

# Red Snapper Allocation



## **Public Hearing Draft for Amendment 28 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**

**post-June 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 28**

## **Draft Environmental Impact Statement (DEIS) Cover Sheet**

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 (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 evaluate changing the current commercial: recreational red snapper allocation of 51:49 percent, respectively. The purpose of this amendment is to increase the net benefits from red snapper fishing and increase the stability of the red snapper component of the reef fish fishery, particularly the recreational sector which has experienced shorter and shorter seasons.

---

### **Responsible Agencies:**

National Marine Fisheries Service  
(Lead Agency)  
Southeast Regional Office  
263 13<sup>th</sup> 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](mailto: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](mailto:assane.diagne@gulfcouncil.org)

### **Type of Action**

Administrative  
 Draft

Legislative  
 Final

### **Filing Dates with EPA**

Notice of intent (NOI) to prepare EIS published: November 9, 2013 (allocation)

Draft environmental impact statement (DEIS) filed with EPA: xx

DEIS comment period ended: xx

EPA comments on DEIS:

**DEIS TABLE OF CONTENTS**

Executive Summary ..... ix  
Purpose and Need ..... 4  
Management Alternatives ..... 6  
Affected Environment..... 12  
Environmental Consequences..... 59  
Cumulative Effects Analysis (CEA)..... 76  
List of Preparers..... 107  
List of Agencies, Organizations and Persons to whom a Copy of the EIS was sent ..... 108

## ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ALS	Accumulated Landings System
AM	accountability measure
Committee	Reef Fish Committee
Council	Gulf of Mexico Fishery Management Council
DEIS	Draft Environmental Impact Statement
EEZ	exclusive economic zone
EFH	Essential Fish Habitat
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
ESA	Endangered Species Act
FMP	Fishery Management Plan
FTE	full-time equivalent
HBS	Southeast Headboat Survey
IFQ	individual fishing quota
LAPP	Limited Access Privilege Program
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MRFSS	Marine Recreational Fisheries Survey and Statistics
MRIP	Marine Recreational Information Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
PDF	probability density function
RFFA	reasonably foreseeable future action
RQ	regional quotient
SAV	submerged aquatic vegetation
SEAMAP	Southeast Area Monitoring and Assessment Program
Secretary	Secretary of Commerce
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office of NMFS
SESSC	Socioeconomic Scientific and Statistical Committee
SSBR	spawning stock biomass per recruit
SSC	Scientific and Statistical Committee
SPR	spawning potential ratio
TAC	total allowable catch
TL	total length
TPWD	Texas Parks and Wildlife Department
VEC	valued environmental components
VOC	volatile organic compounds
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
Fishery Impact Statement .....	xii
Chapter 1. Introduction .....	1
1.1 Background .....	1
1.3 Purpose and Need .....	4
1.4 History of Management .....	4
Chapter 2. Management Alternatives .....	6
2.1 Action 1 – Allocation of Red Snapper .....	6
Chapter 3. Affected Environment .....	12
3.1 Description of the Red Snapper Component of the Reef Fish Fishery .....	12
3.2 Description of the Physical Environment .....	19
3.3 Description of the Biological Environment .....	22
3.4 Description of the Social Environment .....	31
3.4.1 Fishing Communities .....	37
3.4.2 Environmental Justice Considerations .....	43
3.5 Description of the Economic Environment .....	46
3.5.1 Commercial Sector .....	46
3.5.2 Recreational Sector .....	49
3.6 Description of the Administrative Environment .....	57
3.6.1 Federal Fishery Management .....	57
3.6.2 State Fishery Management .....	58
Chapter 4. Environmental Consequences .....	59
4.1 Action 1 – Allocation of Red Snapper .....	59
4.1.1 Direct and Indirect Effects on the Physical Environment .....	59
4.1.2 Direct and Indirect Effects on the Biological Environment .....	61
4.1.3 Direct and Indirect Effects on the Social Environment .....	63
4.1.4 Direct and Indirect Effects on the Economic Environment .....	70
4.1.5 Direct and Indirect Effects on the Administrative Environment .....	76

4.3. Cumulative Effects Analysis (CEA).....	76
Chapter 5. Regulatory Impact Review.....	105
Chapter 6. Regulatory Flexibility Act Analysis.....	106
Chapter 7. List of Preparers .....	107
Chapter 8. List of Agencies, Organizations and Persons to whom a Copy of the EIS was sent	108
Chapter 9. References .....	109
Chapter 10. Index.....	123
Appendix A. Other Applicable Law .....	125
Appendix B. Bycatch Practicability Analysis.....	131
Appendix C. Summary of Habitat Utilization by Life History Stage for Species in the Reef Fish FMP.....	159
Appendix D. Summaries of Public Comments Received .....	162
Appendix E. Fishery Allocation Policy .....	201
Appendix F. Current Federal Regulations for Gulf of Mexico Recreational Red Snapper Management.....	204
Appendix G. Economic Analysis of Red Snapper Allocation Alternatives for Amendment 28 to the Gulf of Mexico Reef Fish FMP .....	213
Appendix H Recreational Red Snapper Average Weights .....	243

## LIST OF TABLES

<b>Table 2.1.1.</b> Red snapper average percentages landed by the commercial and recreational sectors. ....	7
<b>Table 2.1.2.</b> Recreational and commercial red snapper landings, in million pounds whole weight and in percent of the total landings. ....	8
<b>Table 2.1.3.</b> Commercial and recreational red snapper allocations (mp, whole weight) and percent, based on the current 11.0 mp aggregate quota. ....	10
<b>Table 3.1.1.</b> Recreational red snapper landings in 2012 by state and mode. ....	12
<b>Table 3.1.2.</b> Red snapper landings and overage/underage by sector, 1986-2012. ....	14
<b>Table 3.1.3.</b> Red snapper recreational landings vs. allocation/quota ....	16
<b>Table 3.1.4.</b> Commercial red snapper harvest vs. days open, by sector, 1986-2012. ....	19
<b>Table 3.3.1.</b> Species of the Reef Fish FMP grouped by family. ....	26
<b>Table 3.4.1.1.</b> Percentage of total recreational red snapper landings by state for 2011. ....	40
<b>Table 3.4.1.2.</b> Average community rank by total number of reef fish charter permits and divided by community population (SERO 2012). ....	41
<b>Table 3.5.1.1.1.</b> Summary of vessel counts, trips, and logbook landings (pounds gutted weight (lbs gw)) or vessels landing at least one pound of red snapper, 2008-2012. ....	47
<b>Table 3.5.1.1.2.</b> Summary of vessel counts and revenue (thousand 2012 dollars) for vessels landing at least one pound of red snapper, 2008-2012. ....	47
<b>Table 3.5.1.2.1.</b> Average annual business activity associated with the harvests of vessels that harvest red snapper, 2008-2012. ....	48
<b>Table 3.5.2.1.1.</b> Annual red snapper recreational effort, by state, 2008-2012. ....	51
<b>Table 3.5.2.1.2.</b> Annual red snapper recreational effort, by fishing mode, 2008-2012. ....	52
<b>Table 3.5.2.1.3.</b> Average (2008-2012) annual red snapper recreational effort, by state and mode. ....	52
<b>Table 3.5.2.1.4.</b> Average (2008-2012) annual red snapper recreational effort, by state and mode, excluding 2010. ....	53
<b>Table 3.5.2.1.5.</b> Headboat angler days. ....	53
<b>Table 3.5.2.4.1.</b> Summary of red snapper target trips (2008-2009 and 2011-2012 average) and associated business activity (thousand 2012 dollars). ....	56
<b>Table 4.1.2.1.</b> Average depth fished and estimated discard. ....	62
<b>Table 4.1.3.1.</b> Comparison of the sector quotas resulting from Alternative 2 and Alternative 7, given various quota scenarios. The highlighted row represents the quota under Alternative 1 (status quo). ....	69
<b>Table 4.1.4.1.</b> Red snapper allocations and estimated economic losses to the commercial sector. ....	72



**Table 4.1.4.2.** Red snapper recreational allocations and estimated average economic gains to the recreational sector. .... 73

**Table 4.1.4.3.** Recreational quota increases, economic losses to the commercial sector, gains to the recreational sector, and net changes in benefits. Quota increases are expressed in percentage of the red snapper quota. .... 74

**Table 4.2.1.** Number of Gulf of Mexico reef fish commercial (landing at least one pound of reef fish), for-hire, and historical captain permits by year. .... 84

**Table 4.2.2.** 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 angler components of the reef fish recreational sector for the years 2008-1012. .... 85

**Table 4.2.3.** The cause and effect relationship of fishing and regulatory actions for red snapper within the time period of the CEA. .... 91

**Table 4.2.4.** VECs considered, consolidated, or not included for further evaluation. .... 93

## LIST OF FIGURES

<b>Figure 1.1.</b> Season length (days) that the recreational red snapper season was open from 1996 through 2012 in the Gulf.....	2
<b>Figure 2.1.1.</b> Differences between annual red snapper landings and quotas by sector, 1990 – 2013.....	9
<b>Figure 3.2.1.</b> 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 ( <a href="http://accession.nodc.noaa.gov/0072888">http://accession.nodc.noaa.gov/0072888</a> ).....	21
<b>Figure 3.3.1.</b> Fishery closure at the height of the Deepwater Horizon MC252 oil spill.....	30
<b>Figure 3.4.1.</b> Length of fishing season for commercial and recreational sectors, with changes in bag limit.....	33
<b>Figure 3.4.2.</b> Recreational and commercial landings (solid lines) and quotas (dotted lines). ....	34
<b>Figure 3.4.3.</b> 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). ....	36
<b>Figure 3.4.4.</b> Red snapper recreational landings by private vessels and for-hire vessels (includes charter boats and headboats).....	37
<b>Figure 3.4.1.1.</b> Top 15 commercial red snapper fishing communities by RQ value for four years. ....	38
<b>Figure 3.4.1.2.</b> Top 18 red snapper fishing communities’ commercial engagement and reliance. ....	39
<b>Figure 3.4.1.4.</b> Top 16 recreational fishing communities’ engagement and reliance. ....	43
<b>Figure 3.4.2.1.</b> Social vulnerability indices for red snapper commercial fishing communities..	44
<b>Figure 3.4.2.2.</b> Social vulnerability indices for recreational fishing communities. ....	45

## EXECUTIVE SUMMARY

The Gulf of Mexico red snapper stock is overfished and currently under a rebuilding plan. The rebuilding plan uses a constant fishing mortality to determine each year's acceptable biological catch (ABC) which allows the ABC to increase with the increasing stock size. Therefore, it has been possible to increase both the commercial and recreational quotas since 2010 as part of the current rebuilding plan.

The Gulf of Mexico Fishery Management Council is evaluating the allocation of red snapper between the commercial and recreational sectors. NOAA's Catch Share Policy encourages fishery management councils to revisit allocations between fishing sectors on a regular basis when specifying optimum yield. A recent economic analysis on the allocation of the red snapper commercial and recreational allocation suggests that the current split of 51:49%, respectively, is not economically efficient (Appendix G). The analysis suggests that on economic efficiency grounds, net benefits may be increased by shifting quota from the commercial sector to the recreational sector.

This regulatory action addresses red snapper allocation. Specifically, the purpose of this action is to reallocate, in a fair and equitable manner, red snapper resources between the commercial and recreational sectors to increase the net benefits from red snapper fishing and increase the stability of red snapper fishing, particularly for the recreational sector that has experienced shorter and shorter seasons. The need for the proposed action is to reduce the likelihood of overharvests in the recreational sector and to prevent overfishing while achieving optimum yield, particularly with respect to food production and recreational opportunities, while rebuilding the red snapper stock.

**Action 1** includes seven alternatives, six of which would increase the recreational allocation. **Alternative 1**, no action, would maintain the current 51% commercial:49% recreational allocation. **Alternatives 2, 3, and 4** would raise the recreational allocation (and reduce the commercial allocation) by 3%, 5%, and 10%, respectively. **Preferred Alternative 5** and **Alternatives 6 and 7** would allocate quota amounts above a certain baseline. For **Preferred Alternative 5** and **Alternative 6**, the baseline would be 9.12 million pounds (mp). Under **Preferred Alternative 5**, 25% of any allowable harvest above 9.12 mp would go to the commercial quota and 75% would go to the recreational quota. **Alternative 6** would allocate 100% of allowable harvest above 9.12 mp to the recreational sector. **Alternative 7** is similar to **Preferred Alternative 5** (25% to the commercial sector and 75% to the recreational sector) but uses 10.0 mp as a baseline. Thus, **Alternatives 2, 3, and 4** would assign fixed percentages of the recreational quota to each sector, while under **Preferred Alternative 5**, and **Alternatives 6 and 7**, the allocation percentages for each sector would change based on the size of the quota. The resulting allocations based on the current red snapper quota of 11.0 mp are distributed as follows:

	Commercial Sector		Recreational Sector	
	mp	Percent	mp	Percent
Alternative 1	5.610	51.0	5.390	49.0
Alternative 2	5.280	48.0	5.720	52.0

Alternative 3	5.060	46.0	5.940	54.0
Alternative 4	4.510	41.0	6.490	59.0
Preferred Alternative 5	5.121	46.6	5.879	53.4
Alternative 6	4.651	42.3	6.349	57.7
Alternative 7	5.350	48.6	5.650	51.4

Relative to **Alternative 1**, **Alternative 7** would reallocate the smallest percentage of the red snapper quota to the recreational sector, resulting in commercial and recreational allocations of 48.6% and 51.4%, respectively. **Alternative 4**, which would shift 10% of the red snapper quota to the recreational sector, would result in the largest change in allocation. One outcome of shifting allocation to the recreational sector is it could lengthen the recreational season.

An evaluation of the effects of the alternatives on the physical and biological environment relative to the no action alternative indicates that this action does not directly affect these environments and likely has only minimal indirect effects. The magnitude of these effects should be positively correlated with the change in allocation. For the physical environment, some effort shifting between species is likely to occur for red snapper; however, because the reef fish fishery is a multispecies fishery, any shifting is likely to be small given the overall effort of the fishery as a whole. For the biological environment, increases in the rate of commercial dead discards would be expected to occur as a result of this action. For the recreational sector, this action is expected to result in decreases in the rate of dead discards. Additionally, the frequency or magnitude of harvest overages from the recreational sector may be affected by this action as a result of shifting more allocation to the recreational sector.

All the alternatives propose to redistribute allocation from the commercial to the recreational sector, thus, the social effects of this action are expected to be negative for the commercial sector and positive for the recreational sector. Although the extent of anticipated disruptions cannot be quantified, effects would be expected relative to the amount of quota that is reallocated, such that greater negative effects correspond with a greater shift in allocation. Direct effects would be expected due to a decrease in available commercial quota. Some instability in the individual fishing quota program would be expected and be evidenced by short-term volatility in the quota market. Potential long-term impacts would result if confidence in the future of the quota market and commercial fishing industry is undermined. The quality of impacts differ between the sectors, such that a loss of commercial quota would affect the livelihoods of commercial fishermen, especially small-scale owner-operators, and the well-being of commercial communities; the gain in recreational quota will provide additional recreational opportunities to harvest red snapper, a species of great socio-cultural importance for both sectors.

The reallocation alternatives (**Alternatives 2-7**) in this amendment would increase the percentage of the red snapper quota allocated to the recreational sector (and decrease the commercial sector's share by an equivalent percentage). Therefore, any one of these alternatives would be expected to result in economic losses to the commercial sector and generate economic benefits for the recreational sector. For each reallocation alternative, the difference between the expected losses to the commercial sector and gains to the recreational sector would determine the net economic effects. Increases in net benefits that could potentially result from the reallocation

alternatives are estimated to range from \$1.44 million (**Alternative 7**) to \$6.16 million (**Alternative 4**). For **Preferred Alternative 5**, potential increases in net benefits are estimated at \$2.73 million. In addition to potential increases in net benefits, several other factors should be considered in the evaluation of the economic effects that would be expected to result from the reallocation alternatives. These factors include the Magnuson-Stevens Fishery Conservation and Management Act mandates, discrepancies between Council-determined allocations and actual percentages of total red snapper landings attributed to each sector, potential impacts of increased scarcity of individual fishing quota allocation, and considerations relative to which sectors may be better or worse off following a reallocation. Finally, the usefulness of estimated potential increases in net benefits may be limited because, as suggested by Holzer and McConnell (2014) and discussed in a recent report (OECD 2014), the validity of changes in net benefit estimates and associated inferences about economic efficiency should be questioned when quota is not efficiently allocated within each sector.

This action directly affects the administrative environment. Putting in a new allocation would require rulemaking, but this is a routine process and should only minimally impact this environment. Regardless of which alternative is selected including no action, the quotas will require monitoring and enforcement to minimize the risk of quotas being exceeded. Therefore, the effects from each alternative should be similar.

# FISHERY IMPACT STATEMENT

[To be completed following selection of all preferred alternatives.]

# CHAPTER 1. INTRODUCTION

## 1.1 Background

The red snapper stock in the Gulf of Mexico (Gulf) has been declared overfished based on the Status of U.S. Fisheries Report to Congress<sup>1</sup> and is in the 14<sup>th</sup> year of a 32-year rebuilding plan. The Gulf of Mexico Fishery Management Council (Council) has worked toward rebuilding the red snapper stock since 1997 and overfishing was projected to have ended in 2009. Overfishing was not officially declared to end in the Status of U.S. Fisheries Report until 2012 after the new overfishing definition developed in the Generic Annual Catch Limits and Accountability Measures (ACLs/AMs) Amendment was implemented (GMFMC 2011a).

### *Gulf of Mexico Fishery Management 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

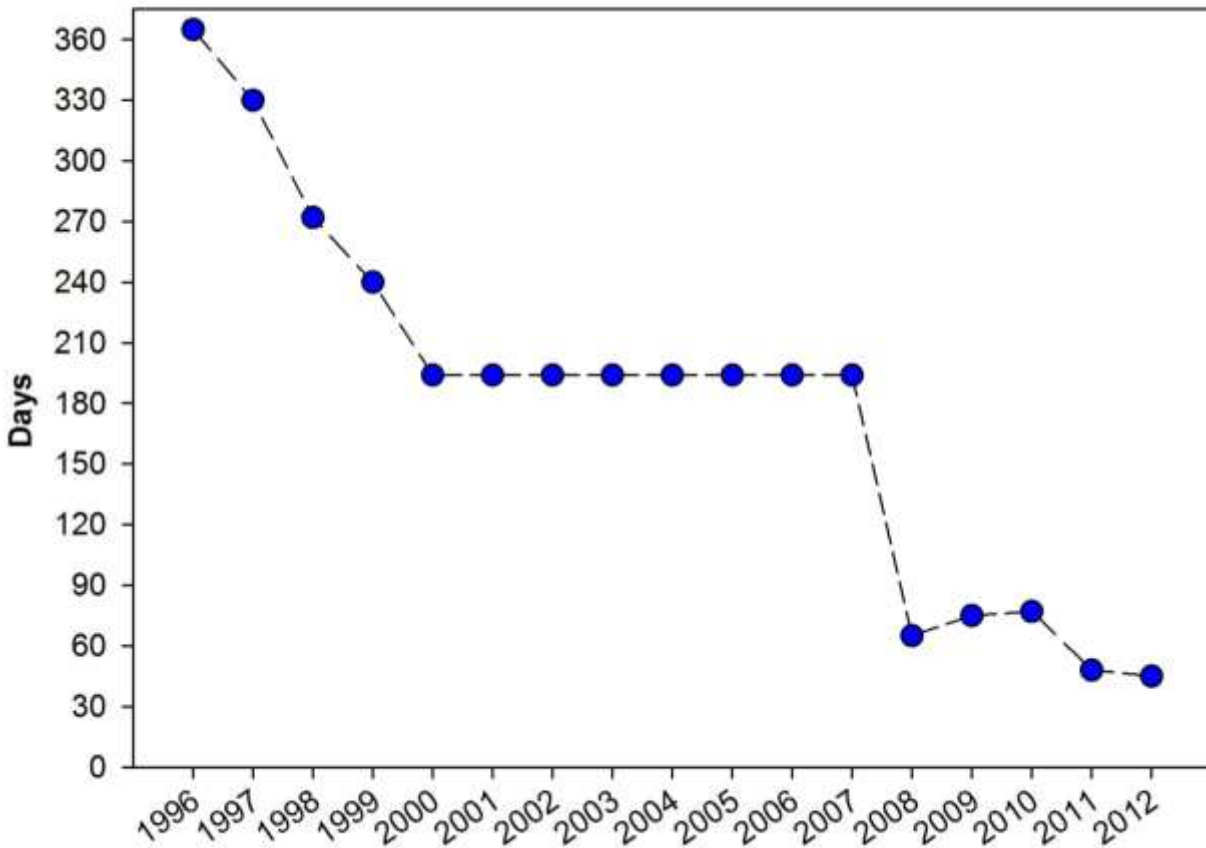
### *National Marine Fisheries Service*

- Responsible for compliance with federal, state, and local laws and regulations
- Responsible for preventing overfishing while achieving optimum yield
- Approves, disapproves, or partially approves Council recommendations
- Implements regulations

Since 2007, the recreational red snapper season length has become progressively shorter (Figure 1.1) and overharvests have occurred in every year but one since 2007 (Figure 2.1.1). The commercial sector has the potential for a year-round season and has consistently harvested below its quota since the implementation of the Individual Fishing Quota (IFQ) program in 2007.

