain endorsement is fully transferable, with or without sale of the permitted vessel, except that no transfer is allowed to a vessel with a greater authorized passenger capacity than that of the vessel to which the moratorium permit was originally issued, as specified on the face of the permit being transferred. An application to transfer a permit to an inspected vessel must include a copy of that vessel's current USCG Certificate of Inspection (COI). A vessel without a valid COI will be considered an uninspected vessel with an authorized passenger capacity restricted to six or fewer passengers.

(B) Permits with a historical captain endorsement. A charter vessel/headboat permit for Gulf coastal migratory pelagic fish or Gulf reef fish that has a historical captain endorsement may only be transferred to a vessel operated by the historical captain, cannot be transferred to a vessel with a greater authorized passenger capacity than that of the vessel to which the moratorium permit was originally issued, as specified on the face of the permit being transferred, and is not otherwise transferable.

(C) Procedure for permit transfer. To request that the RA transfer a charter vessel/headboat permit for Gulf reef fish, the owner of the vessel who is transferring the permit and the owner of the vessel that is to receive the transferred permit must complete the transfer information on the reverse side of the permit and return the permit and a completed application for transfer to the RA. See § 622.4(f) for additional transfer-related requirements applicable to all permits issued under this part.

(ii) Renewal. (A) Renewal of a charter vessel/headboat permit for Gulf reef fish is contingent upon the permitted vessel and/or captain, as appropriate, being included in an active

survey frame for, and, if selected to report, providing the information required in one of the approved fishing data surveys. Surveys include, but are not limited to–-

(1) NMFS' Marine Recreational Fishing Vessel Directory Telephone Survey (conducted by the Gulf States Marine Fisheries Commission);

(2) NMFS' Southeast Headboat Survey (as required by § 622.26(b)(1));

(3) Texas Parks and Wildlife Marine Recreational Fishing Survey; or

(4) A data collection system that replaces one or more of the surveys in paragraph (b)(1)(ii)(A),(1),(2), or (3) of this section.

(B) A charter vessel/headboat permit for Gulf reef fish that is not renewed or that is revoked will not be reissued. A permit is considered to be not renewed when an application for renewal, as required, is not received by the RA within 1 year of the expiration date of the permit.

(iii) Requirement to display a vessel decal. Upon renewal or transfer of a charter vessel/headboat permit for Gulf reef fish, the RA will issue the owner of the permitted vessel a vessel decal for Gulf reef fish. The vessel decal must be displayed on the port side of the deckhouse or hull and must be maintained so that it is clearly visible.

(2) A charter vessel or headboat may have both a charter vessel/headboat permit and a commercial vessel permit. However, when a vessel is operating as a charter vessel or headboat, a person aboard must adhere to the bag limits. See the definitions of "Charter vessel" and "Headboat" in § 622.2 for an explanation of when vessels are considered to be operating as a charter vessel or headboat, respectively.

(3) If Federal regulations for Gulf reef fish in subparts A or B of this part are more restrictive than state regulations, a person aboard a charter vessel or headboat for which a charter vessel/headboat permit for Gulf reef fish has been issued must comply with such Federal regulations regardless of where the fish are harvested.

3. § 622.26 Recordkeeping and reporting.

(b) Charter vessel/headboat owners and operators–-(1) Reporting requirement. The owner or operator of a vessel for which a charter vessel/headboat permit for Gulf reef fish has been issued, as required under § 622.20(b), or whose vessel fishes for or lands such reef fish in or from state waters adjoining the Gulf EEZ, who is selected to report by the SRD must maintain a fishing record for each trip, or a portion of such trips as specified by the SRD, on forms provided by the SRD and must submit such record as specified in paragraph (b)(2) of this section.

(2) Reporting deadlines--(i) Charter vessels. Completed fishing records required by paragraph (b)(1) of this section for charter vessels must be submitted to the SRD weekly, postmarked not later than 7 days after the end of each week (Sunday). Information to be reported is indicated on the form and its accompanying instructions.

(ii) Headboats. Completed fishing records required by paragraph (b)(1) of this section for headboats must be submitted to the SRD monthly and must either be made available to an authorized statistical reporting agent or be postmarked not later than 7 days after the end of each month. Information to be reported is indicated on the form and its accompanying instructions.