---

<sup>1</sup> [http://www.nmfs.noaa.gov/sfa/fisheries\\_eco/status\\_of\\_fisheries/](http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/)



**Figure 1.1.** Season length (days) that the recreational red snapper season was open from 1996 through 2012 in the Gulf.

Current recreational fishing season length projections are dependent on estimated red snapper average weights and daily catch rates. As the daily catches and average weight of landed red snapper increases the season becomes progressively shorter (NMFS 2012a). Since 2007, when the rebuilding plan was revised, the estimated average weight of red snapper increased from 3.30 to 7.02 lbs whole weight (ww). Based on preliminary data, the average red snapper landed in 2013 weighed 7.02 lbs ww per fish (Appendix H). With a red snapper quota of 8.46 million pounds (mp), corresponding to a recreational quota of 4.146 mp, the 2013 season was projected to be 29 days.

In January 2013, the Council convened a special meeting of their Reef Fish Committee (Committee) to focus on red snapper management issues. The Committee requested that Amendment 28 focus on red snapper allocation only and decided to address allocation of groupers (i.e., gag, red, and black) in a separate amendment. During the meeting, the Committee discussed and modified the goals and objectives of the Reef Fish FMP, including suggestions for objectives that better focus the purpose and need of this amendment. The requested changes to



the document were discussed and adopted by the Council at the April 2014 meeting (see Section 1.2).

The Council discussed the 2013 projected recreational red snapper fishing season and it was noted that the federal fishing season could become shorter, should any of the Gulf States choose not to adopt compatible federal regulations. Therefore, the Council requested staff develop an accountability measure that would give the National Marine Fisheries Service (NMFS) Regional Administrator the authority to shorten the federal fishing season off a state adopting incompatible regulations should any Gulf State choose not to adopt compatible federal regulations. Following the completion of the red snapper stock assessment, the Council elected to increase the red snapper quota to 11.0 mp, resulting in commercial and recreational quotas of 5.61 mp and 5.39 mp, respectively. The quota increase was distributed to the commercial sector as additional annual IFQ allocation and provided a fall recreational season from October 1 through 14 for the recreational sector. In addition to the evaluation and potential adjustments to the current red snapper allocation between the sectors and to recreational season lengths beyond 2013, the Council's discussions increasingly suggest that there is a need to explore alternative methods of managing the recreational harvest of red snapper.

### **Allocation**

In recent years, the Council has expressed its intent to evaluate and possibly adjust the allocation of reef fish resources between the commercial and recreational sectors. These Council discussions have included consideration of comprehensive changes to the structure of the recreational sector and to sector allocations for red snapper and several grouper species.

The Council's evaluation of the allocations between the commercial and recreational sectors is consistent with NOAA's Catch Share Policy<sup>2</sup>. The Policy recommends that, for all fishery management plans (FMPs), "the underlying harvest allocations to specific fishery sectors (i.e., commercial and recreational) should be revisited on a regular basis, and the basis for the allocation should include consideration of conservation, economic, and social criteria used in specifying optimum yield and in furtherance of the goals of the underlying FMP" (NOAA's Catch Share Policy 2010, page iii).

In response to the challenges inherent to allocating limited resources between competing interests, the Council established an Ad Hoc Allocation Committee composed of Council members to assist in drafting an allocation policy that would streamline future allocation decisions. The Council's allocation policy was adopted in early 2009 and provides principles, guidelines, and suggested methods for allocating fisheries resources between or within sectors. The principles and guidelines developed by the Council are provided in Appendix B. In February 2012, the National Marine Fisheries Service (NMFS) released a technical memorandum on the principles and practice of allocating fishery harvests, which provides additional guidance to the Council (Plummer et al. 2012).

At the Council's request, the Southeast Fishery Science Center (SEFSC) conducted a study evaluating the economic efficiency of the current allocation of red snapper resources between the

---

<sup>2</sup> [http://www.nmfs.noaa.gov/sfa/domes\\_fish/catchshare/index.htm](http://www.nmfs.noaa.gov/sfa/domes_fish/catchshare/index.htm)

commercial and recreational sectors. The study was discussed by the Socioeconomic Scientific and Statistical Committee (SESSC) during its October 2012 meeting. Conclusions of the study and recommendations provided by the SESSC were presented to the Council in October 2012. An economic evaluation of allocation alternatives proposed in this amendment was also requested. Drs. Agar and Carter of the SEFSC conducted the analyses and presented their findings to the SESSC during a November 2013 meeting and a January 2014 follow-up webinar. SESSC recommendations were discussed during the February 2014 Council meeting.

### 1.3 Purpose and Need

This regulatory action addresses red snapper allocation. Specifically, the purpose of this action is to reallocate, in a fair and equitable manner, red snapper resources between the commercial and recreational sectors to increase the net benefits from red snapper fishing and increase the stability of red snapper fishing, particularly for the recreational sector that has experienced shorter and shorter seasons.

The need for the proposed actions is to reduce the likelihood of overharvests in the recreational sector and to prevent overfishing while achieving optimum yield, particularly with respect to food production and recreational opportunities, while rebuilding the red snapper stock.

### 1.4 History of Management

This history of management covers events pertinent to red snapper allocation, setting quotas, and AMs. 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](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 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 fishing 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. These measures are discussed in more detail in Section 3.1.

*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) was effective in February 1990. The amendment specified a framework procedure for setting 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, hence the current 51% commercial:49%: recreational allocation. **Amendment 1** also established a commercial quota allowing the Regional Administrator to close commercial red snapper fishing when the quota was caught. 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 (Figure 2.1.1). 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.

*Red snapper accountability measures:* For the commercial sector, an IFQ program was put in place for the 2007 fishing year through **Amendment 26** to the FMP. The program allocates pounds to IFQ shareholders based on the number of shares they have. This program allows shareholders to use their individual allocation as they see fit. Since the program has been in effect, the commercial sector has not exceeded its quota (See Section 3.1).

For the recreational sector, the accountability measure is an in-season closure based on annual projections of the season length. The season begins on June 1, as implemented through **Amendment 27** in 2008. This amendment also put in place the current 16-inch TL minimum size limit, 2-fish bag limit, and zero bag limit for captain and crew of for-hire vessels. Subsequent to Amendment 27, a series of framework actions and temporary rules have set the season length.

On March 26, 2014 the U. S. District Court for the District of Columbia ruled in favor of the plaintiffs in the case of *Guindon v. Pritzker*, 2014 WL 1274076 (D.D.C. Mar. 26, 2014) and found that the 2013 May Final Rule, June Temporary Rule, and October Final Rule challenged in this action were arbitrary and capricious, and not in accordance with the Magnuson-Stevens Act. The Court found in pertinent part that NMFS failed to require adequate AMs to prohibit the retention of fish after the recreational quota had been harvested, and failed to use the best scientific information available by not using the 2013 MRIP numbers to determine whether there should be a fall season. To address the court's findings, the Council requested NMFS put in place an emergency rule for the 2014 season that set a recreational ACT to base the season length on that was 20% less than the recreational quota (See Section 1.1). The resulting season length was nine days.

## CHAPTER 2. MANAGEMENT ALTERNATIVES

### 2.1 Action 1 – Allocation of Red Snapper

**Alternative 1:** No Action – Maintain the allocation set in Reef Fish Amendment 1. The commercial and recreational red snapper allocations remain at 51% and 49% of the red snapper quota<sup>3</sup>, respectively. Based on a red snapper quota of 11.0 million pounds (mp), resulting allocations to the commercial and recreational sectors are 5.610 mp and 5.390 mp, respectively.

#### Reallocation of Quota

**Alternative 2:** Increase the recreational sector's allocation by **3 percent**<sup>4</sup>; allocate 48% of the red snapper quota to the commercial sector and 52% of the quota to the recreational sector.

**Alternative 3:** Increase the recreational sector's allocation by **5 percent**; allocate 46% of the red snapper quota to the commercial sector and 54% of the quota to the recreational sector.

**Alternative 4:** Increase the recreational sector's allocation by **10 percent**; allocate 41% of the red snapper quota to the commercial sector and 59% of the quota to the recreational sector.

#### Allocation of Quota Increases

**Preferred Alternative 5:** If the red snapper quota is less than or equal to 9.12 million pounds (mp), maintain the commercial and recreational red snapper allocations at 51% and 49% of the red snapper quota, respectively. If the red snapper quota is greater than 9.12 mp, allocate 75% of the amount in excess of 9.12 mp to the recreational sector and 25% to the commercial sector. Based on a red snapper quota of 11.0 mp, resulting allocations to the commercial and recreational sectors are 5.121 mp and 5.879 mp, respectively.

**Alternative 6:** If the red snapper quota is less than or equal to 9.12 million pounds (mp), maintain the commercial and recreational red snapper allocations at 51% and 49% of the red snapper quota, respectively. If the red snapper quota is greater than 9.12 mp, allocate 100% of the amount in excess of 9.12 mp to the recreational sector. Based on a red snapper quota of 11.0 mp, resulting allocations to the commercial and recreational sectors are 4.651 mp and 6.349 mp, respectively.

**Alternative 7:** If the red snapper quota is less than or equal to 10.0 million pounds (mp), maintain the commercial and recreational red snapper allocations at 51% and 49% of the red snapper quota, respectively. If the red snapper quota is greater than 10.0 mp, allocate 75% of the amount in excess of 10.0 mp to the recreational sector and 25% to the commercial sector. Based on a red snapper quota of 11.0 mp, resulting allocations to the commercial and recreational sectors are 5.350 mp and 5.650 mp, respectively.

---

<sup>3</sup> The red snapper quota (commercial and recreational quotas) is functionally equivalent to a red snapper ACL.

<sup>4</sup> Unless otherwise indicated, specified percentages refer to percentages of the red snapper quota.

## **Discussion**

The Gulf of Mexico Fishery Management Council (Council) initially considered alternatives that increased the allocation above the commercial sector's current 51%. However, in considering the economic analyses conducted by the Southeast Fisheries Science Center (SEFSC) and the loss of fishing opportunities by the recreational sector, the Council concluded that such a reallocation would not meet the purpose and need of this action. Therefore, the Council limited the alternatives to either no action or increasing the recreational sector's allocation above 49%.

**Alternative 1** would continue to allocate 49% of the red snapper quota to the recreational sector and 51% to the commercial sector. This allocation was established in 1990 through Reef Fish Amendment 1 (GMFMC 1989) and was based on the historical average red snapper landings by each sector for the base period of 1979-1987. Average percentages landed by each sector for various time series are provided in Table 2.1.1. Annual commercial and recreational red snapper landings between 1986 and 2013 are provided in Table 2.1.2.

**Table 2.1.1.** Red snapper average percentages landed by the commercial and recreational sectors.

<b>Years</b>	<b>Commercial</b>	<b>Recreational</b>
1986-2012	48.25	51.75
1991-2012	46.59	53.41
1996-2012	48.20	51.80
2001-2012	46.88	53.12
2006-2012	45.28	54.72

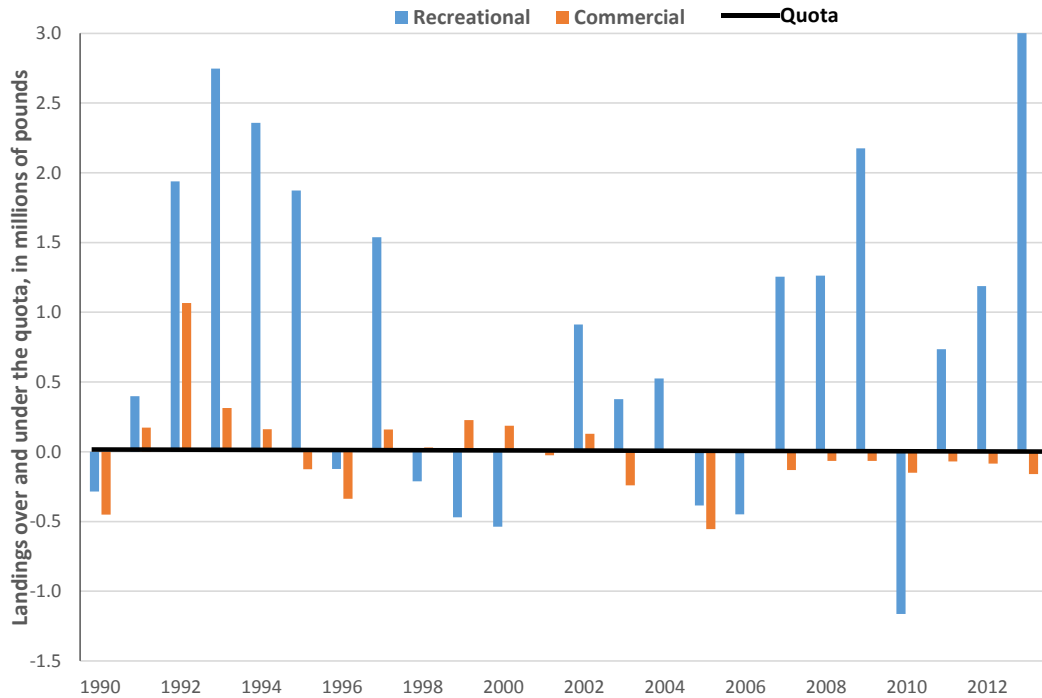
For the recreational and commercial sectors, the differences between the quotas and annual landings are provided in Figure 2.1.1. The Council has had limited success in consistently constraining the amounts harvested by the commercial and recreational sectors to their allotted share of the red snapper quota. As a result, the actual proportions of the aggregate quota harvested by each sector have fluctuated widely over time and consistently departed from the sector allocation set by the Council. Figure 2.1.2 compares the resource allocation established by the Council with the proportions of red snapper landings attributed to the recreational and commercial sectors.

**Table 2.1.2.** Recreational and commercial red snapper landings, in million pounds whole weight and in percent of the total landings.

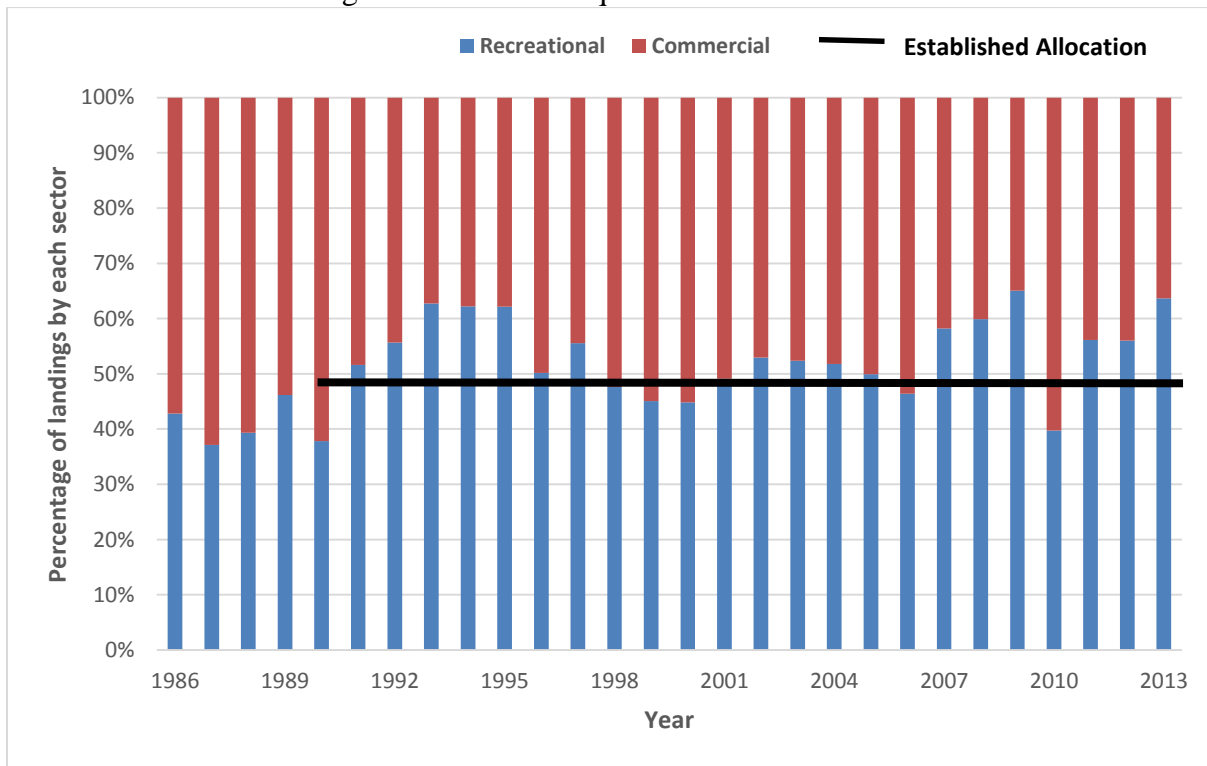
	Recreational		Commercial	
	Pounds	Percent	Pounds	Percent
1986	2.770	42.81	3.700	57.19
1987	1.814	37.15	3.069	62.85
1988	2.568	39.34	3.960	60.66
1989	2.656	46.16	3.098	53.84
1990	1.614	37.85	2.650	62.15
1991	2.358	51.59	2.213	48.41
1992	3.899	55.66	3.106	44.34
1993	5.687	62.76	3.374	37.24
1994	5.299	62.19	3.222	37.81
1995	4.814	62.13	2.934	37.87
1996	4.346	50.19	4.313	49.81
1997	6.008	55.54	4.810	44.46
1998	4.258	47.64	4.680	52.36
1999	3.999	45.06	4.876	54.94
2000	3.932	44.84	4.837	55.16
2001	4.468	49.14	4.625	50.86
2002	5.383	52.97	4.779	47.03
2003	4.847	52.37	4.409	47.63
2004	4.996	51.79	4.651	48.21
2005	4.084	49.93	4.096	50.07
2006	4.021	46.38	4.649	53.62
2007	4.440	58.24	3.183	41.76
2008	3.712	59.91	2.484	40.09
2009	4.625	65.06	2.484	34.94
2010	2.239	39.76	3.392	60.24
2011	4.602	56.15	3.594	43.85
2012	5.146	56.04	4.036	43.96
2013	9.541	63.65	5.449	36.35

Source: Recreational landings are from the Marine Recreational Information Program, Texas Parks and Wildlife Department, and the Southeast Headboat Survey. Commercial landings are from the Southeast Data Assessment and Review 31, Data Workshop Report (1990-2011), commercial quotas/catch allowances report from the National Marine Fisheries Service/SERO individual fishing quota landings website (2013 commercial);<sup>5</sup> quotas/landings in gutted weight were multiplied by 1.11 to convert to whole weight.

<sup>5</sup> <http://sero.nmfs.noaa.gov/sf/ifq/CommercialQuotasCatchAllowanceTable.pdf.commercial>



**Figure 2.1.1.** Differences between annual red snapper landings and quotas by sector, 1990 – 2013. For each sector, positive values indicate that landings are greater than the quota; negative values indicate that landings are less than the quota.



**Figure 2.1.2.** Comparison between the proportions of red snapper landed by each sector and the commercial/recreational split of the quota (established allocation of 51% and 49% to the commercial and recreational sectors, respectively).

Based on a status quo aggregate red snapper quota of 11.0 million pounds (mp), **Alternative 1** would allocate 5.610 mp and 5.390 mp to the commercial and recreational sectors, respectively. **Alternatives 2, 3, and 4** consider increases to the recreational red snapper allocation by 3%, 5%, and 10% from the status quo (**Alternative 1**), increasing the recreational allocation to 52%, 54%, and 59% of the red snapper quota, respectively. Table 2.1.3 provides a summary of the commercial and recreational red snapper quotas that would result from the alternative allocations included in this action. Based on a red snapper quota of 11.0 mp, recreational quotas that would correspond to **Alternatives 2, 3, and 4** would be equal to 5.720 mp, 5.940 mp, and 6.490 mp, respectively.

**Table 2.1.3.** Commercial and recreational red snapper allocations (mp, whole weight) and percent, based on the current 11.0 mp aggregate quota.

	Commercial Sector		Recreational Sector	
	MP	Percent	MP	Percent
Alternative 1	<b>5.610</b>	<b>51.0</b>	<b>5.390</b>	<b>49.0</b>
Alternative 2	5.280	48.0	5.720	52.0
Alternative 3	5.060	46.0	5.940	54.0
Alternative 4	4.510	41.0	6.490	59.0
<b>Preferred Alternative 5</b>	5.121	46.6	5.879	53.4
Alternative 6	4.651	42.3	6.349	57.7
Alternative 7	5.350	48.6	5.650	51.4

**Preferred Alternative 5** would continue to allocate 51% of the red snapper quota to the commercial sector and 49% of the red snapper quota to the recreational sector as long as the aggregate red snapper quota is below or equal to 9.12 mp, which was the total allowable catch from 1996 through 2006. Once the threshold is reached, 75% of quota amounts in excess of 9.12 mp would be allocated to the recreational sector and 25% to the commercial sector. Based on an aggregate red snapper quota of 11.0 mp, **Preferred Alternative 5** would allocate 5.121 mp and 5.390 mp to the commercial and recreational sectors, respectively. In percentage points (based on a red snapper quota of 11.0 mp), **Preferred Alternative 5** would allocate 46.6% and 53.4% of the red snapper quota to the commercial and recreational sectors, respectively. Provided the quota is at least 9.12 mp, any increase or decrease from the 11.0 mp aggregate quota will result in different percentages allocated to each sector.

Like **Preferred Alternative 5**, **Alternative 6** would maintain the 51/49 commercial/recreational split of the red snapper quota as long as the red snapper quota is less than or equal to 9.12 mp. However, if the red snapper quota is greater than 9.12 mp, **Alternative 6** would allocate the totality of the quota greater than 9.12 mp to the recreational sector, rather than 75% of the quota above the baseline of 9.12 mp, as in **Preferred Alternative 5**. Based on an aggregate red snapper quota of 11.0 mp, **Alternative 6** would allocate 4.651 mp and 6.349 mp to the commercial and recreational sectors, respectively. In percentage points, **Alternative 6** would allocate 42.3% and 57.7% of the red snapper quota to the commercial and recreational sectors,



respectively. Again, provided the quota is at least 9.12 mp, any increase or decrease from the 11.0 mp aggregate quota will result in different percentages and estimated season length.

**Alternative 7** would continue to allocate 51% of the red snapper quota to the commercial sector and 49% of the red snapper quota to the recreational sector as long as the aggregate red snapper quota is below or equal to 10.0 mp. However, if the red snapper quota is greater than 10.0 mp, 75% of quota amounts in excess of 10.0 mp would be allocated to the recreational sector and 25% to the commercial sector. Based on an aggregate red snapper quota of 11.0 mp, **Alternative 7** would allocate 5.350 mp and 5.650 mp to the commercial and recreational sectors, respectively. In percentage points, **Alternative 7** would allocate 48.6% and 51.4% of the red snapper quota to the commercial and recreational sectors, respectively. Provided the quota is at least 10.0 mp, any increase or decrease from the 11.0 mp aggregate quota will result in different percentages and estimated season length.

As illustrated in Figure 2.1.2, the percentages of the red snapper aggregate quota harvested by the commercial and recreational sectors do not reflect the established allocation of 51% and 49% assigned to the commercial and recreational sectors, respectively. Alongside allocation discussions and reallocation decisions, the Council has added management measures to this document which are intended to reduce the recreational quota overages, thereby minimizing the difference between the proportion of red snapper landings attributed to each sector and the allocation established by the Council.

Recent allocation studies completed by the SEFSC and reviewed by the Socioeconomic Scientific and Statistical Committee (SESSC) have concluded that existing allocations between the commercial and recreational sectors of several reef fish resources, including red snapper, are not economically efficient. In a 2012 study evaluating the economic efficiency of the allocation of red snapper resources, Agar and Carter<sup>6</sup> compared estimated commercial and recreational marginal willingness to pay for red snapper and indicated that the relative magnitude of the estimates suggests that economic efficiency could potentially be improved by reallocating red snapper resources. The SESSC reviewed and accepted the methodology of the study. The SESSC further stated that although the study results indicated that the marginal value of a recreationally caught red snapper is likely higher than the marginal value of a commercially caught red snapper, given the data used, e.g., data collection time periods (recreational data collected from a 2003 survey; commercial data collected during the last 5 years of the red snapper IFQ program), it cannot specify the potential efficiency gains from possible quota shifts because it does not know how the marginal valuations would change with the switch. The SESSC also indicated that incentive-based approaches to reallocation would be more appropriate for increasing net benefits than mandated allocations. A study evaluating potential changes in net benefits expected to result from alternatives proposed in this amendment is provided in Appendix G.

---

<sup>6</sup> Agar and Carter presentation to the SESSC in October 2012 titled “Are the 2012 allocations of red snapper in the Gulf of Mexico economically efficient?”

## CHAPTER 3. AFFECTED ENVIRONMENT

The action considered in this environmental impact statement (EIS) would affect commercial and 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 2011b), the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), and the Generic Annual Catch Limits/Accountability Measures (ACL/AM) Amendment (GMFMC 2011a). 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 2012c). 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	
<b>FL (west)</b>	641,437	205,114	1,289,253	2,135,804	41.5%
<b>AL</b>	359,469	72,199	1,013,460	1,445,128	28.1%
<b>MS</b>	997	5,894	182,767	189,658	3.7%
<b>LA</b>	236,302	21,999	501,704	760,005	14.8%
<b>TX</b>	39,128	419,671	157,726	616,525	12.0%
<b>Total</b>	<b>1,277,333</b>	<b>724,077</b>	<b>3,144,911</b>	<b>5,147,120</b>	
<b>% by Mode</b>	<b>24.8%</b>	<b>14.1%</b>	<b>61.1%</b>		<b>100%</b>

Source: NMFS 2013a.

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<sup>7</sup>.

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.

---

<sup>7</sup> 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, 1986-2012. 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 2010-2012.

Year	Recreational			Commercial			Total		
	Allocation 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

Sources: For recreational landings, Southeast Fisheries Science Center including landings from the Marine Recreational Information Program, Texas Parks and Wildlife Department, and the Southeast Headboat Survey (May 2013). For commercial landings, 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 commercial):

<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 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). It should also be noted that overages have been quite substantial when they occur (often 30% or greater than the quota) while underages are generally minor (often 12% or less of the quota). 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 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, an IFQ program was implemented for the commercial red snapper sector. Each vessel that qualified for the program was issued shares of the commercial quota. The amount of shares was based on historical participation. At the beginning of each year, each shareholder is issued allocation in pounds based on the amount of shares they have. Each shareholder is then allowed to harvest or 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 has not 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.



**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.

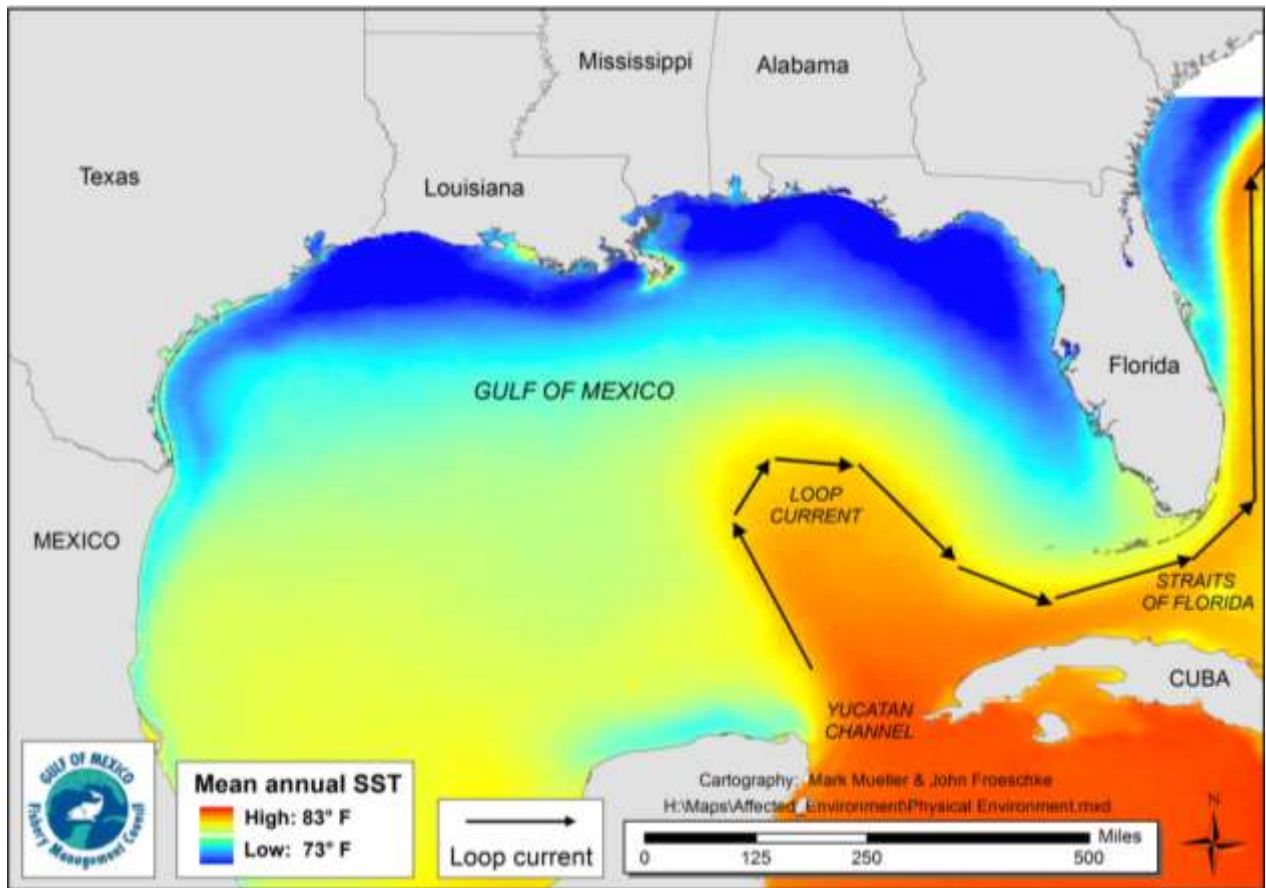
## 3.2 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km<sup>2</sup>), 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 54° F to 84° F (12° C to 29° C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73 ° F through 83° F (23-28° 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 and the Generic ACL/AM Amendment (refer to GMFMC 2004a; GMFMC 2011a). 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, and gravel bottoms; oilrigs; and other artificial structures (GMFMC 2004a). Detailed information pertaining to the closures and preserves is provided in the February 2010 Regulatory Amendment (GMFMC 2010).



**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.

#### **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 et al. 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).

#### **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 NMFS in 1986 suggested that the stock was in decline (Parrack and McLellan 1986) and since 1988 (Goodyear 1988) the stock biomass has been in an overfished condition.

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. Commercial landings data included commercial handline and longline landings from the accumulated landings system from 1964 through 2011. For landings between 1880 and 1963, previously constructed historical landings were used. Total annual landings from the IFQ program for years 2007-2011 were used to reapportion 2007-2011 accumulated landings system data across strata. Recreational landings data included the MRIP/Marine Recreational Fishery Statistics Survey (MRFSS) from 1981-2011, Southeast Headboat Survey for 1981-2011, and Texas Parks and Wildlife Department survey for 1983-2011. For the years 2004-2011, MRIP landings are available. For earlier years, MRFSS data were calibrated to MRIP estimates using a standardized approach for calculating average weight that accounts for species, region, year, state, mode, wave, and area.

Standardized indices of relative abundance from both fishery dependent and independent data sources were included in the model. The fishery dependent indices came from the commercial

handline fleet, recreational headboats, and recreational private/for-hire sectors. Fishery independent indices came from the Southeast Area Monitoring and Assessment Program (SEAMAP) bottom trawl survey, SEAMAP reef fish video survey, NMFS bottom longline survey, and the SEAMAP plankton survey.

Red snapper discards in the Gulf were calculated from data collected by the self-reported commercial logbook data and the NMFS Gulf reef fish observer program. In addition to these directed fisheries discards, estimates of red snapper bycatch from the commercial shrimp fleet were also generated.

The 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 SSC in May 2013. Under the base model, it was estimated that the red snapper stock has been overfished since the 1960s.

The stock status as of 2011, as estimated relative to SSC's preferred proxy of  $F_{SPR26\%}$  (i.e., the fishing mortality rate that would produce an equilibrium spawning potential ratio (SPR) of 26%) was found to be still overfished, but not undergoing overfishing (GMFMC 2013a). Based on an evaluation to the Tier 1 P\* spreadsheet used for the ABC control rule, the SSC determined that the P\* (probability of overfishing) should equal 0.427. This P\* is applied to a probability density function (PDF) to determine an ABC that takes into account scientific uncertainty in the setting of the overfishing limit (OFL). In order to capture more of the scientific uncertainty, the SSC decided to use a weighted average of PDFs constructed for the base model (50% weighting), a high natural mortality model that assumed a higher natural mortality rate for age-0 and age-1 red snapper (25% weighting), and a lower M model that assumed a lower natural mortality rate for age-0 and age-1 red snapper (25% weighting). These model runs were selected because they bracket the range of plausible results obtained from the base run and 15 alternative state model runs. Based on the results of the  $P^* = 0.427$  applied to the weighted average PDF, the SSC set the following ABCs: 13.5 mp ww in 2013; 11.9 mp in 2014; 10.6 mp in 2015. A red snapper update assessment scheduled for 2014 is expected to re-evaluate the ABC for 2015 and beyond.

### *Definition of Overfishing*

In January 2012, the Generic ACL/AM Amendment (GMFMC 2011a) 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 OFL. Even though the recreational harvest exceeded its quota in 2012, the total catch (recreational and commercial combined) remained below the OFL. Therefore, as of 2012, overfishing is no longer occurring in the red snapper stock. 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 could change on a year-to-year basis.

## 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 2011a). Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council ([www.gulfcouncil.org](http://www.gulfcouncil.org)) and SEDAR ([www.sefsc.noaa.gov/sedar](http://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
<b>Family Balistidae – Triggerfishes</b>		
Gray Triggerfish	<i>Balistes capriscus</i>	Overfished, no overfishing
<b>Family Carangidae – Jacks</b>		
Greater Amberjack	<i>Seriola dumerili</i>	Overfished, no overfishing
Lesser Amberjack	<i>Seriola fasciata</i>	Unknown
Almaco Jack	<i>Seriola rivoliana</i>	Unknown
Banded Rudderfish	<i>Seriola zonata</i>	Unknown
<b>Family Labridae - Wrasses</b>		
Hogfish	<i>Lachnolaimus maximus</i>	Unknown
<b>Family Malacanthidae - Tilefishes</b>		
Tilefish (Golden)	<i>Lopholatilus chamaeleonticeps</i>	Not overfished, no overfishing
Blueline Tilefish	<i>Caulolatilus microps</i>	Unknown
Goldface Tilefish	<i>Caulolatilus chrysops</i>	Unknown
<b>Family Serranidae - Groupers</b>		
Gag	<i>Mycteroperca microlepis</i>	Overfished, no overfishing
Red Grouper	<i>Epinephelus morio</i>	Not overfished, no overfishing
Scamp	<i>Mycteroperca phenax</i>	Unknown
Black Grouper	<i>Mycteroperca bonaci</i>	Not overfished, no overfishing
Yellowedge Grouper	* <i>Hyporthodus flavolimbatus</i>	Not overfished, no overfishing
Snowy Grouper	* <i>Hyporthodus niveatus</i>	Unknown
Speckled Hind	<i>Epinephelus drummondhayi</i>	Unknown
Yellowmouth Grouper	<i>Mycteroperca interstitialis</i>	Unknown
Yellowfin Grouper	<i>Mycteroperca venenosa</i>	Unknown
Warsaw Grouper	* <i>Hyporthodus nigritus</i>	Unknown
**Atlantic Goliath Grouper	<i>Epinephelus itajara</i>	Unknown
<b>Family Lutjanidae - Snappers</b>		
Queen Snapper	<i>Etelis oculatus</i>	Unknown
Mutton Snapper	<i>Lutjanus analis</i>	Not overfished, no overfishing
Blackfin Snapper	<i>Lutjanus buccanella</i>	Unknown
Red Snapper	<i>Lutjanus campechanus</i>	Overfished, no overfishing
Cubera Snapper	<i>Lutjanus cyanopterus</i>	Unknown
Gray Snapper	<i>Lutjanus griseus</i>	Unknown
Lane Snapper	<i>Lutjanus synagris</i>	Unknown
Silk Snapper	<i>Lutjanus vivanus</i>	Unknown
Yellowtail Snapper	<i>Ocyurus chrysurus</i>	Not overfished, no overfishing
Vermilion Snapper	<i>Rhomboplites aurorubens</i>	Not overfished, no overfishing
Wenchman	<i>Pristipomoides aquilonaris</i>	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. 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, and Gulf sturgeon also occur within nearshore waters of the Gulf. Further, designated critical habitat for the Northwest Atlantic Distinct Population Segment of loggerhead sea turtles has been proposed for some nearshore waters of the Gulf. Information on the distribution, biology, and abundance of these protected species in the Gulf is included in the final EIS to the Generic EFH Amendment (GMFMC 2004a) and the February 2005, October 2009, and September 2011 ESA biological opinions on the reef fish fishery (NMFS 2005; NMFS 2009; NMFS 2011a). Marine Mammal Stock Assessment Reports and additional information are also available on the NMFS Office of Protected Species website: <http://www.nmfs.noaa.gov/pr/sspecies/>.

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.

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.

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.

### **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.<sup>8</sup>

In addition to the crude oil, 1.4 million gallons of the dispersant, Corexit 9500A<sup>®</sup>, 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

---

<sup>8</sup> Source: [http://sero.nmfs.noaa.gov/sf/deepwater\\_horizon/OilCharacteristics.pdf](http://sero.nmfs.noaa.gov/sf/deepwater_horizon/OilCharacteristics.pdf)

environmental fate of dispersants in deep water. However, a study found that, while Corexit 9500A<sup>®</sup> and oil are similar in their toxicity, when Corexit 9500A<sup>®</sup> 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.

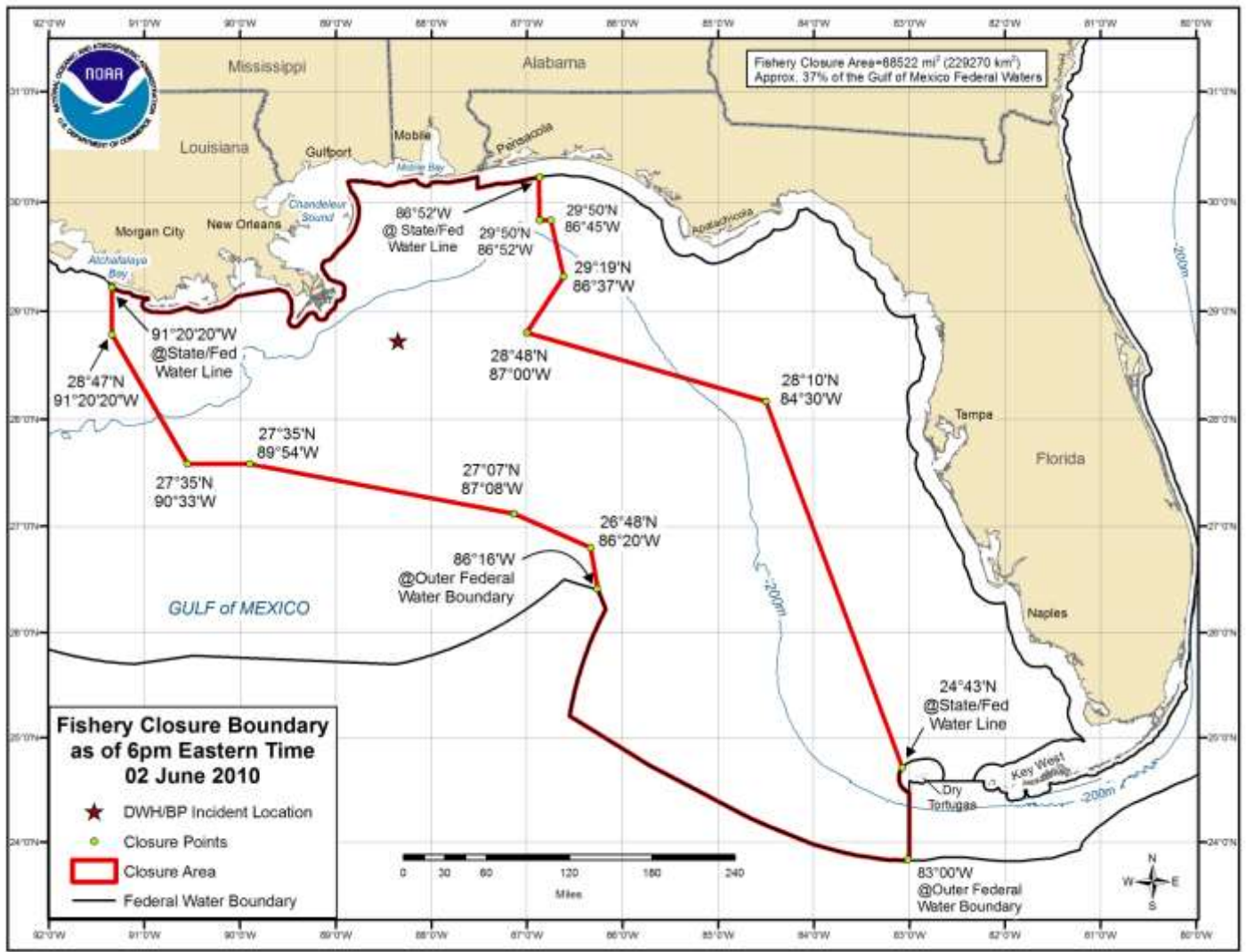
Oil could exacerbate development of the hypoxic “dead” zone in the Gulf as could higher than normal input of water from the Mississippi River drainage. For example, oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations 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 in the amount and distribution of fishing effort in the Gulf in response to the oil spill and area closures has required a reanalysis of the number of days needed for the recreational sector to fill its quota in 2010. The continuing but unknown effects of the oil spill on both fishing effort and red snapper abundance are being monitored. 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.