4. § 622.27 At-sea observer coverage.

(a) Required coverage. A vessel for which a Federal commercial vessel permit for Gulf reef fish or a charter vessel/headboat permit for Gulf reef fish has been issued must carry a NMFS-approved observer, if the vessel's trip is selected by the SRD for observer coverage. Vessel permit renewal is contingent upon compliance with this paragraph (a).

(b) Notification to the SRD. When observer coverage is required, an owner or operator must advise the SRD in writing not less than 5 days in advance of each trip of the following:

(1) Departure information (port, dock, date, and time).

(2) Expected landing information (port, dock, and date).

(c) Observer accommodations and access. An owner or operator of a vessel on which a NMFS-approved observer is embarked must:

(1) Provide accommodations and food that are equivalent to those provided to the crew.

(2) Allow the observer access to and use of the vessel's communications equipment and personnel upon request for the transmission and receipt of messages related to the observer's duties.

(3) Allow the observer access to and use of the vessel's navigation equipment and personnel upon request to determine the vessel's position.

(4) Allow the observer free and unobstructed access to the vessel's bridge, working decks, holding bins, weight scales, holds, and any other space used to hold, process, weigh, or store fish.

(5) Allow the observer to inspect and copy the vessel's log, communications logs, and any records associated with the catch and distribution of fish for that trip.

5. § 622.29 Conservation measures for protected resources.

(a) Gulf reef fish commercial vessels and charter vessels/headboats--(1) Sea turtle conservation measures. (i) The owner or operator of a vessel for which a commercial vessel permit for Gulf reef fish or a charter vessel/headboat permit for Gulf reef fish has been issued, as required under
§§ 622.20(a)(1) and 622.20(b), respectively, must post inside the wheelhouse, or within a waterproof case if no wheelhouse, a copy of the document provided by NMFS titled, "Careful Release Protocols for Sea Turtle Release With Minimal Injury," and must post inside the wheelhouse, or in an easily viewable area if no wheelhouse, the sea turtle handling and release guidelines provided by NMFS.

(ii) Such owner or operator must also comply with the sea turtle bycatch mitigation measures, including gear requirements and sea turtle handling requirements, specified in §§ 635.21(c)(5)(i) and (ii) of this chapter, respectively.

(iii) Those permitted vessels with a freeboard height of 4 ft (1.2 m) or less must have on board a dipnet, tire, short-handled dehooker, long-nose or needle-nose pliers, bolt cutters, monofilament line cutters, and at least two types of mouth openers/mouth gags. This equipment must meet the specifications described in §§ 635.21(c)(5)(i)(E) through (L) of this chapter with the following modifications: the dipnet handle can be of variable length, only one NMFS-approved short-handled dehooker is required (i.e., § 635.21(c)(5)(i)(G) or (H) of this chapter); and life rings, seat cushions, life jackets, and life vests or any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as alternatives to

tires for cushioned surfaces as specified in § 635.21(c)(5)(i)(F) of this chapter. Those permitted vessels with a freeboard height of greater than 4 ft (1.2 m) must have on board a dipnet, tire, long-handled line clipper, a short-handled and a long-handled dehooker, a long-handled device to pull an inverted "V", long-nose or needle-nose pliers, bolt cutters, monofilament line cutters, and at least two types of mouth openers/mouth gags. This equipment must meet the specifications described in § 635.21(c)(5)(i)(A) through (L) of this chapter with the following modifications: only one NMFS-approved long-handled dehooker (§ 635.21(c)(5)(i)(B) or (C)) of this chapter and one NMFS-approved short-handled dehooker (§ 635.21(c)(5)(i)(G) or (H) of this chapter) are required; and life rings, seat cushions, life jackets, and life vests, or any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as alternatives for cushioned surfaces as specified in § 635.21(c)(5)(i)(F) of this chapter.

(2) Smalltooth sawfish conservation measures. The owner or operator of a vessel for which a commercial vessel permit for Gulf reef fish or a charter vessel/headboat permit for Gulf reef fish has been issued, as required under §§ 622.20(a)(1) and 622.20(b), respectively, that incidentally catches a smalltooth sawfish must--

(i) Keep the sawfish in the water at all times;

(ii) If it can be done safely, untangle the line if it is wrapped around the saw;

(iii) Cut the line as close to the hook as possible; and

(iv) Not handle the animal or attempt to remove any hooks on the saw, except for with a long-handled dehooker.