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](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 the conceptual and historical background for the proposed actions which will be evaluated in Chapter 4.

Allocation is a social issue of assigning access to a scarce resource. Reallocation is inherently controversial when the result will benefit some and be detrimental to others. When considering allocations of fishing privileges, the Magnuson-Stevens Act requires fishery managers to examine social and economic factors as laid out in the National Standards. These include National Standard 4 which states if it becomes necessary to allocate fishing privileges among fishermen, the allocation will be fair and equitable, will promote conservation, and be carried out such that no particular entity receives an excessive share; National Standard 5 which states conservation and management measures will consider efficiency in the utilization of fishery resources except that no such measure will have economic allocation as its sole purpose; and National Standard 8 which states that conservation and management measures shall take into account the importance of fishery resources to fishing communities.

NMFS' technical memorandum on the principles and practice of allocation (Plummer et al. 2012) identifies two main criteria for the national standard mandates. Each criterion is based on a conceptual approach from distinct social sciences: economic efficiency and social equity. While a quantitative framework exists for analyzing economic efficiency, there is no such quantitative framework for evaluating fairness and equity (Plummer et al. 2012). This section provides information on the social context for the evaluation of fairness for the two purposes of this action: to increase net benefits and increase the stability of red snapper fishing, particularly for the recreational sector that has experienced shorter and shorter seasons.

Plummer et al.'s (2012) review of approaches to evaluate fairness focuses on critiques of the application of efficiency analyses to policy. Specifically, efficiency is critiqued for the decision to ignore issues of equity by reducing such social concerns to assumptions of "other things being equal" (Dietz and Atkinson 2010, Copes 1997, Bromley 1977), when in fact, they are not. Dietz and Atkinson (2010) argue efficiency and fairness are often presented as a trade-off in environmental policy, but show that "public preferences do not support making efficiency the only goal of policy, at the expense of equity" (2010:440). Bromley (1977) also addresses the tension between requirements that policy consider economic efficiency and social fairness, arguing that allocation fairness in the distribution of fishing rights is just as important as efficiency for making policy decisions. Bromley further critiques efficiency analyses for their lack of attention to distributional effects and questions assumptions that an "efficiency analysis is scientific and value free" (1977).

Copes (1997) echoes Bromley's critique of economic efficiency, repeating the concerns on the use of "other things being equal" in efficiency analyses "to exclude from consideration interdependencies that may be important for their distributional repercussions" (1997:65). While such assumptions simplify the economic analysis, both Copes and Bromley argue that efficiency analyses ignore the social costs that underlie the direct and indirect social impacts (Copes 1997, Bromley 1977, 1990). That other things are *not* equal, precisely reflects those components of the human environment that are at the center of equity considerations. Furthermore, from the social

perspective, willingness-to-pay studies measure ideology of respondents more than actual behavior (Andreoni 1990), undermining any potential net benefits.

A review of the allocation decisions made by regional fishery management councils can provide insight into how allocation decisions have been made elsewhere around the country (Plummer et al. 2012). Nearly all allocation decisions have been based on historical or current landings ratios. Following initial establishment of a sector allocation, seven stocks have undergone a revision to the original allocation; five of these examples are in the Gulf. One, vermilion snapper, had its sector allocation removed entirely.

Of the remaining four examples from the Gulf, Plummer et al. (2012) cite two stocks as having had their allocations shifted in favor of the recreational sector: greater amberjack (Amendment 30A, GMFMC 2008a) and red grouper (Amendment 30B, GMFMC 2008b). Although Plummer et al. describe the respective actions as reallocations, each amendment specifically avoided labeling the action as an allocation. For greater amberjack, the adopted management measures were intended to reduce recreational effort less (by 18-26%) than commercial effort (by 38%). However, the actual allocation decision was moved to the considered but rejected section of the amendment; no reallocation was adopted.

For red grouper, the initial allocation decision in Amendment 1 (GMFMC 1989) set an aggregate grouper allocation at 35% recreational and 65% commercial; no allocations were established for individual grouper species. Secretarial Amendment 1 (GMFMC 2004b) created a commercial red grouper quota, but specifically stated that no allocation decision was being made. The commercial quota represented 81% of the total allowable catch. In Amendment 30B (GMFMC 2008b), an “interim” allocation was established for red grouper at 24% recreational and 76% commercial. Thus, the two actions affected the distribution of access to the resource while avoiding the formal declaration of a sector allocation.

The other two Gulf examples concern species for which management is shared between the Gulf and South Atlantic Councils: king and Spanish mackerel. Since it was first established in 1987, the allocation for the Atlantic stock of Spanish mackerel has been changed twice, once toward the recreational sector and once toward the commercial sector. Initially established at 76% commercial and 24% recreational, the allocation was changed in 1989 to 50%:50%, due to a determination that the allocation was based on a time period of overfishing and low recreational participation. In 1998, the commercial allocation was increased because the recreational sector was not harvesting its quota. The 2% change in the king mackerel allocation towards the commercial sector was an adjustment to account for the sale of recreational catches that counted against the commercial quota. The allocations of both these species are scheduled to be reviewed in Coastal Migratory Pelagics Amendment 24, currently under development.

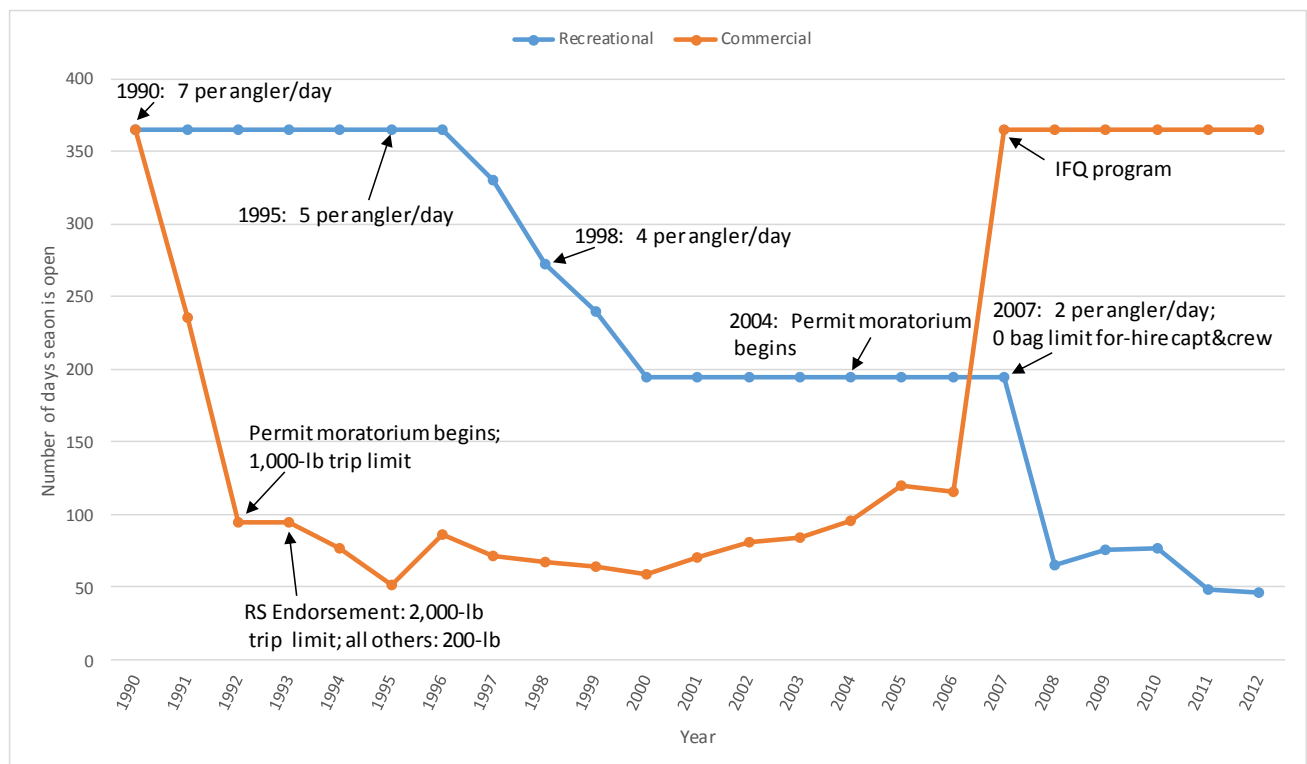
Finally, the remaining two cases come from the Pacific Fishery Management Council’s management of salmon, Amendments 7 (PFMC 1986) and 9 (PFMC 1988). In contrast to nearly all allocation decisions that have been based on landings ratios, the rationale for these two cases was to provide more stability to the recreational sector. For both stocks, the recreational component is a directed fishery while the commercial component is provided for bycatch. In both examples, the reallocation was based on the recommendations from a working group of

commercial and recreational fishermen and is an example of negotiation-based allocation. Also in this case, the sector allocations shift depending on the size of the quota, similar in design to Alternatives 5 and 6 of Action 1.

### Context of red snapper management in the Gulf

Historical patterns of harvest by both sectors is an important consideration for the distributional effects of allocation (Plummer et al. 2012). In the Gulf, the commercial and recreational sectors are managed differently and separately. Allocating between sectors is difficult to determine because the “characteristics, motivations, and output measures for participants differ dramatically” (Gislason 2006).

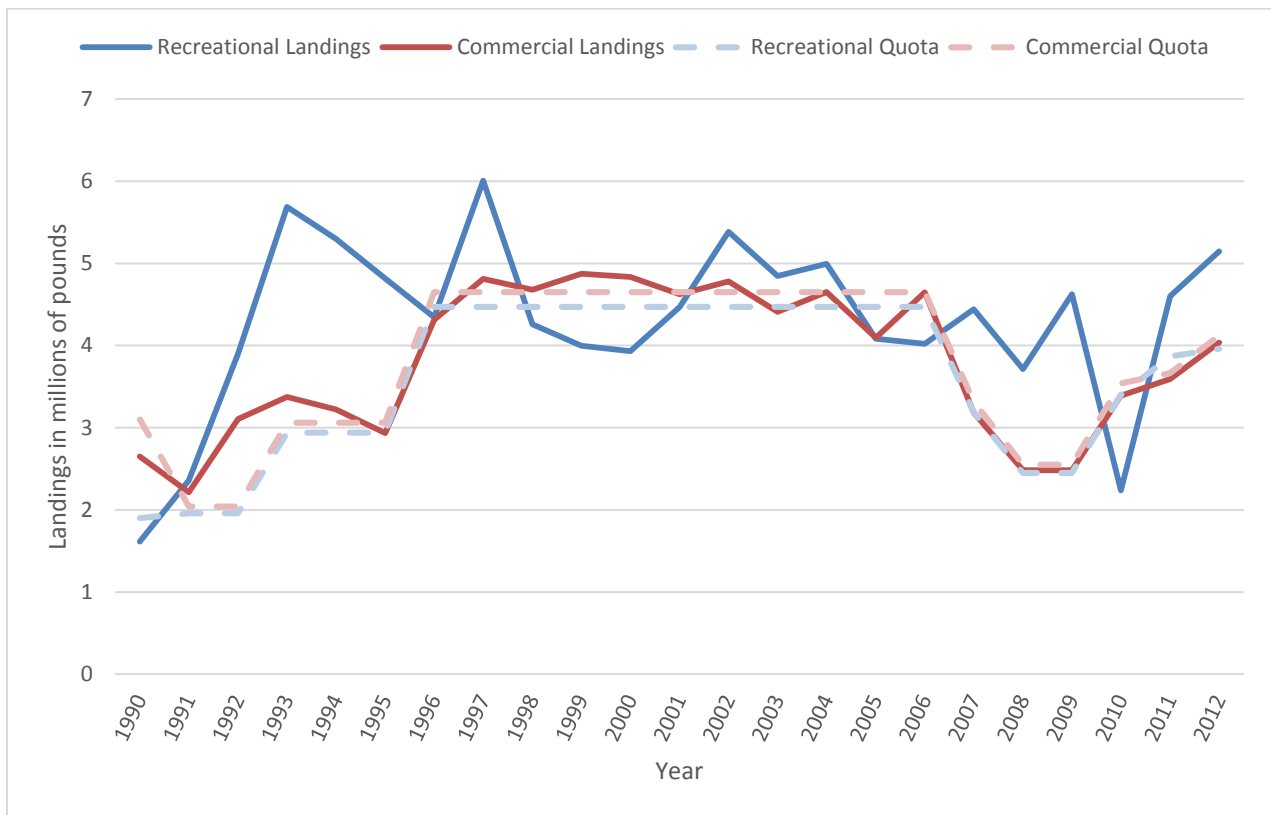
The existing allocation for red snapper was implemented alongside the establishment of a total allowable catch, and corresponding management measures intended to reduce landings by 20% for each sector (GMFMC 1989). Thus, at the time the allocation was established, there was already great demand for red snapper by both sectors. A minimum size limit of 13” was adopted for both sectors, alongside a recreational bag limit of 7 fish per angler per day, and a commercial quota of 3.1 mp. Since then, both sectors have been subject to additional measures to reduce harvests and effort (Figure 3.4.1) which have been insufficient to restrict harvests before reaching the quota for either sector (Figure 3.4.2).



**Figure 3.4.1.** Length of fishing season for commercial and recreational sectors, with changes in bag limits, trip limits, and implementation dates of limited access regulations. The timeline does not include minimum size limits or additional requirements such as use of a vessel monitoring system.

For the **commercial sector**, the year the allocation was established (1990) was the last year commercial fishing was open year round until implementation of the IFQ program in 2007 (Figure 3.4.1). Entry to the commercial sector was capped in 1992, when the commercial reef fish permit moratorium began. No additional commercial permits have been available since that time, effectively capping sector participation. The following year, the system of red snapper endorsements for commercial permit holders was adopted. A red snapper endorsement allowed the holder a 2,000-lb trip limit, while all other commercial permit holders were allowed a 200-lb trip limit.

Despite the adoption of endorsements and trip limits to constrain harvests, from the early 1990’s until implementation of the IFQ program, the commercial fishing seasons were best described as “derbies,” where vessels raced to fish before each harvest closure. During this time, the commercial harvest was usually open only 10 days at a time. The IFQ program was implemented in 2007 to address two identified problems in commercial red snapper fishing: the derby fishing conditions and “overcapacity” in the commercial sector.



**Figure 3.4.2.** Recreational and commercial landings (solid lines) and quotas (dotted lines).

The IFQ program fundamentally restructured commercial fishing for red snapper. The opportunity for any permitted commercial vessel to harvest a trip limit of red snapper during a short open season was replaced by a system in which a vessel’s crew must obtain access to a quantity of red snapper prior to being harvested. Thus, the system of attempting to constrain commercial harvest to a quota using trip limits and closed seasons was replaced by a system



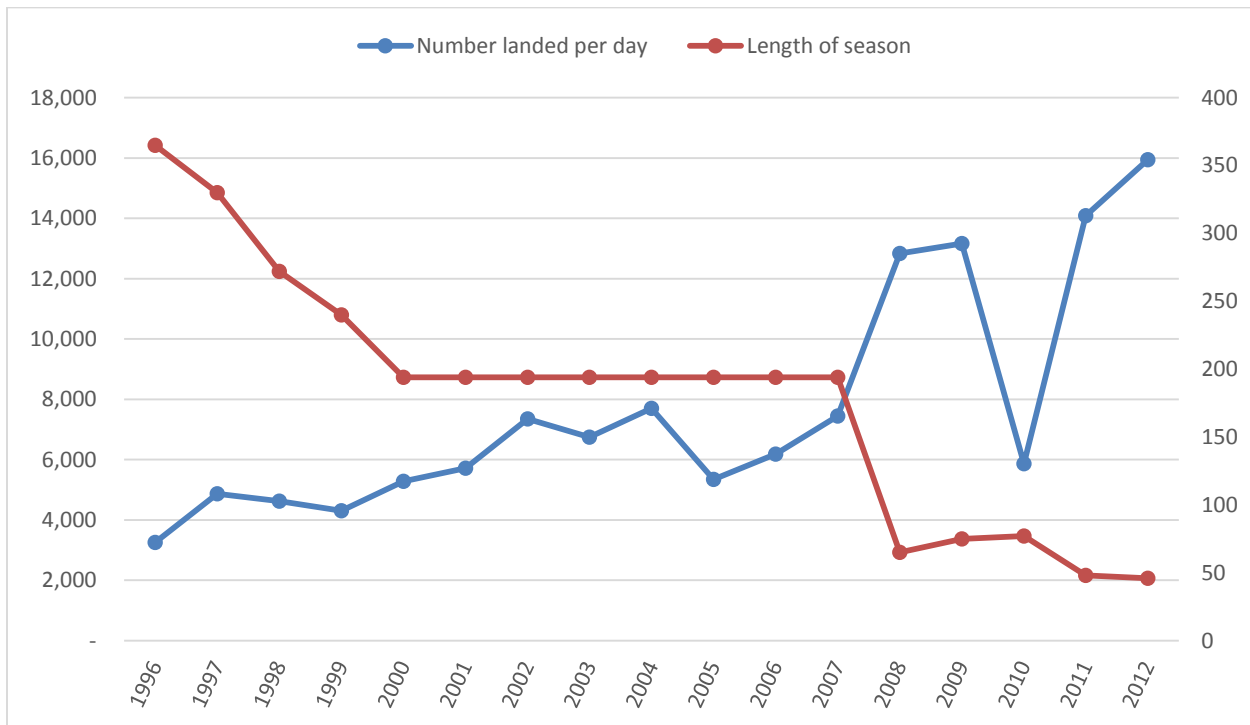
based on the distribution and exchange of portions of the red snapper commercial quota. This has effectively eliminated the occurrence of quota overages. From the sector-wide perspective, this has enabled the fishing season to remain open year round and for total landings to remain within the quota. The implementation of the IFQ program has resolved both issues of subtractability and excludability, within the sector. Though these controls appear to have improved the problems they were designed to address, the program has benefited some fishermen and been a detriment to others.

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). 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.

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).

The second problem concerns the quota overages. Alongside the short seasons 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 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. Thus, the adoption of accountability measures to reduce the

likelihood of quota overages (Action 2.1) and to make adjustments to the quota in the event it is exceeded (Action 2.2) are included in this plan amendment.

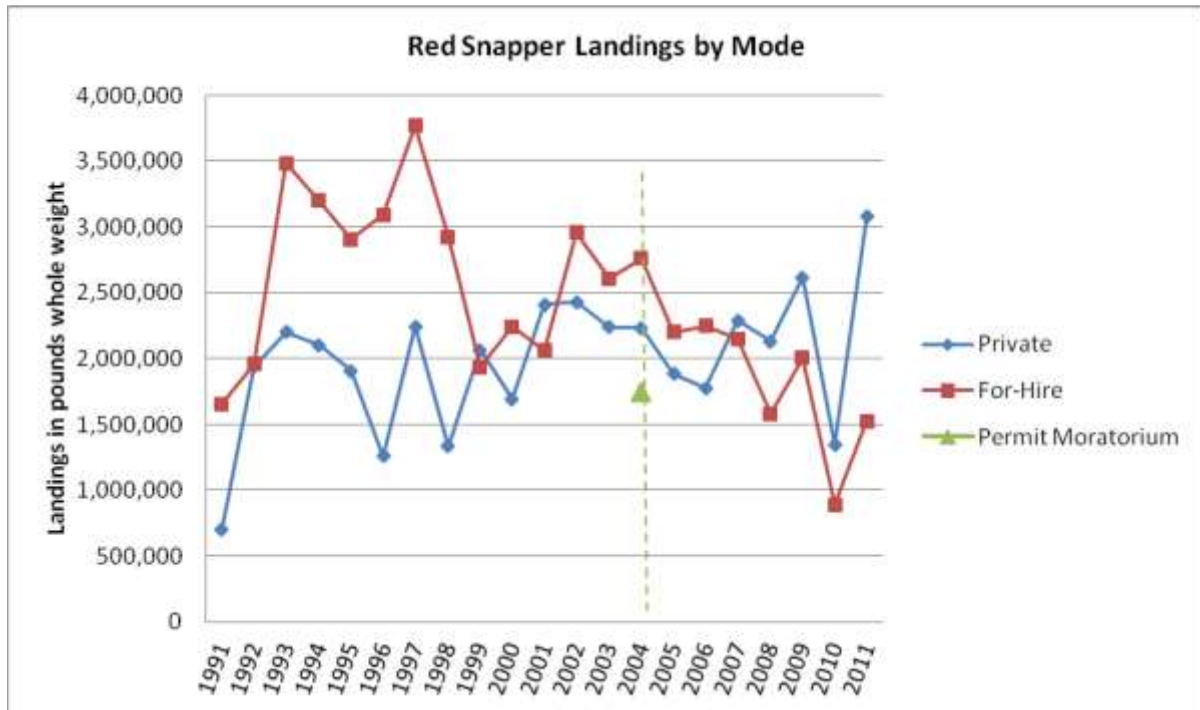


**Figure 3.4.3.** Length of recreational red snapper season in days (red line, right axis) and landings divided by average weight of fish and number of days in the season (blue line, left axis), providing the average number of red snapper landed per day (1996-2012). Source: Southeast Fisheries Science 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 3.4.4). 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.



**Figure 3.4.4.** Red snapper recreational landings by private vessels and for-hire vessels (includes charter boats and headboats). Source: Southeast Fisheries Science Center, recreational ACL dataset (4/2012).

### 3.4.1 Fishing Communities

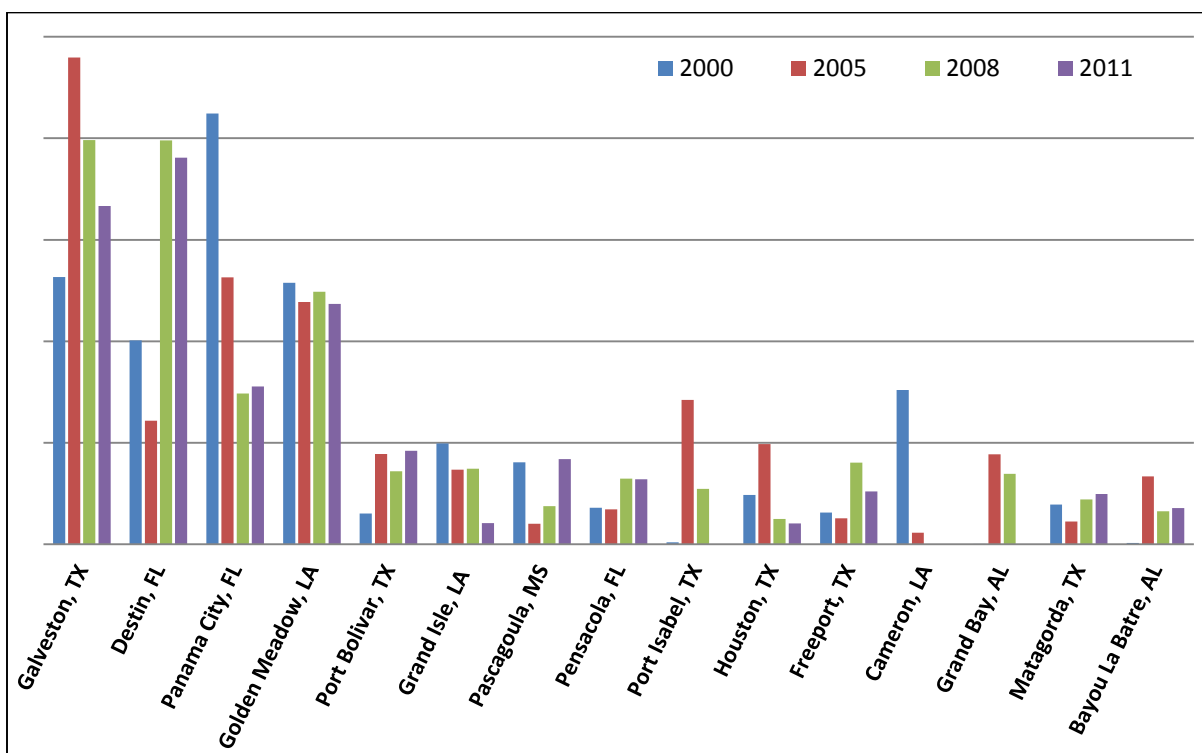
This section provides a description of where recreational and commercial fishing for red snapper occurs. The description is based on the geographical distribution of landings and the relative importance of red snapper for commercial and recreational communities. This spatial approach enables discussion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

#### Commercial Fishing Communities

To identify commercial reliance, a regional quotient (RQ) measure was used. The RQ measures the relative importance of a given species across all communities in the region and represents the proportional distribution of commercial landings of a particular species. This proportional measure does not provide the number of pounds or the value of the catch; data that might be confidential at the community level for many places. The RQ is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities in the region. The measure is a way to quantify the importance of red snapper to communities around the Gulf coast and suggest where impacts from management actions are more likely to be experienced. The data used for the RQ measure were assembled from the accumulated landings system (ALS), which includes commercial landings of

all species from both state and federal waters and is based on dealers' reports. Because of this, the address of a dealer may not be the coastal community where the dealer's facility is located.

Commercial red snapper fishing is prosecuted throughout the Gulf region with the majority of landings occurring in the northern Gulf. Based on the RQ measure, the top 15 commercial red snapper fishing communities are identified in Figure 3.4.1.1. A community's proportion of total landings is not static and changes over time. Thus, the figure provides rankings by RQ value for four years: 2000, 2005, 2008, and 2011. The top three communities in terms of commercial landings are Galveston, Texas; Destin, Florida; and Golden Meadow, Louisiana (Figure 3.4.1.1). While in 2000, Panama City, Florida ranked first for commercial red snapper landings Gulf-wide, the community has since been replaced by Destin, Florida in terms of commercial landings of red snapper.

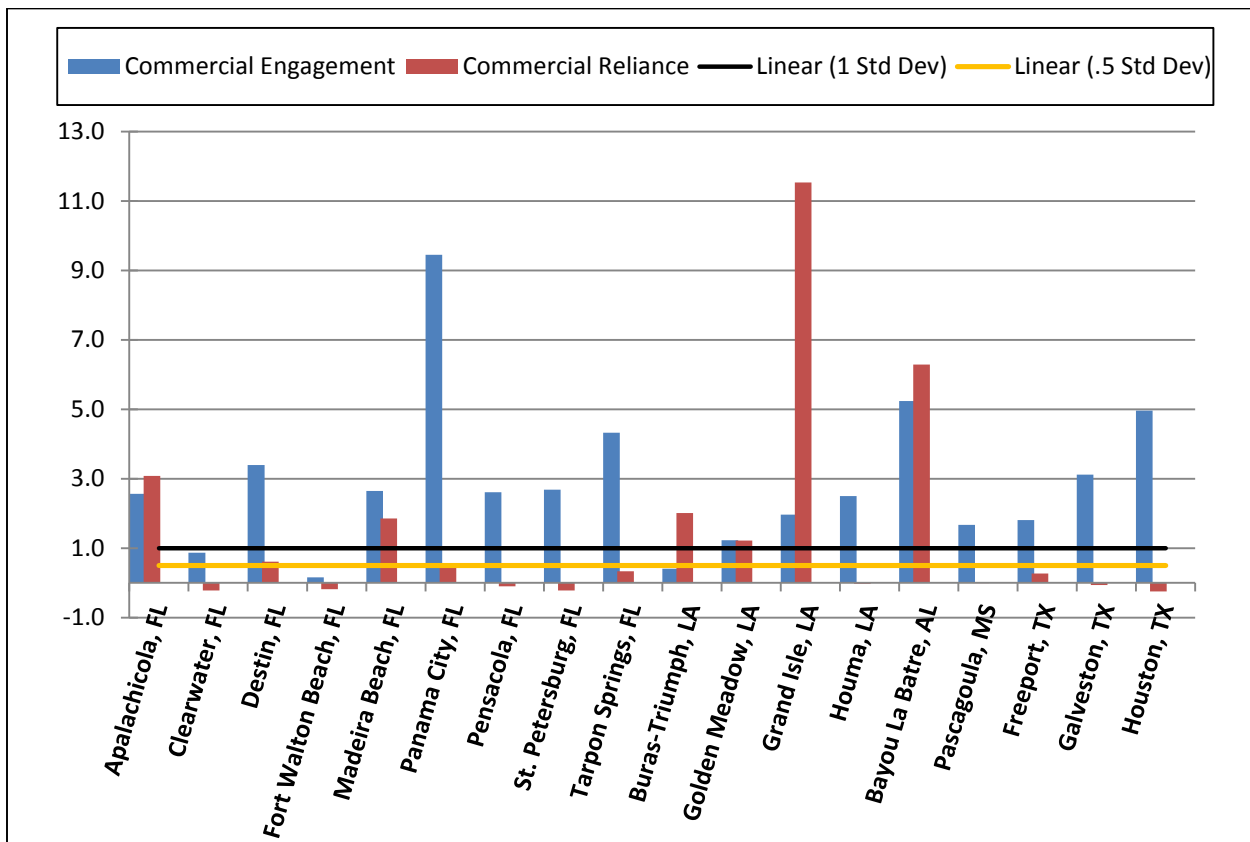


**Figure 3.4.1.1.** Top 15 commercial red snapper fishing communities by RQ value for four years. Source: Southeast Fisheries Science Center, accumulated landings system (2011).

To better understand how Gulf fishing communities are engaged and reliant on fishing, indices were created using secondary data from permit and landings information for the commercial and recreational sectors (Jepson and Colburn 2013; Jacob et al. 2012). Fishing engagement is primarily the absolute numbers of permits, landings, and value. Fishing reliance has many of the same variables as engagement divided by population to give an indication of the per capita impact of this activity.

Using a principal component and single solution factor analysis each community receives a factor score for each index to compare to other communities. With the selected communities

from both sectors, factor scores of both engagement and reliance were plotted onto bar graphs. Factor scores are denoted by colored bars and are standardized, therefore the mean is zero. Two thresholds of one and ½ standard deviation above the mean are plotted onto the graphs to help determine a threshold for significance. Because the factor scores are standardized a score above 1 is also above one standard deviation. Using the thresholds of fishing dependence of ½ and one standard deviation, Figure 3.4.1.2 suggests that several communities are substantially engaged or reliant or both on commercial fishing.



**Figure 3.4.1.2.** Top 18 red snapper fishing communities’ commercial engagement and reliance. Source: Southeast Regional Office, social indicators database (2012).

### 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). More than half of the recreational catch is now landed in Alabama (Table 3.4.1.1). Florida also harvests a sizable amount of the red snapper recreational catch (32.4%, 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.

State	Landings
AL	50.3%
FL (Gulf Coast)	32.4%
LA	6.2%
MS	0.7%
TX	10.5%

Source: SERO LAPP/DM Branch 2011.

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.

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 reef fish charter permits and reef fish charter permits divided by population. This is a crude measure of the reliance upon recreational reef fish 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 Pensacola, Florida; Port Bolivar and Freeport, Texas; and Venice and Grand Isle, Louisiana.

**Table 3.4.1.2.** Average community rank by total number of reef fish charter permits and divided by community population (SERO 2012).

State	Community	Reef Fish charter permits	Permit Rank	Pop	Permit/Pop	Permit/Pop rank	Combined rank
AL	Orange Beach	105	2	5185	0.0203	3	5
LA	Venice	36	7	202	0.1782	1	8
FL	Destin	114	1	12307	0.0093	10	11
AL	Dauphin Island	19	12	1375	0.0138	5	17
TX	Port Aransas	33	9	3444	0.0096	9	18
LA	Grand Isle	14	17	597	0.0235	2	19
TX	Freeport	40	5	12183	0.0033	15	20
TX	Port O'Connor	15	15	1253	0.0120	7	22
FL	Panama City	60	3	36795	0.0016	20	23
FL	Steinhatchee	13	19	1047	0.0124	6	25
FL	Pensacola	43	4	52903	0.0008	22	26
FL	Panama City Beach	32	10	11364	0.0028	16	26
FL	Apalachicola	17	14	2357	0.0072	12	26
FL	Naples	35	8	20405	0.0017	19	27
LA	Chauvin	15	15	3220	0.0047	13	28
TX	Galveston	38	6	49990	0.0008	23	29
FL	Cedar Key	8	27	463	0.0173	4	31
TX	Matagorda	8	27	710	0.0113	8	35
MS	Biloxi	26	11	43921	0.0006	25	36
FL	Mexico Beach	9	25	1181	0.0076	11	36
FL	Carrabelle	10	23	2612	0.0038	14	37
FL	Sarasota	18	13	52877	0.0003	26	39
FL	Madeira Beach	11	21	4335	0.0025	18	39
FL	Port St Joe	10	23	3560	0.0028	17	40
FL	Tarpon Springs	14	17	23071	0.0006	24	41
FL	St Petersburg	12	20	245715	0.0000	27	47
FL	Treasure Island	8	27	6847	0.0012	21	48
TX	Houston	11	21	2068026	0.0000	29	50
TX	Corpus Christi	9	26	299324	0.0000	28	54

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 (<http://www.fishdestin.com/fishinggallery.html>; and <http://www.jubileefishing.com/>). Panama City 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,”<sup>9</sup> 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<sup>10</sup>. All three Alabama communities are considered primarily involved in fishing as noted in their fishing communities’ profiles (Impact Assessment, Inc. 2006). Red snapper fishing is featured at Pascagoula charter websites<sup>11</sup> and the community 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.<sup>12</sup> 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.

The following figure was produced from the indicator database as described above for the commercial sector. Figure 3.4.1.4 identifies recreational communities engaged and reliant upon fishing in general. Using thresholds of fishing dependence of ½ standard deviation and one standard deviation, Figure 3.4.1.4 suggests that several communities are substantially engaged in recreational fishing.

---

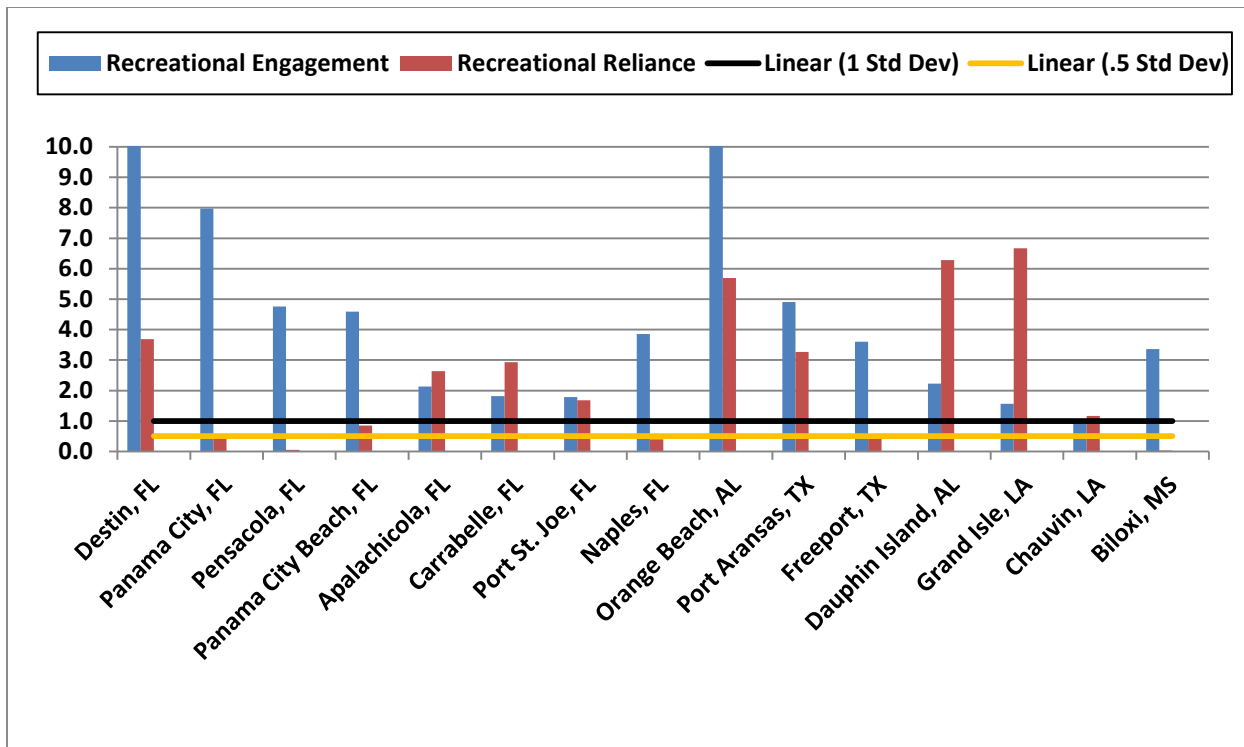
<sup>9</sup> [http://www.cityoforangebeach.com/pages\\_2007/pdfs/events/2009/2009\\_Snapper\\_Tournament.pdf](http://www.cityoforangebeach.com/pages_2007/pdfs/events/2009/2009_Snapper_Tournament.pdf)

<sup>10</sup> <http://gulfinfo.com/fishing.htm>

<sup>11</sup> <http://www.jkocharters.com/1938863.html>

<sup>12</sup> <http://www.texassaltwaterfishingguide.com/> or <http://www.matagordabay.com/>





**Figure 3.4.1.4.** Top 16 recreational fishing communities’ engagement and reliance. Source: Southeast Regional Office, social indicators database (2012).

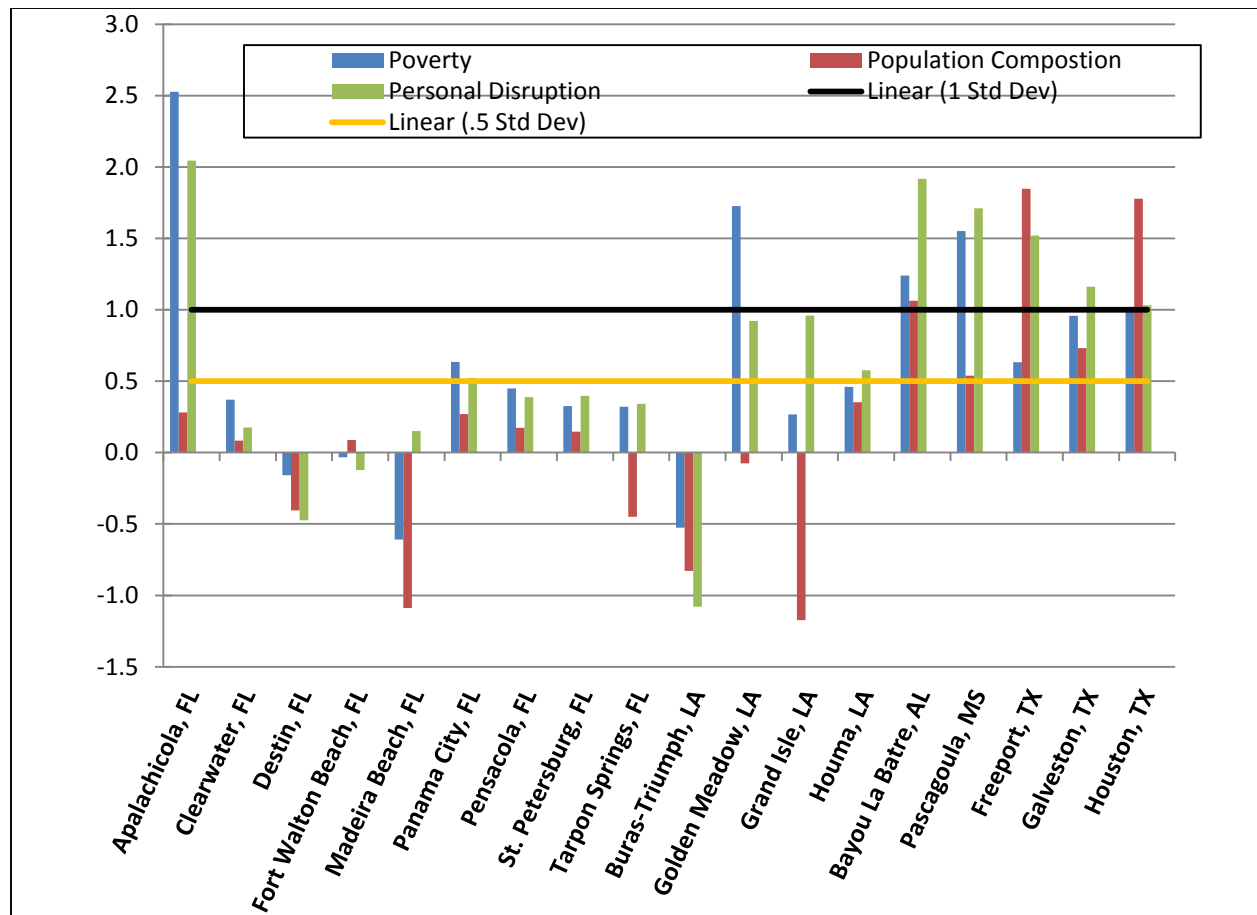
### 3.4.2 Environmental Justice Considerations

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).