(b) [Reserved]

6. § 622.30 Required fishing gear.

For a person on board a vessel to fish for Gulf reef fish in the Gulf EEZ, the vessel must possess on board and such person must use the gear as specified in paragraphs (a) through (c) of this section.

(a) Non-stainless steel circle hooks. Non-stainless steel circle hooks are required when fishing with natural baits.

(b) Dehooking device. At least one dehooking device is required and must be used to remove hooks embedded in Gulf reef fish with minimum damage. The hook removal device must be constructed to allow the hook to be secured and the barb shielded without re-engaging during the removal process. The dehooking end must be blunt, and all edges rounded. The device must be of a size appropriate to secure the range of hook sizes and styles used in the Gulf reef fish fishery.

(c) Venting tool. At least one venting tool is required and must be used to deflate the abdominal cavities of Gulf reef fish to release the fish with minimum damage. This tool must be a sharpened, hollow instrument, such as a hypodermic syringe with the plunger removed, or a 16-gauge needle fixed to a hollow wooden dowel. A tool such as a knife or an ice-pick may not be used. The venting tool must be inserted into the fish at a 45-degree angle approximately 1 to 2 inches (2.54 to 5.08 cm) from the base of the pectoral fin. The tool must be inserted just deep enough to release the gases, so that the fish may be released with minimum damage.

7. § 622.32 Prohibited gear and methods.

Also see § 622.9 for additional prohibited gear and methods that apply more broadly to multiple fisheries or in some cases all fisheries.

(a) Poisons. A poison may not be used to take Gulf reef fish in the Gulf EEZ.

(b) [Reserved]

8. § 622.33 Prohibited species.

(d) Gulf reef fish exhibiting trap rash. Possession of Gulf reef fish in or from the Gulf EEZ that exhibit trap rash is prima facie evidence of illegal trap use and is prohibited. For the purpose of this paragraph, trap rash is defined as physical damage to fish that characteristically results from contact with wire fish traps. Such damage includes, but is not limited to, broken fin spines, fin rays, or teeth; visually obvious loss of scales; and cuts or abrasions on the body of the fish, particularly on the head, snout, or mouth.

9. § 622.34 Seasonal and area closures designed to protect Gulf reef fish.

(a) Closure provisions applicable to the Madison and Swanson sites and Steamboat Lumps, and the Edges-- (1) Descriptions of Areas. (i) The Madison and Swanson sites are bounded by rhumb lines connecting, in order, the following points:

Point	North lat.	West long.
A	29°17'	85°50'
B	29°17'	85°38'
C	29°06'	85°38'
D	29°06'	85°50'
A	29°17'	85°50'

(ii) Steamboat Lumps is bounded by rhumb lines connecting, in order, the following points:

Point	North lat.	West long.
A	28°14'	84°48'
B	28°14'	84°37'
C	28°03'	84°37'
D	28°03'	84°48'
A	28°14'	84°48'

(iii) The Edges is bounded by rhumb lines connecting, in order, the following points:

Point	North lat.	West long.
A	28°51'	85°16'
B	28°51'	85°04'
C	28°14'	84°42'
D	28°14'	84°54'
A	28°51'	85°16'

(2) Within the Madison and Swanson sites and Steamboat Lumps, possession of Gulf reef fish is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified in paragraph (a)(4) of this section.

(3) Within the Madison and Swanson sites and Steamboat Lumps during November through April, and within the Edges during January through April, all fishing is prohibited, and possession of any fish species is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified in paragraph (a)(4) of this section. The provisions of this paragraph, (a)(3), do not apply to highly migratory species.

(4) For the purpose of paragraph (a) of this section, transit means non-stop progression through the area; fishing gear appropriately stowed means--

(i) A longline may be left on the drum if all gangions and hooks are disconnected and stowed below deck. Hooks cannot be baited. All buoys must be disconnected from the gear; however, buoys may remain on deck.

(ii) A trawl net may remain on deck, but trawl doors must be disconnected from the trawl gear and must be secured.

(iii) A gillnet must be left on the drum. Any additional gillnets not attached to the drum must be stowed below deck.