Commercial red snapper fishermen and associated businesses and communities along the coast are likely to be impacted by this proposed action. However, information on race, ethnicity, and income status for groups at the different participation levels and roles is not available. To identify potential areas of EJ concern, this analysis uses a suite of indices created to examine the social vulnerability of coastal communities (Jepson and Colburn 2013). The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community’s vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the

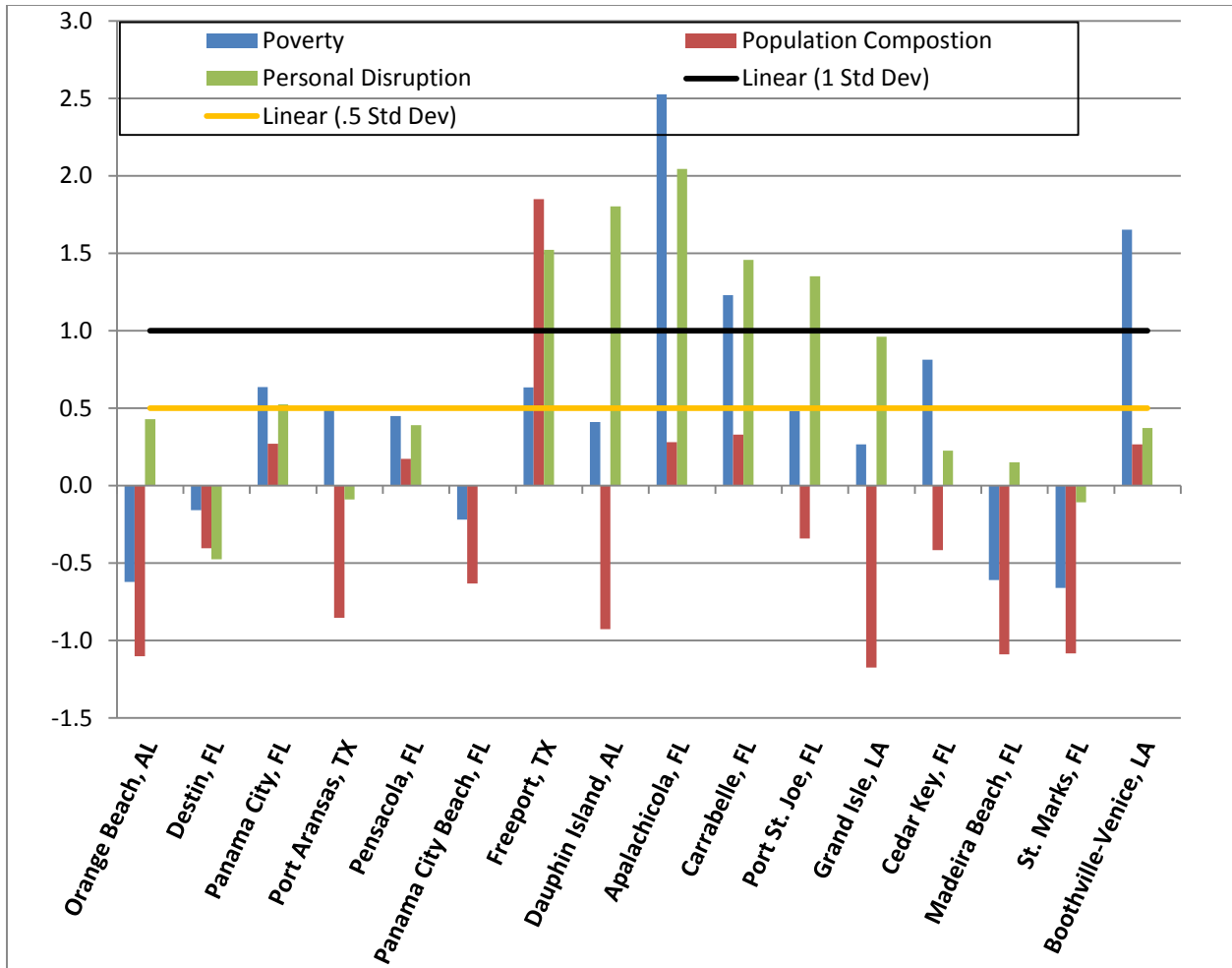
age of five, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of populations experiencing vulnerabilities. Communities that exceed the threshold for one or more of the indices would be expected to exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figure 3.4.2.1 shows how the commercial communities most engaged and reliant on red snapper fishing (Figure 3.4.1.2) score for the three social vulnerability indices. The communities of Apalachicola and Panama City, Florida; Golden Meadow, Grand Isle, and Houma, Louisiana; Bayou La Batre, Alabama; Pascagoula, Mississippi; and Freeport, Galveston, and Houston, Texas exceed the threshold of ½ standard deviation above the mean for at least one of the social vulnerability indices. It would be expected that these communities may exhibit vulnerabilities to social or economic disruption because of regulatory change, and would be the communities most likely subject to EJ concerns. Those communities that exhibit several index scores exceeding the threshold would be the most vulnerable. These include Apalachicola, Florida; Golden Meadow, Louisiana; Bayou La Batre, Alabama; Pascagoula, Mississippi; and Freeport, Galveston, and Houston, Texas. Five communities exceed the threshold of ½ standard deviation for all three indices (Bayou La Batre, Alabama; Pascagoula, Mississippi; and Freeport, Galveston, and Houston, Texas). Social effects resulting from action taken in this plan amendment are likely to be greatest in these communities.



**Figure 3.4.2.1.** Social vulnerability indices for red snapper commercial fishing communities  
Source: Southeast Regional Office, social indicators database (2012).

Recreational red snapper fishermen and associated businesses and communities along the coast are expected to benefit from this proposed action. Thus, no EJ concerns are expected for participants in the recreational sector. Figure 3.4.2.2 provides the scores of the social vulnerability indices for the top recreational fishing communities identified in Figure 3.4.1.4. Communities that exceed the threshold for one or more indices would be expected to exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change, and greater vulnerability is suggested by exceeding the thresholds for multiple indices. However, regulatory change that would impact recreational participants in these communities is not expected.



**Figure 3.4.2.2.** Social vulnerability indices for recreational fishing communities.

Source: Southeast Regional Office, social indicators database (2012).

## 3.5 Description of the Economic Environment

### 3.5.1 Commercial Sector

#### 3.5.1.1 Vessel Activity

A description of the red snapper IFQ program is contained in GMFMC (2013b). This description is incorporated herein by reference. Tables 3.5.1.1.1 and 3.5.1.1.2 contain summary vessel and trip counts, landings, and revenue information from vessels landing at least one pound of red snapper from 2008 through 2012. Data from years prior to the implementation of the IFQ program are not representative of current conditions.

The tables contain vessel counts from the NMFS Southeast Fisheries Science Center (SEFSC) logbook (logbook) data (vessel count, trips, and landings) and the NMFS Southeast Regional Office (SERO) Limited Access Privilege Program (LAPP) data (vessel count). Dockside values were generated using landings information from logbook data and price information from the SEFSC ALS data. The logbook and LAPP data programs serve different purposes and use different data collection methods. Consequently, comparative analysis of data from these programs may produce different results, as evidenced by the vessel counts provided in Table 3.5.1.1.1. However, this assessment utilizes logbook data because the logbook program collects data on all species harvested on trips on which red snapper are harvested, as well as harvests by these vessels on trips without red snapper.

On average, 342 vessels per year landed red snapper (Table 3.5.1.1.1). These vessels averaged 2,871 trips per year on which red snapper was landed and 2,125 trips without red snapper (Table 3.5.1.1.1). The average annual total dockside revenue (2012 dollars) was approximately \$10.29 million from red snapper, approximately \$12.43 million from other species co-harvested with red snapper (on the same trip), and approximately \$10.42 million from other species harvested on trips on which no red snapper were harvested (Table 3.5.1.1.2). Total average annual revenues were approximately \$33.14 million, or approximately \$97,000 per vessel (Table 3.5.1.1.2).

**Table 3.5.1.1.1.** Summary of vessel counts, trips, and logbook landings (pounds gutted weight (lbs gw)) or vessels landing at least one pound of red snapper, 2008-2012.

Year	Number of Vessels, Logbook Data	Number of Vessels, LAPPs Data	Number of Trips that Caught Red Snapper, Logbook Data	Red Snapper Landings (lbs gw)*	“Other Species” Landings Jointly Caught with Red Snapper (lbs gw)	Number of Trips that Only Landed “Other Species”	“Other Species” Landings on Trips without Red Snapper (lbs gw)
2008	308	297	2,274	2,163,312	3,755,670	2,552	4,085,616
2009	296	289	2,329	2,163,632	3,753,024	2,425	3,964,434
2010	376	384	2,970	2,939,254	3,955,422	1,717	2,807,661
2011	368	362	3,389	3,073,697	5,467,639	1,959	4,160,800
2012	363	371	3,391	3,446,987	5,392,126	1,971	4,210,523
<b>Average</b>	342	341	2,871	2,757,377	4,464,776	2,125	3,845,807

Source: NMFS SEFSC Logbook and NMFS SERO LAPPs data.

\*Red snapper harvest totals from logbook records for 2008-2012 ranged from 3.4% (2009) to 5.5% (2011) lower than IFQ reported landings for these years.

**Table 3.5.1.1.2.** Summary of vessel counts and revenue (thousand 2012 dollars) for vessels landing at least one pound of red snapper, 2008-2012.

Year	Number of Vessels, Logbook Data	Dockside Revenue from Red Snapper	Dockside Revenue from “Other Species” Jointly Caught with Red Snapper	Dockside Revenue from “Other Species” Caught on Trips without Red Snapper	Total Dockside Revenue	Average Total Dockside Revenue per Vessel
2008	308	\$8,504	\$10,101	\$10,796	\$29,402	\$95
2009	296	\$8,088	\$9,208	\$9,716	\$27,012	\$91
2010	376	\$10,563	\$10,903	\$7,427	\$28,893	\$77
2011	368	\$11,139	\$15,689	\$11,594	\$38,422	\$104
2012	363	\$13,145	\$16,239	\$12,585	\$41,969	\$116
<b>Average</b>	342	\$10,288	\$12,428	\$10,424	\$33,140	\$97

Source: NMFS SEFSC Logbook and ALS data.

Commercial fishing for red snapper in 2010 appeared to be unaffected, from a landings and revenue perspective, by conditions associated with the Deepwater Horizon MC252 oil spill. As a result, 2010 data were included in the information provided in Tables 3.5.1.1.1 and 3.5.1.1.2. As discussed below, this was not the case for the recreational sector.

### 3.5.1.2 Commercial Sector Business Activity

Estimates of the business activity (economic impacts) in the U.S. associated with the Gulf red snapper commercial harvests were derived using the model developed for and applied in NMFS (2011b) and are provided in Table 3.5.1.2.1. Business activity for the commercial sector is characterized in the form of full-time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting. The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors).

**Table 3.5.1.2.1.** Average annual business activity associated with the harvests of vessels that harvest red snapper, 2008-2012.

<b>Species</b>	<b>Average Annual Dockside Revenue (thousands)<sup>1</sup></b>	<b>Total Jobs</b>	<b>Harvester Jobs</b>	<b>Output (Sales) Impacts (thousands)<sup>1</sup></b>	<b>Income Impacts (thousands)<sup>1</sup></b>
Red snapper	\$10,288	1,818	237	\$135,456	\$57,730
All species <sup>2</sup>	\$33,140	5,857	764	\$436,332	\$185,961

<sup>1</sup>2012 dollars.

<sup>2</sup>Includes dockside revenues and economic activity associated with the average annual harvests of all species, including red snapper, harvested by vessels that harvested red snapper.

In addition to red snapper harvests, as discussed above, vessels that harvested red snapper also harvested other species on trips where red snapper were harvested. These vessels also took trips during the year where only species other than red snapper were caught. All revenues from all species on all these trips contributed towards making these vessels economically viable and contribute to the economic activity associated with these vessels. The average annual total ex-vessel revenues from all species (including red snapper) harvested during this period (2008-2012) by vessels that harvested red snapper was approximately \$33.14 million (2012 dollars). In terms of business activity, these revenues are estimated to support 5,857 FTE jobs (764 in the harvesting sector) and are associated with approximately \$436.33 million in output (sales) impacts and approximately \$185.96 million in income impacts.

### 3.5.1.3 Dealers

Commercial vessels landing reef fish, including red snapper, can only sell their catch to federally permitted fish dealers. On December 20, 2013, 160 dealers possessed a reef fish dealer permit and the IFQ endorsement necessary to receive Gulf LAPP species (SERO Permits and LAPP

data). Because there are no income or sales requirements to acquire a federal dealer permit or IFQ endorsement, the total number of dealers can vary over the course of the year and from year to year. In addition to red snapper, grouper and tilefish are Gulf LAPP species and not all dealers authorized to receive Gulf LAPP species purchase red snapper. The following results are based on assessment of ALS data. In 2011, 88 dealers purchased red snapper. Sixty-six of these dealers were in Florida, eight in Texas, six in Louisiana, and four each in Alabama and Mississippi. Total red snapper purchased by these dealers in 2011 had an ex-vessel value of approximately \$11.42 million (2011 dollars), or approximately 10.6% of the total revenues, approximately \$108.21 million (2011 dollars), from all marine resource purchases by these dealers. Dependency on red snapper sales varies by dealer, with the percentage of red snapper purchases (value, not pounds) to total purchases varying from less than 1% to 100%. Red snapper purchases in 2011 comprised 10% or more of total purchases for 40 of these dealers, between 5% and 10% for 13 dealers, and 5% or less for 35 dealers. Average red snapper dependency (measured as the percentage of red snapper value to total value of all purchases) was highest for Texas and Mississippi dealers, approximately 20.83% in both states, followed by Florida (approximately 5.73%), Louisiana (approximately 4.78%), and Alabama (approximately 2.33%).

#### **3.5.1.4 Imports**

Information on the imports of all snapper and grouper species, either fresh or frozen, are available at: [http://www.st.nmfs.noaa.gov/st1/trade/cumulative\\_data/TradeDataProduct.html](http://www.st.nmfs.noaa.gov/st1/trade/cumulative_data/TradeDataProduct.html). Information on the imports of individual snapper or grouper species is not available. In 2012, imports of all snapper and grouper species (fresh and frozen) were approximately 44.51 million pounds valued at approximately \$128.20 million (2012 dollars). These amounts are contrasted with the domestic harvest of all snapper and grouper in the U.S. in 2012 of approximately 19.60 million pounds valued at approximately \$60.53 million (data available at: [http://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus12/02\\_commercial2012.pdf](http://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus12/02_commercial2012.pdf)). Although the levels of domestic production and imports are not totally comparable for several reasons, including considerations of different product form such as fresh versus frozen, and possible product mislabeling, the difference in the magnitude of imports relative to amount of domestic harvest is indicative of the dominance of imports in the domestic market.

### **3.5.2 Recreational Sector**

#### **3.5.2.1 Angler Effort**

Recreational effort derived from the 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 harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures, but the three measures of effort listed above are used in this assessment. Because of the Deepwater Horizon MC252 oil spill, 2010 was not a typical year for recreational fishing due to the extensive closures and associated decline in fishing in much of the Gulf. For information on the Deepwater Horizon MC252 oil spill and associated closures, see: [http://sero.nmfs.noaa.gov/deepwater\\_horizon\\_oil\\_spill.htm](http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm). Estimates of the average annual red snapper effort (in terms of individual angler trips) for the shore, charter, and private/rental boat modes in the Gulf for 2008-2012 with and without 2010 data are provided in Table 3.5.2.1.1. The average annual red snapper target effort for 2008-2012 was approximately 8% less than the average for this period excluding 2010. For red snapper catch effort, the difference was approximately 7%. This difference indicates the importance of the effort data for 2010 when assessing the socio-economic implications of the actions in this amendment.

Table 3.5.2.1.2 contains estimates for the average annual red snapper recreational effort for 2008-2012 by mode (shore, charter, and private/rental boat only). Although the private/rental mode accounted for a greater portion of angler trips (about 83% to 84% of target trips and 75% to 76% of catch trips), percentage-wise the charter mode was affected by the 2010 oil spill incident more than the private/rental mode. The average annual red snapper target effort for 2008-2012 was less than the average for this period excluding 2010 by approximately 13% for the charter mode and 7% for the private mode. For red snapper catch effort, the difference was approximately 11% for the charter mode and 6% for the private mode.

Tables 3.5.2.1.3 and 3.5.2.1.4 provide some details on the 2008-2012 average annual recreational effort by state and mode. Percentage-wise, recreational effort for Alabama and Louisiana was affected by the 2010 oil spill incident more than that for Florida. This holds true for both the charter (target and catch effort) and private modes (target and catch effort).



**Table 3.5.2.1.1.** Annual red snapper recreational effort, by state, 2008-2012.

	<b>Alabama</b>	<b>West Florida</b>	<b>Louisiana</b>	<b>Mississippi</b>	<b>Texas</b>	<b>Total</b>
	<b>Target Trips</b>					
<b>2008</b>	39,325	160,466	31,864	8,877	*	240,532
<b>2009</b>	75,854	222,035	42,112	7,622	*	347,623
<b>2010</b>	23,548	146,738	3,338	5,659	*	179,283
<b>2011</b>	136,704	142,663	21,324	16,790	*	317,481
<b>2012</b>	90,278	161,247	50,751	13,589	*	315,865
<b>Avg (full)</b>	73,142	166,630	29,878	10,507	*	280,157
<b>Avg (w/o 2010)</b>	85,540	171,603	36,513	11,720	*	305,375
	<b>Catch Trips</b>					
<b>2008</b>	80,042	407,477	55,393	10,362	*	553,274
<b>2009</b>	98,005	399,309	60,119	13,035	*	570,468
<b>2010</b>	56,170	266,485	5,635	7,225	*	335,515
<b>2011</b>	134,346	261,454	32,451	6,390	*	434,641
<b>2012</b>	95,389	332,921	49,938	2,410	*	480,658
<b>Avg (full)</b>	92,790	333,529	40,707	7,884	*	474,911
<b>Avg (w/o 2010)</b>	101,946	350,290	49,475	8,049	*	509,760

\*Unavailable

Source: NOAA Fisheries Office of Science and Technology website,  
<http://www.st.nmfs.noaa.gov/recreational-fisheries/index#>

**Table 3.5.2.1.2.** Annual red snapper recreational effort, by fishing mode, 2008-2012.

	<b>Charter</b>	<b>Private/ Rental</b>	<b>Shore</b>	<b>Total</b>
<b>Target Trips</b>				
<b>2008</b>	51,766	188,766	0	240,532
<b>2009</b>	53,797	293,555	271	347,623
<b>2010</b>	19,463	159,296	524	179,283
<b>2011</b>	50,076	266,597	808	317,481
<b>2012</b>	48,540	265,686	1,639	315,865
<b>Avg (full)</b>	44,728	234,780	811	280,157
<b>Avg (w/o 2010)</b>	51,045	253,651	680	305,375
<b>Catch Trips</b>				
<b>2008</b>	145,193	403,047	5,034	553,274
<b>2009</b>	133,938	435,245	1,285	570,468
<b>2010</b>	59,208	273,875	2,432	335,515
<b>2011</b>	121,628	313,013	0	434,641
<b>2012</b>	109,450	370,637	571	480,658
<b>Avg (full)</b>	113,883	359,163	2,331	474,911
<b>Avg (w/o 2010)</b>	127,552	380,486	1,723	509,760

\*Unavailable

Source: NOAA Fisheries Office of Science and Technology website,  
<http://www.st.nmfs.noaa.gov/recreational-fisheries/index#>

**Table 3.5.2.1.3.** Average (2008-2012) annual red snapper recreational effort, by state and mode.

	<b>Charter</b>	<b>Private/ Rental</b>	<b>Shore</b>	<b>Total</b>
<b>Target Trips</b>				
<b>Alabama</b>	13,526	59,072	544	73,142
<b>West Florida</b>	26,183	140,342	105	166,630
<b>Louisiana</b>	4,963	24,915	0	29,878
<b>Mississippi</b>	56	10,451	0	10,507
<b>Texas</b>	*	*	*	*
<b>Catch Trips</b>				
<b>Alabama</b>	24,169	68,278	343	92,790
<b>West Florida</b>	84,048	247,960	1,521	333,529
<b>Louisiana</b>	5,496	35,211	0	40,707
<b>Mississippi</b>	170	7,714	0	7,884
<b>Texas</b>	*	*	*	*

\*Unavailable

Source: NOAA Fisheries Office of Science and Technology website:  
<http://www.st.nmfs.noaa.gov/recreational-fisheries/index#>

**Table 3.5.2.1.4.** Average (2008-2012) annual red snapper recreational effort, by state and mode, excluding 2010.

	<b>Charter</b>	<b>Private/ Rental</b>	<b>Shore</b>	<b>Total</b>
	<b>Target Trips</b>			
<b>Alabama</b>	16,211	68,650	680	85,540
<b>West Florida</b>	28,612	142,991	0	171,603
<b>Louisiana</b>	6,204	30,309	0	36,513
<b>Mississippi</b>	19	11,701	0	11,720
<b>Texas</b>	*	*	*	*
	<b>Catch Trips</b>			
<b>Alabama</b>	27,388	74,236	321	101,946
<b>West Florida</b>	93,198	255,691	1,401	350,290
<b>Louisiana</b>	6,819	42,657	0	49,475
<b>Mississippi</b>	147	7,902	0	8,049
<b>Texas</b>	*	*	*	*

\*Unavailable

Source: NOAA Fisheries Office of Science and Technology website,  
<http://www.st.nmfs.noaa.gov/recreational-fisheries/index#>

Headboat data do not support the estimation of target or catch effort because target intent is not collected and the harvest data (the data reflect only harvest information and not total catch) are collected on a vessel basis and not by individual angler. Table 3.5.2.1.5 contains estimates of the number of headboat angler days for all Gulf States for 2008-2012.

**Table 3.5.2.1.5.** Headboat angler days.

<b>Year</b>	<b>W Florida/Alabama</b>	<b>Louisiana</b>	<b>Mississippi</b>	<b>Texas</b>	<b>Total</b>
2008	130,176	2,945	0	41,188	174,309
2009	142,438	3,268	0	50,737	196,443
2010	111,018	217	*	47,154	158,389
2011	157,025	1,886	1,771	47,284	207,966
2012	161,973	1,839	1,840	51,771	217,423
Average all	140,526	2,031	903	47,627	190,906
Average w/o 2010	147,903	2,485	903	47,745	199,035

\*Confidential. \*\*Because the average totals are used to represent expectations of future activity, the 2011 and 2012 numbers of trips are provided as best representative of the emergent headboat fishery in Mississippi.

Source: NMFS Southeast Region Headboat Survey (HBS).

### 3.5.2.2 Permits

The for-hire sector is comprised of charter boats and headboats (party boats). Although charter boats 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 sector currently operates under a limited access system. On December 20, 2013, there were 1,190 valid (non-expired) or renewable Gulf of Mexico 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 resultant permit itself does not identify the permitted vessel as either a headboat or a charter boat, operation as either a headboat or charter boat is not restricted by the permitting regulations, and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the NMFS Southeast Region Headboat Survey (HBS). Participation in the HBS is based on determination by the SEFSC that the vessel primarily operates as a headboat. Seventy vessels were registered in the SHRS as of March 1, 2013 (K. Brennen, NMFS SEFSC, pers. comm.).

Information on Gulf charter boat and headboat operating characteristics, including average fees and net operating revenues, is included in Savolainen et al. (2012), is incorporated herein by reference, and is summarized below.

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 amendment. (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 amendment.)

### **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 mean value of consumer surplus per two red snapper (current bag limit) kept on a trip ranges from \$142.11 to \$154.16 in 2012 dollars (Appendix G: Agar and Carter 2013). On a per pound basis, the estimated mean consumer surplus ranges from \$11.21 to \$12.16 per pound in 2012 dollars.

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 is \$164.88 per target charter angler trip and \$54.59 (2012 dollars) per target headboat angler trip

regardless of species targeted or catch success (C. Liese, NMFS SEFSC, pers. comm.). Estimates of net operating revenue by target species are not available.

#### **3.5.2.4 Recreational Sector Business Activity**

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 (2011a). Estimates of these coefficients for target or catch behavior for individual species are not available. Estimates of the average expenditures by recreational anglers are also provided in NMFS (2011a) and are incorporated herein by reference.

Business activity for the recreational sector is characterized in the form of fulltime equivalent (FTE) jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income impacts (commercial sector) and value-added impacts (recreational sector) are not equivalent, though similarity in the magnitude of multipliers generated and used for the two metrics may result in roughly equivalent values. Similar to income impacts, value-added impacts should not be added to output (sales) impacts because this would result in double counting.

Estimates of the average red snapper effort (2008-2009 and 2011-2012) and associated business activity (2012 dollars) are provided in Table 3.5.2.4.1. Red snapper target effort (trips) was selected as the measure of red snapper effort. More individual angler trips catch red snapper than target red snapper, however, as shown in Tables 3.5.2.1.1 and 3.5.2.1.2. Estimates of the business activity associated with red snapper catch trips can be calculated using the ratio of catch trips to target trips because the available estimates of the average impacts per trip are not differentiated by trip intent or catch success. For example, if the estimated number of catch trips is three times the number of target trips for a particular state and mode, the estimate of the business activity associated with these catch trips would equal three times the estimated impacts of target trips.

The estimates of the business activity associated with red snapper recreational trips are only available at the state level. Addition of the state-level estimates to produce a regional or national total will underestimate the actual amount of total business activity because summing the state estimates will not capture business activity that leaks outside the individual states. A state estimate only reflects activities that occur within that state and not related activity that occurs in another state. For example, if a good is produced in Alabama but sold in Florida, the measure of business activity in Florida associated with the its sale in Florida does not include the production process in Alabama. Assessment of business activity at the national (or regional) level would capture activity in both states and include all activity except that which leaks into other nations.

It is noted that these estimates do not, and should not be expected to, represent the total business activity associated with a specific recreational harvest sector in a given state or in total. For example, these results do not state, or should be interpreted to imply, that there are only 154 jobs

associated with the charter sector in Alabama. Instead, as previously stated, these results relate only to the business activity associated with target trips for red snapper. Because of the seasonal nature of red snapper fishing, few, if any businesses or jobs, would be expected to be devoted solely to red snapper fishing. The existence of these businesses and jobs, in total, is supported by the fishing for, and expenditures on, the variety of marine species available to anglers throughout the year.

**Table 3.5.2.4.1.** Summary of red snapper target trips (2008-2009 and 2011-2012 average) and associated business activity (thousand 2012 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas
<b>Shore Mode</b>					
Target trips	680	0	0	0	*
Output impact	\$53,049	\$0	\$0	\$0	*
Value added impact	\$28,538	\$0	\$0	\$0	*
Jobs	1	0	0	0	*
<b>Private/Rental Mode</b>					
Target trips	68,650	142,991	30,309	11,701	*
Output impact	\$4,259,249	\$6,922,865	\$2,635,702	\$355,841	*
Value added impact	\$2,331,842	\$4,116,595	\$1,296,330	\$170,544	*
Jobs	42	65	23	3	*
<b>Charter Mode</b>					
Target trips	16,211	28,612	6,204	19	*
Output impact	\$9,000,468	\$9,580,658	\$3,149,447	\$6,295	*
Value added impact	\$4,954,456	\$5,680,344	\$1,788,250	\$3,547	*
Jobs	113	92	31	0	*
<b>All Modes</b>					
Target trips	85,541	171,603	36,513	11,720	*
Output impact	\$13,312,766	\$16,503,524	\$5,785,149	\$362,136	*
Value added Impact	\$7,314,836	\$9,796,939	\$3,084,581	\$174,091	*
Jobs	155	157	54	3	*

\*Because target information is unavailable, associated business activity cannot be calculated.

Source: Effort data from NOAA Fisheries Science and Technology website, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Estimates of the business activity (impacts) associated with headboat red snapper effort are not available. The headboat sector in the Southeast is not covered in the MRFSS/MRIP, so estimation of the appropriate impact coefficients for the headboat sector has not been conducted. While appropriate impact coefficients are available for the charter sector, potential differences in certain factors, such as the for-hire fee, rates of tourist versus local participation, and expenditure

patterns, may result in significant differences in the business impacts of the headboat sector relative to the charter sector.

## 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 Fishery Conservation and Management Act (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](http://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 2004c).



# CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

## 4.1 Action 1 – Allocation of Red Snapper

### 4.1.1 Direct and Indirect Effects on the Physical Environment

Sections 3.1, 3.2, and GMFMC (2004a, 2004c, and 2007) describe the physical environment and habitat used by red snapper. In summary, adult red snapper are found around low relief bottom structure, hard bottom, and artificial structures; 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 of Mexico (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). 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 common fishing gear on the physical environment.

Handline gear (bandit gear, rod-and-reel, and electric reels) used in 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). Handline gear is less likely to contact the bottom than longlines, but still has the potential to snag and entangle bottom structures and cause tear-offs or abrasions (Barnette 2001). In using bandit gear, a weighted line is lowered to the bottom, and then the lead is raised slightly off the bottom (Siebenaler and Brady 1952). The gear is in direct contact with the bottom for only a short period of time. Barnette (2001) suggests that physical impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers). Commercial or recreational fishing with rod-and-reel also lays gear on the bottom. The terminal part of the gear is either lifted off the bottom like fishing with bandit gear, or left contacting the bottom. Sometimes the fishing line can become entangled on coral and hard bottom outcroppings. The subsequent algal growth can foul and eventually kill the underlying coral (Barnette 2001). Researchers conducting studies in the restricted fishing area at Madison-Swanson reported seeing lost fishing line on the bottom, much of which appeared to be fairly old and covered with 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. Hamilton (2000) points out that “favorite” fishing areas such as reefs are targeted and revisited multiple times, particularly with the advent of global positioning technology. The cumulative effects of repeated anchoring could damage the hard bottom areas where fishing for red snapper occurs.

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

The action would have no direct effect on the physical environment. This action could indirectly affect the physical environment if changes in allocation result in an increase or decrease in the amount of fishing gear used to harvest the respective commercial and recreational quotas. However, any effects under **Alternatives 2-7** would likely be minimal. One reason is the overall red snapper combined quota, currently 11.0 million pounds (mp), would remain the same. Thus any beneficial effects from reducing the commercial quota would likely be offset by adverse effects from increasing the recreational quota. Additionally, changes in overall fishing effort is likely to be small because fishermen target other species besides red snapper. Thus, for example, an angler who could schedule additional red snapper fishing trips under an alternative that increases the recreational quota (more red snapper fishing days), could still take those fishing trips under a smaller quota. The fishing trips would target some other species besides red snapper (e.g., gag). Conversely, a commercial fisherman who might not take a trip targeting red snapper because of less IFQ allocation based on a lower commercial quota, might schedule another trip targeting some other species. An example would be a trip targeting vermilion snapper, which is not managed under an IFQ program.

The no action (**Alternative 1**) would continue the current allocation. **Alternatives 2-7** would reduce the commercial red snapper allocation and increase the recreational red snapper allocation. Assuming that commercial vessels in general are more efficient at catching red snapper due to vessel type, experience, and equipment, then a likely result of having greater recreational allocation could be an increase in overall red snapper effort as a result of lower recreational efficiency. Thus, **Alternative 4** that increases the recreational allocation the most (by 10% totaling 59%), would have the greatest indirect effect on the physical environment compared to **Alternative 1**, no action (49%). Moving this logic forward, then **Alternative 6**

(58%) would have the next greatest effect, followed by **Alternative 3** (54%), **Preferred Alternative 5** (53%), **Alternative 2** (52%), and **Alternative 7** (51.4%) when compared to **Alternative 1**.

#### **4.1.2 Direct and Indirect Effects on the Biological Environment**

The action in this amendment is not expected to have any direct effects on the biological environment because the Council is not considering changes to the total quota. The SSC recommends the acceptable biological catch, the management metric that the Council cannot exceed, therefore, any biological effects from these alternatives are expected to be indirect. Indirect effects on the biological environment could occur if there are significant changes in the total number of red snapper killed (landed or discarded dead) by either sector, or any changes to the frequency or magnitude of any quota overages due to modifications to the red snapper allocation. Gear types used by the commercial and recreational sectors and their expected effects are discussed in Sections 3.1 and 4.1.1 of this document.

The most recent red snapper stock assessment (SEDAR 31 2013) estimated dead discard rates separately for each sector. Based on the commercial observer program, dead discard rate estimates were based on average depths, gear type (handline or longline), region (eastern or western Gulf), and season (open or closed). The assessment defined open season discard rates as those occurring on commercial fishing trips with IFQ allocation, while discards from trips without IFQ allocation were considered closed season dead discard rates. 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 discard data from the iSnapper program and reflected fishing depths, in general, reported by recreational anglers (SEDAR 31 2013). The stock assessment also estimated discard mortality rates before and after the implementation of the circle hook and venting tool requirement in 2008 for both sectors (GMFMC 2007). In August 2013, the Council decided to remove the venting tool requirement due to questions of its efficacy (GMFMC 2013c).

For purposes of comparing these alternatives, only the discard mortality rates estimates by sector, region (east and west), and fish venting are cited and discussed from Tables 5.1 and 5.2 in SEDAR 31 (2013). Regardless of whether the recreational red snapper season is open or closed, the recreational sector reported fishing at shallower depths and typically used hook and line gear that results in lower rates of dead discards (Table 4.1.2.1). The commercial sector is estimated to have higher estimates of dead discard rates than the recreational sector due to gear types and depth fished (GMFMC 2007; SEDAR 7 2005; SEDAR 31 2013). This is especially true in the western Gulf when commercial fishers did not possess IFQ allocation (closed season).

Because **Alternatives 2** through **7** would increase the recreational quota and decrease the commercial quota relative to **Alternative 1 (no action)**, the following discussion will only focus on this direction of allocation change. For the recreational sector, the average rate of red snapper discarded dead is lower based on information in the stock assessment for depths fished and gear types (Table 4.1.2.1). Additionally, as a result of increased allocation and subsequently longer fishing season, some red snapper caught could now be retained instead of discarded dead. However, the magnitude of this reduction in dead discards is expected to be minimal based on

the number recreational anglers compared to commercial fishermen. **Alternative 4** has the greatest allocation shift and is expected to increase the recreational season the most compared to **Alternative 1 (no action)**.

**Table 4.1.2.1.** Average depth fished and estimated discard mortality rates of red snapper by sector during the closed and open seasons in the eastern and western Gulf. The associated discard mortality estimates for the recreational and commercial sector listed are based on use of circle hooks and the venting tool requirement.

Recreational sector		Commercial handline		Commercial bottom longline	
Open		Open		Open	
East	West	East	West	East	West
102 ft	105 ft	135 ft	159 ft	186 ft	312 ft
10%	10%	56%	60%	64%	81%
Closed		Closed		Closed	
East	West	East	West	East	West
99 ft	108 ft	126 ft	252 ft	198 ft	396 ft
10%	10%	55%	74%	66%	88%

Source: Tables 5.1 and 5.2 in SEDAR 31 2013

For the commercial sector, estimates of dead discard rates are higher compared to the recreational sector and a decrease in the allocation would likely lead to increased dead discards as a result of a reduced commercial quota (Table 4.1.2.1). Since the implementation of the red snapper IFQ program, the overall rates of dead discards by the commercial sector have been reduced (GMFMC 2013b), which may minimize any increases in discarded fish from this action. However, SEDAR 31 (2013) reported that in the western Gulf, where most of the red snapper are commercially caught, the discard mortality rate for vessels using handline gear without IFQ shares was greater than the discard mortality rate for handline vessels with IFQ shares (Table 4.1.2.1). Handline gear is the predominant gear used to harvest red snapper (see Section 4.1.1). Thus in the western Gulf, a decrease in allocation could result in more trips without red snapper shares and more dead discards. In eastern Gulf, even though there did not seem to be a different discard mortality rates between commercial vessels with IFQ shares and those without; as allocation is shifted away from the commercial sector, it is likely that the number of dead discards would increase (Table 4.1.2.1). As the red snapper stock expands into the eastern Gulf, the incidence of red snapper being encountered should increase as catch rates increase (Boen and Keithly 2012). As a result, fewer red snapper could be kept and more fish would need to be discarded because of the reduced allocation and subsequent quota reduction from **Alternatives 2** through **7**. Additionally, the reef fish fishery is a multispecies fishery and commercial fishermen may shift fishing effort to others species due to the reduction in red snapper quota so they could compensate for lost income.

With the introduction of the IFQ program, no overages of the commercial quota have occurred and are not likely to occur in the near future. However, for the recreational sector, quota overages have occurred frequently in recent years and could adversely affect the stock's recovery if they continue (NMFS 2013d; SEDAR 31 2013). Recreational quota overages have occurred because of difficulties assessing past fishing patterns and projecting them into the future to estimate season length (NMFS 2013). Because **Alternatives 2** through **7** provide additional

recreational fishing days, is it possible that the additional allocation may increase the model's predictive capability.

Given the discussion above, if the recreational quota were increased as a result of **Alternative 2** through **Alternative 7**, the number of recreational dead discards would likely decrease. However, this benefit to the red snapper stock would likely be offset by increases in dead discards as a result of a reduced commercial quota. Therefore, it is difficult to assess whether these alternatives, in terms of dead discards, would be beneficial, adverse, or have no effect on the red snapper stock. These effects need to be qualified in that they are largely based upon behavior of fishermen and this behavior could change in response to changing allocation. Current monitoring of harvests and discards could provide insights into these effects in the future.

Based on the information discussed above, **Alternative 4** would be expected to have the greatest beneficial effect on the biological environment compared to **Alternative 1 (no action)**, if in fact discard mortality rates are reduced when the recreational sector has more quota. Whereas, **Alternative 4** would be expected to have the greatest adverse effect on the biological environment compared to **Alternative 1 (no action)**, if in fact dead discard mortality rates are increased when the commercial sector has less quota. The comparison of these alternatives to no action, whether beneficial or adverse depends on fishermen behavior, and based on these behaviors any potential effects on the biological environment could end up canceling each other out. **Alternative 3** and **Alternative 2** would be expected to have the next greatest effects (either beneficial or adverse) on the biological environment after **Alternative 4** compared to **Alternative 1 (no action)**. Given the 11.0 mp combined quota, **Preferred Alternative 5** and **Alternative 6** are expected to have intermediate impacts compared to **Alternative 3** and **Alternative 4**. Similarly, **Alternative 7** is expected to have intermediate impacts compared to **Alternatives 3** and **4**. If the total quota is decreased, but does not reach the given threshold, the indirect effects under **Preferred Alternatives 5**, **Alternative 6**, and **Alternatives 7** would be reduced as the allocations get closer to **Alternative 1 (no action)**. However, if the total quota increases, effects of **Preferred Alternative 5**, and **Alternatives 6** and **7** could be greater than **Alternative 4**.

### 4.1.3 Direct and Indirect Effects on the Social Environment

**Alternative 1 (no action)** would retain the current sector allocations for red snapper and would have no impact upon the commercial sector as their allocation would remain the same. The shortened recreational fishing seasons over the past few years have been exacerbated by differential management between some states and their adjoining federal waters. This varied management has allowed for continued harvest, including when federal waters are closed, which then translates into shortened seasons because season length is based on total harvest in state and federal waters.

A direct result of the shortened seasons has been dissatisfaction with current management for the recreational sector. This dissatisfaction has, in part, prompted the Council to revisit the red snapper allocation to potentially provide some relief to the shortening seasons, which in turn has increased tension among the recreational and commercial sectors. While the red snapper stock

has rebounded, the appearance of good year classes has resulted in an abundance of larger fish which has allowed the recreational quota to be caught faster, as each angler's bag limit weighs more and thus represents more of the quota. Without addressing the problem of shortened seasons, there will continue to be dissatisfaction with management and continued quota overages by the recreational sector. Modifying the red snapper allocation could potentially provide some temporary relief to the shortened recreational fishing seasons (although, with the current federal season only nine days, allocating the total red snapper quota to the recreational sector would still allow less than one month of red snapper harvest in federal waters); however, the scope of this action is to evaluate reallocation, rather than addressing the broader issues of managing the recreational harvest of red snapper.

Alternative methods of allowing for transfer of quota between the sectors, such as incentive-based mechanisms, rather than the regulatory-based alternatives provided in this amendment might avoid some of the disparities that occur with the regulatory approach used here, and have been recommended by the Socio-economic Scientific and Statistical Committee (SESSC). With the commercial sector already under an IFQ program, such incentive-based mechanisms would allow for trading of quota between the two sectors, thereby allowing market mechanisms to determine efficiency. Incentive-based approaches would more likely result in actual increases in efficiency and net benefits, but would face similar concerns for social impacts resulting from unequal distributional effects (see Section 3.4). Reallocation of quota through the regulatory-based approaches in **Alternatives 2-7** would be the quickest manner of providing some additional fishing days to the recreational sector; yet, the season is extended only nominally and would be matched by negative impacts in the commercial sector, as discussed below.

Because **Alternatives 2-7** all transfer a certain percentage of quota from the commercial sector to the recreational sector, the types of effects on the social environment would be similar among the alternatives. The effects would vary in scope and strength relative to the amount of quota that is reallocated. It is difficult to quantify social effects because a comparable social net benefits analysis has not been developed to accompany an economic efficiency analysis used to quantify net benefits. As a result, the discussion that follows will be qualitative in its approach and identify possible direct and indirect effects that might accrue from reallocation under the different alternatives. Most generally, the quality of social impacts differs between the sectors, in that a loss of commercial access to red snapper could affect the livelihoods of commercial fishermen, especially small-scale owner-operators, hired captains and crew who do not own red snapper shares, and the well-being of commercial communities. The gains in recreational quota would provide additional recreational opportunities to retain red snapper.

The recent economic efficiency analysis suggests that reallocation from the commercial sector to the recreational sector could potentially result in increased net benefits. While this analysis and previous analyses by the Southeast Fisheries Science Center (SEFSC) suggest that a shift of allocation from the commercial to the recreational sector could result in a gain of net benefits, the SESSC noted that the analysis may be limited in its scope and benefit from more up-to-date data. Furthermore, it should be clarified that the net benefits estimated by an economic efficiency analysis are not actual economic gains, but potential gains that do not consider other distributional effects (Bromley 1977).