(iv) A rod and reel must be removed from the rod holder and stowed securely on or below deck. Terminal gear (i.e., hook, leader, sinker, flasher, or bait) must be disconnected and stowed separately from the rod and reel. Sinkers must be disconnected from the down rigger and stowed separately.

(5) Within the Madison and Swanson sites and Steamboat Lumps, during May through October, surface trolling is the only allowable fishing activity. For the purpose of this paragraph (a)(5), surface trolling is defined as fishing with lines trailing behind a vessel which is in constant motion at speeds in excess of four knots with a visible wake. Such trolling may not involve the use of down riggers, wire lines, planers, or similar devices.

(6) For the purpose of this paragraph (a), fish means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds. Highly migratory species means tuna species, marlin (*Tetrapturus spp.* and *Makaira spp.*), oceanic sharks, sailfishes (*Istiophorus spp.*), and swordfish (*Xiphias gladius*).

10. § 622.35 Gear restricted areas.

(a) Reef fish stressed area. The stressed area is that part of the Gulf EEZ shoreward of rhumb lines connecting, in order, the points listed in Table 2 in Appendix B of this part.

(1) A powerhead may not be used in the stressed area to take Gulf reef fish. Possession of a powerhead and a mutilated Gulf reef fish in the stressed area or after having fished in the stressed area constitutes prima facie evidence that such reef fish was taken with a powerhead in the stressed area. The provisions of this paragraph do not apply to hogfish.

(2) A roller trawl may not be used in the stressed area. Roller trawl means a trawl net equipped with a series of large, solid rollers separated by several smaller spacer rollers on a separate cable or line (sweep) connected to the footrope, which makes it possible to fish the gear over rough bottom, that is, in areas unsuitable for fishing conventional shrimp trawls. Rigid framed trawls adapted for shrimping over uneven bottom, in wide use along the west coast of Florida, and shrimp trawls with hollow plastic rollers for fishing on soft bottoms, are not considered roller trawls.

(b) Seasonal prohibitions applicable to bottom longline fishing for Gulf reef fish. (1) From June through August each year, bottom longlining for Gulf reef fish is prohibited in the portion of the Gulf EEZ east of 85°30' W. long. that is shoreward of rhumb lines connecting, in order, the following points:

Point	North lat.	West long.
A	28°58.70'	85°30.00'
B	28°59.25'	85°26.70'
C	28°57.00'	85°13.80'
D	28°47.40'	85°3.90'
E	28°19.50'	84°43.00'
F	28°0.80'	84°20.00'
G	26°48.80'	83°40.00'
H	25°17.00'	83°19.00'
I	24°54.00'	83°21.00'
J	24°29.50'	83°12.30'
K	24°26.50'	83°00.00'

(2) Within the prohibited area and time period specified in paragraph (b)(1) of this section, a vessel with bottom longline gear on board may not possess Gulf reef fish unless the bottom longline gear is appropriately stowed, and a vessel that is using bottom longline gear to fish for species other than Gulf reef fish may not possess Gulf reef fish. For the purposes of paragraph (b) of this section, appropriately stowed means that a longline may be left on the drum

if all gangions and hooks are disconnected and stowed below deck; hooks cannot be baited; and all buoys must be disconnected from the gear but may remain on deck.

(3) Within the Gulf EEZ east of 85°30' W. long., a vessel for which a valid eastern Gulf reef fish bottom longline endorsement has been issued that is fishing bottom longline gear or has bottom longline gear on board cannot possess more than a total of 1000 hooks including hooks on board the vessel and hooks being fished and cannot possess more than 750 hooks rigged for fishing at any given time. For the purpose of this paragraph, "hooks rigged for fishing" means hooks attached to a line or other device capable of attaching to the mainline of the longline.

(c) Reef fish longline and buoy gear restricted area. A person aboard a vessel that uses, on any trip, longline or buoy gear in the longline and buoy gear restricted area is limited on that trip to the bag limits for Gulf reef fish specified in § 622.38(b) and, for Gulf reef fish for which no bag limit is specified in § 622.38(b), the vessel is limited to 5 percent, by weight, of all fish on board or landed. The longline and buoy gear restricted area is that part of the Gulf EEZ shoreward of rhumb lines connecting, in order, the points listed in Table 1 in Appendix B of this part.

(d) Alabama SMZ. The Alabama SMZ consists of artificial reefs and surrounding areas. In the Alabama SMZ, fishing by a vessel that is operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, as required under § 622.20(a)(1), or a vessel with such a permit fishing for Gulf reef fish is limited to hook-and-line gear with three or fewer hooks per line and spearfishing gear. A person aboard a vessel that uses on any trip gear other than hook-and-line gear with three or fewer hooks per line and spearfishing gear in the Alabama SMZ is limited on that trip to the bag limits for Gulf reef fish specified in § 622.38(b) and, for Gulf reef fish for which no bag limit is specified in § 622.38(b), the vessel is limited to 5 percent, by weight, of all fish on board or landed. The Alabama SMZ is bounded by rhumb lines connecting, in order, the following points:

Point	North lat.	West long.
A	30°02.5'	88°07.7'
B	30°02.6'	87°59.3'
C	29°55.0'	87°55.5'
D	29°54.5'	88°07.5'
A	30°02.5'	88°07.7'

11. § 622.37 Size limits.

All size limits in this section are minimum size limits unless specified otherwise. A fish not in compliance with its size limit, as specified in this section, in or from the Gulf EEZ, may not be possessed, sold, or purchased. A fish not in compliance with its size limit must be released immediately with a minimum of harm. The operator of a vessel that fishes in the EEZ is responsible for ensuring that fish on board are in compliance with the size limits specified in this section. See § 622.10 regarding requirements for landing fish intact.

(a) Snapper—-(1) Red snapper–-16 inches (40.6 cm), TL, for a fish taken by a person subject to the bag limit specified in § 622.38 (b)(3) and 13 inches (33.0 cm), TL, for a fish taken by a person not subject to the bag limit.

12. § 622.38 Bag and possession limits.

(a) Additional applicability provisions for Gulf reef fish. (1) Section 622.11(a) provides the general applicability for bag and possession limits. However, § 622.11(a) notwithstanding, bag and possession limits also apply for Gulf reef fish in or from the EEZ to a person aboard a vessel that has on board a commercial permit for Gulf reef fish--

(i) When trawl gear or entangling net gear is on board. A vessel is considered to have trawl gear on board when trawl doors and a net are on board. Removal from the vessel of all trawl doors or all nets constitutes removal of trawl gear.

(ii) When a longline or buoy gear is on board and the vessel is fishing or has fished on a trip in the reef fish longline and buoy gear restricted area specified in § 622.35(c). A vessel is considered to have a longline on board when a power-operated longline hauler, a cable of diameter and length suitable for use in the longline fishery, and gangions are on board. Removal of any one of these three elements, in its entirety, constitutes removal of a longline.

(iii) For a species/species group when its quota has been reached and closure has been effected, provided that no commercial quantities of Gulf reef fish, i.e., Gulf reef fish in excess of applicable bag/possession limits, are on board as specified in paragraph (a)(2) of this section.

(iv) When the vessel has on board or is tending any trap other than a stone crab trap or a spiny lobster trap.

(2) A person aboard a vessel that has a Federal commercial vessel permit for Gulf reef fish and commercial quantities of Gulf reef fish, i.e., Gulf reef fish in excess of applicable bag/possession limits, may not possess Gulf reef fish caught under a bag limit.

(b) Bag limits--

(3) Red snapper--2. However, no red snapper may be retained by the captain or crew of a vessel operating as a charter vessel or headboat. The bag limit for such captain and crew is zero.

13. § 622.39 Quotas.

See § 622.8 for general provisions regarding quota applicability and closure and reopening procedures. This section, provides quotas and specific quota closure restrictions for Gulf reef fish.

(a) Gulf reef fish--

(2) Recreational quotas. The following quotas apply to persons who fish for Gulf reef fish other than under commercial vessel permits for Gulf reef fish and the applicable commercial quotas specified in paragraph (a)(1) of this section.

(i) Recreational quota for red snapper--4.145 million lb (1.880 million kg), round weight.

(c) Restrictions applicable after a recreational quota closure--

(1) After closure of the recreational quota for red snapper. The bag and possession limit for red snapper in or from the Gulf EEZ is zero.