From a social perspective, the economic gains predicted by the analysis assumes certain aspects of the economy are equal, which may not be the case. The distributional effects of how dollars lost and gained from reallocation move through the various value chains and other targeted fisheries, including fishing communities and the larger Gulf coast economy, should be taken into consideration. While it might be expected that any net benefits from a purely economic efficiency standpoint should continue to provide net gains, there is concern that gains and losses may be experienced differently and appear with other types of analysis (Copes 1997). This point was made by the SEFSC as there are other aspects within the current economic and social climate that are not taken into consideration in the analysis. Some of the factors that might contribute to resulting impacts and how impacts are distributed through the economy include differential value chains, a sluggish economy, a high unemployment rate, the recovery from the recent Deepwater Horizon MC252 oil spill, different property rights structures, and the general differences in community well-being that currently exist.

As mentioned, although net gains in economic efficiency may be realized as a result of reallocation, there is no reason to expect that the gains or losses would be equally distributed among fishing communities. Jacob et al. (2013) found that when shifting allocation between recreational and commercial fishing communities, highly dependent fishing communities experienced greater positive or negative effects on well-being than those communities that were less dependent. Although this research was not specific to red snapper or the Gulf coast, it did look at reallocation and reinforces the idea that any shift may have unintended consequences not accounted for in an economic efficiency analysis (Appendix G). Current measures of community well-being (Section 3.3) also suggest that commercial dependent fishing communities exhibit greater vulnerability than recreational-dependent fishing communities, in that more index thresholds are exceeded for commercially dependent communities than recreationally dependent communities (Figures 3.4.2.1 & 3.4.2.2). Of the commercially dependent communities discussed in Section 3.3, five exceed the social vulnerability threshold on all three measures and three exceed the thresholds for two social vulnerability measures. For the recreationally dependent communities discussed in Section 3.3, only one community exceeds the social vulnerability threshold for all three measures and three communities exceed at least two measures of social vulnerability. Again, these social vulnerability measures are not specific to red snapper but suggest the nature of differences among other parts of the economy outside of red snapper fishing. The communities that are experiencing higher social vulnerabilities may be less able to absorb negative social effects from a change in resource access resulting from reallocation due to having higher levels of poverty, unemployment, and a higher proportion of vulnerable populations. The losses to commercial fishing communities may be compounded because of increased vulnerabilities that are not captured in the economic efficiency analysis, as discussed above.

The remainder of this discussion assumes current conditions, including an aggregate quota of 11.0 mp. This discussion of the expected social effects would need to be revised if the quota changes or one or more states adopt additional regulations that are inconsistent with federal regulations. Because of the short season projected for 2014 (nine days), it is difficult to project reliable estimates of the additional number of fishing days that would result from each of the alternatives. The difficulty arises from uncertainty whether historical harvest patterns, notably daily effort and harvest rates, will continue or change (and, if so, change how much) as a result

of the short season. These rates could change in either direction; they could increase as a result of a race to fish, or decrease if, for example, adverse weather conditions reduce the ability to fish on a given day or be rescheduled for another day. Reallocating 3% of the red snapper quota to the recreational sector (**Alternative 2**) would result in 330,000 lbs more red snapper compared to **Alternative 1**. Assuming an average 210,166 lbs of red snapper were caught by recreational anglers per day (2013 fishing season average; NMFS 2014), **Alternative 2** would provide the recreational sector with one to two additional fishing days. With a larger shift in allocation of 10% (**Alternative 4**), 1.10 mp of red snapper would be moved from the commercial sector to the recreational sector, which given the daily rate of harvest in 2013, the projected season could possibly be extended by five days. Although these additional fishing opportunities for recreational fishing communities are proportionately large given the short duration of the season, they do not extend the season near the six months advocated by many anglers (<https://docs.google.com/spreadsheet/ccc?key=0Atgbk2rxQkqhdHBYby1ad0F0THZiMGtoVTdlVDJ6cWc#gid=0>). Furthermore, assuming the daily rate of harvest will increase as the season becomes shorter (Figure 3.4.3), and the nine day federal season in 2014, these estimations of additional fishing days may be overgenerous, as changes in effort or participation are likely for an open entry sector.

Conversely, the increase in fishing opportunities provided to the recreational sector from reallocation would correspond with negative impacts to the commercial sector by reducing their access to the red snapper resource. A purpose of this amendment is to increase the stability of red snapper fishing, particularly for the recreational sector; however, **Alternatives 2-7** will not increase the stability of red snapper fishing for the commercial sector but, instead, each of these alternatives would be expected to trigger some instability in the IFQ market as a result of restructuring existing property rights. Although the commercial harvest of red snapper has been open year round since inception of the IFQ program, a commercial fisherman's ability to harvest red snapper depends on the ability to acquire quota. The commercial sector consists of numerous participation roles that may incur differential impacts from this management action. For example, some captains own and fish from their own vessel, and other captains work vessels for owners, including dealers. Commercial red snapper allocation can cost upwards of 75% of ex-vessel price (GMFMC 2013b; Appendix G) for those who must purchase allocation from others. Although IFQ shares were initially distributed based on historical landings, since implementation of the program, red snapper IFQ shares have been bought by fishermen who did not initially receive them, representing direct economic investment in the IFQ program. Because frustration has been expressed in public testimony by those opposed to the sale of red snapper quota allocation in the IFQ program, it must be noted that for every pound of allocation sold, another commercial fisherman paid to land that red snapper.<sup>13</sup>

One concern about reallocation under current management is that the quota has been increasing, but may not continue to do so in the future. The economic efficiency analysis assumes that many factors remain constant, one of which is the quota. If the quota decreases, the losses, benefits, and associated net benefits that accrue would be much different and could shift the direction of

---

<sup>13</sup> In the IFQ program, 'shares' refer to a percentage of the entire commercial quota; shares may be bought and sold by any U.S. citizen. 'Allocation' refers to the pounds of red snapper represented by those shares, based on the current year's quota. Allocation may only be purchased and landed by a permitted commercial vessel.



how those benefits accrue. Even with a stable quota, net benefits could change over time as other factors related to either sector or other parts of the economy can change.

The concerns discussed above highlight many of the issues that might be raised with this choice of reallocation alternatives. As mentioned earlier, the shortened seasons and quota overages occurring in the recreational sector suggest the need for a revision to current management. Reallocation is one method of addressing overages, but does not provide a mechanism for avoiding overages in the future. This is evident as with even a 100% shift, the season is only extended by 18 days. In fact, if NMFS continues to estimate the length of the recreational season as it has in recent years for any newly allocated quota without attending accountability measures, it should be assumed that overages would continue. In response, NMFS would be expected to shorten the season, accordingly. As discussed, other alternative management strategies have been suggested that include incentive-based mechanisms that would require a more complex management regime. The various reallocation alternatives under consideration may provide some temporary relief to a problem that needs a long-term solution.

Another aspect of reallocation is the effect on perceptions of management. Existing management has led to considerable dissatisfaction among the recreational sector. However, with a reallocation of quota from the commercial sector, considerable dissatisfaction and instability in commercial participants' confidence in the IFQ market would be expected to result, because there would be no mitigation to the commercial sector for the loss of access to red snapper quota. Although the efficiency analysis suggests potential net gains from a shift in allocation, all losses accrue to the commercial sector. Prior to implementation of the IFQ program for the commercial sector, there were many years during which commercial fishermen experienced similar dissatisfaction with management due to trip limits and shortened seasons that led to derby fishing (Figure 3.4.1). Doubtless, painful social impacts accompanied the transition to the incentive-based management regime, including reductions in participation; however, seven years later, commercial red snapper fishing has stabilized, both in terms of the season length (year round), prices, and avoiding quota overages. A reallocation from the commercial quota would be expected to negatively affect the stability of the commercial sector in terms of long-term access to red snapper allocation and confidence in the IFQ program. These effects are different than would be expected from a quota decrease deemed necessary for biological concerns, which would also result in less quota availability, but would not be expected to negatively affect participants' confidence in the IFQ market and their ability to continue participating. Given the history of the commercial sector's derby seasons prior to the IFQ program's implementation, reallocating commercial quota to the recreational sector may be seen as unfair and create new tensions with management, as quota overages and shortened seasons would be expected to continue in the recreational sector.

Although the allocation is currently at 51% commercial, 49% recreational, the proportion of actual landings by each sector has consistently departed from the established allocation (Tables 2.1.1 and 2.1.2). That is, since the allocation was established in 1990, in all but five years the recreational sector's annual landings have represented a larger proportion of total landings than their allocation. In fact, the proposed allocation increases to the recreational sector under three of the alternatives (Table 2.1.3) overlap with the actual recreational landings for various year ranges (Table 2.1.1). Specifically, the resulting quota from increasing the recreational sector's

allocation by 3% (**Alternative 2**) approximates the average recreational landings for the years 1996-2012. Increasing the recreational sector's quota even more, by 5% (**Alternative 3**) or by reallocating quota increases under **Preferred Alternative 5**, approximates average landings for more recent year ranges (2001-2012, or 2006-2012). Thus, the proportion of *actual* recreational landings is roughly equivalent to some of the proposed increases. Given the pattern of quota overages for the recreational sector, it should be assumed that increasing the recreational sector's allocation (**Alternatives 2-7**) without other measures to constrain the harvest would allow the quota overages to continue. Measures to constrain red snapper landings to the recreational sector's quota are analyzed in Actions 2.1 and 2.2.

With a 3% reallocation, **Alternative 2** would have the least negative direct or indirect social effects upon the commercial sector while providing the fewest additional opportunities for the recreational sector to retain red snapper among **Alternatives 2-6**. The effects resulting from **Alternative 2** would be most similar to **Alternative 7**, as discussed below. With a 5% reallocation, **Alternative 3** would extend the recreational season by 2-3 days; **Alternative 3** would also result in slightly more negative direct and indirect social effects upon the commercial sector compared with **Alternative 2**, assuming that any gains and losses move through all sectors proportionately in strength and scope. With a 10% reallocation, **Alternative 4** would provide the most fishing opportunities to the recreational sector of the alternatives, but also result in the greatest negative direct and indirect social effects on the commercial sector. Given the discussion above, **Alternative 4** has the potential to have the greatest impact on the commercial sector and social aspects of the IFQ program, as described above.

Given the progress of red snapper rebuilding, as evidenced by larger fish and quota increases, the preceding discussion largely focused on impacts assuming a stable or increasing quota. However, it is possible the quota may decrease in future years, for example, if recruitment declines. Under **Alternatives 2-4**, quota decreases would compound the problems of the commercial sector's loss of access to red snapper from reallocation. **Preferred Alternative 5** and **Alternative 6** propose reallocations only on any quota above 9.12 mp, and **Alternative 7** would reallocate only that portion of the quota above 10.0 mp. As a result, these alternatives (**Alternatives 5-7**) result in different sector allocations depending on the total amount of the quota. If the red snapper quota drops below 9.12 mp, the effects of **Preferred Alternative 5** and **Alternative 6** would be similar to **Alternative 1**, as the 51% commercial, 49% recreational allocation would be maintained. This also holds true for **Alternative 7** if the red snapper quota drops below 10.0 mp. Thus, these alternatives provide some protection to the commercial sector's share of the quota in the event the red snapper quota declines in the future, compared with **Alternatives 2-4**.

By limiting reallocation of 75% of any quota over 9.12 mp to the recreational sector (**Preferred Alternative 5**), no negative social effects on the commercial sector would occur when the quota is at or below 9.12 mp, because the sectors' proportions of the quota would remain the same as under **Alternative 1**. However, with the current quota of 11.0 mp, the increased benefits associated with the increased quota (488,800 lbs) under **Preferred Alternative 5** to the recreational sector would be minimal in the short term compared to **Alternative 1**. In turn, the commercial quota would be decreased by this same amount, and attending adverse impacts would result from decreased access to the red snapper resource. Yet, if the red snapper stock

continues to rebuild, any quota increases would benefit both sectors, but provide three times the additional quota to the recreational sector as the commercial sector. For example, if the quota is increased to 13.0 mp, under **Preferred Alternative 5**, the respective sector quotas would be 5.620 mp commercial and 7.380 mp recreational, or 43.24% for the commercial sector and 56.77% for the recreational sector. Thus, under **Preferred Alternative 5**, if the red snapper quota is 13.0 mp, the commercial quota would be 0.10 mp more than its current quota of 5.610 mp (**Alternative 1**).

By allocating 100% of all quota above 9.12 mp to the recreational sector (**Alternative 6**), the negative social effects to the commercial sector would be greater than under **Preferred Alternative 5**, but remain the same as **Alternative 1** when the quota is equal or less than 9.12 mp. For the current quota, the benefits to the recreational sector from **Alternative 6** would be second only to **Alternative 4**, resulting in an additional 958,800 lbs of red snapper. In turn, the commercial sector would not benefit from quota increases above 9.12 mp, and would share in any future decreases to the quota below 9.12 mp. Compared with the current quota of 11.0 mp (**Alternative 1**), **Alternative 6** would result in approximately twice the amount of reduction to the commercial quota (0.970 mp) compared to **Preferred Alternative 5** (0.490 mp). With a larger, hypothetical 13.0 mp quota, resulting sector quotas would be 4.650 mp commercial and 8.350 mp recreational, or 35.8% commercial and 64.2% recreational, under **Alternative 6**.

Setting the baseline above which to reallocate at 10.0 mp, **Alternative 7** would reallocate the least amount of quota compared with **Alternatives 2-6**. **Alternative 7** would be expected to provide the least benefits to the recreational sector among these alternatives by providing only an additional 260,000 lbs of red snapper quota. **Alternative 1**, would result in the least adverse effects for the commercial sector. By setting the baseline at 10.0 mp, some recovery benefits are provided to the commercial sector from the rebuilding stock before the threshold at which the quota would be reallocated is reached. However, the baseline is 1.0 mp lower than the current quota (**Alternative 1**), meaning that adverse impacts would still be expected for the commercial sector.

**Table 4.1.3.1.** Comparison of the sector quotas resulting from Alternative 2 and Alternative 7, given various quota scenarios. The highlighted row represents the quota under Alternative 1 (status quo).

Quota	Alternative 2 (3% shift)		Alternative 7 (25%:75% shift above 10 mp quota)	
	Commercial	Recreational	Commercial	Recreational
<b>8.0 mp</b>	3.840 mp	4.160 mp	4.080 mp	3.920 mp
<b>9.12 mp</b>	4.378 mp	4.742 mp	4.651 mp	4.469 mp
<b>10.0 mp</b>	4.800 mp	5.200 mp	5.100 mp	4.900 mp
<b>11.0 mp</b>	5.280 mp	5.720 mp	5.350 mp	5.650 mp
<b>13.0 mp</b>	6.240 mp	6.760 mp	5.850 mp	7.150 mp

When compared with **Alternative 1**, the effects of **Alternative 2** and **Alternative 7** would be expected to be the most similar to one another in terms of the amount of quota that would be reallocated. As shown in Table 4.1.3.1, however, the benefits and impacts to each sector would change according to the size of the quota. While the structure of **Alternative 7** would not lower

the commercial quota if the aggregate quota decreases below the baseline at which the reallocation would apply, the benefits to the commercial sector of a rebuilding stock and associated quota increases would be lessened. The inverse would apply under **Alternative 2**, which would reallocate a fixed 3% of the quota. As the red snapper stock rebuilds and continues to expand eastward, this trade-off between the structure of these alternatives may warrant further consideration.

This section has primarily addressed the recreational sector as a whole; however, fishing opportunities are not distributed evenly Gulf-wide. Currently, three of the five Gulf States allow additional harvest of red snapper in their state waters when the retention of red snapper from federal waters is prohibited. The result is fewer red snapper fishing opportunities for 1) all anglers in federal waters during the federal season, 2) all anglers in states with compatible regulations, and 3) federal for-hire vessels operating from states with incompatible regulations. It is unknown whether a reallocation decision will affect the practice of states adopting incompatible regulations, by either increasing compliance, or resulting in greater state regulatory inconsistency. Nevertheless, those states with incompatible regulations provide additional fishing opportunities for anglers in their state waters, which shortens the recreational fishing season for other anglers. For the 2014 red snapper fishing season, an estimated 2.04 mp of the recreational red snapper quota is expected to be harvested in state waters outside of the federal season. This is approximately half of the 4.312 mp ACT implemented by emergency rule for the 2014 recreational red snapper season (NMFS 2014). Thus, it cannot be assumed that additional fishing opportunities provided through reallocation would benefit all recreational anglers through a longer federal season, as some portion of the quota would be expected to be landed in state waters outside of the federal season.

#### **4.1.4 Direct and Indirect Effects on the Economic Environment**

This action considers alternative reallocations of the red snapper quota between the recreational and the commercial sectors. The current partition of the resource grants 49 percent of the quota to the recreational sector and 51 percent to the commercial sector. Reallocation alternatives considered in this action vary the recreational share of the quota from 49 percent (**Alternative 1**) to 59 percent in **Alternative 4**. Conversely, the commercial share of the red snapper quota ranges from a minimum of 41 percent to a maximum of 51 percent for **Alternative 4** and **Alternative 1**, respectively. The commercial and recreational red snapper allocations, in pounds and percentage of the quota, are provided in Table 2.1.3.

**Alternative 1** (no action) would maintain the current split of the red snapper quota between the commercial and recreational sectors (51% commercial and 49% recreational). Therefore, direct economic effects are not expected to result from **Alternative 1** because changes to harvests or other customary uses of red snapper are not expected to result from the no action alternative. However, in a study evaluating the economic efficiency of red snapper allocation between the commercial and recreational sectors, Agar and Carter (2013, Appendix G) concluded that the existing allocation was not economically efficient. Therefore, the continued apportionment of red snapper resources according to the status quo allocation between the sectors could potentially be expected to result in indirect adverse economic effects stemming from forgone opportunities to enhance economic efficiency and thus generate economic benefits. Improvements in

economic efficiency would increase the economic value derived from the red snapper resources if the current allocation is moved closer to the optimal allocation, which is unknown. In terms of economic efficiency, the optimal allocation is the allocation that would equate marginal values across the commercial and recreational sectors. Detailed discussions of this optimal condition (also referred to as the equimarginal principle) are provided by several authors, e.g., Edwards (1990) and Plummer et al. (2012).

All remaining alternatives (**Alternatives 2-7**) considered in this amendment would increase the percentage of the red snapper quota allocated to the recreational sector (and decrease the commercial sector's share by an equivalent percentage). Therefore, the implementation of any one of these alternatives would be expected to result in economic losses to the commercial sector and generate economic benefits for the recreational sector. For each reallocation alternative, the relative magnitude of the expected losses to the commercial sector and gains to the recreational sector would determine the net economic effects.

The methods used and assumptions made to evaluate expected economic effects of proposed red snapper reallocation alternatives are detailed in a study recently completed by the SEFSC. The study report is included as an appendix to this document (Appendix G). Modeling approaches, assumptions and datasets utilized to estimate changes in economic values that are expected to result from proposed adjustments to the allocation of red snapper between the sectors, as well as limitations of the methods used, are detailed in Appendix G. Therefore, the following discussion focuses on the results of the analysis presented in Appendix G.

In general, for commercial fisheries managed under an IFQ program, changes in economic value in the commercial sector can be evaluated using IFQ allocation prices because for well-functioning IFQ markets, allocation prices can be used to measure net economic benefits. Estimates of economic effects for the commercial sector provided in Appendix G and discussed in this amendment were derived following the approach suggested in Newell et al. (2005a and 2005b), which provide discussions on IFQ markets and on the determinants of allocation prices in individual fishing quotas markets. Due to the absence of market transactions for recreationally-caught fish, the evaluation of economic benefits to the recreational sector typically relies on non-market valuation techniques such as revealed preference methods or stated preference approaches. Following Carter and Liese (2012), estimates of economic benefits used in this analysis were derived based on a 2003 stated preference choice experiment survey administered by the SEFSC.

**Alternatives 2, 3, and 4** would add 3%, 5%, and 10% of the red snapper quota to the recreational allocation, respectively. Adjustments proposed in **Alternatives 5 and 6** would only reapportion quota amounts in excess of 9.12 mp and would either grant 75% of the amounts in excess of 9.12 mp (**Alternative 5**) or 100% of the amount in excess of 9.12 mp (**Alternative 6**) to the recreational sector. **Alternative 7** would allocate 75% of quota amounts in excess of 10.0 mp to the recreational sector, and the remaining 25% to the commercial sector. Resulting percentages allocated to each sector would be fixed in **Alternatives 2-4** but would fluctuate in **Alternatives 5, 6 and 7** based on the magnitude of the red snapper quota amount. **Alternatives 5, 6 and 7** could potentially result in the reallocation of very large portions of the red snapper quota as the red snapper stock recovers and red snapper quotas are increased.

Estimates of the economic losses to the commercial sector expected to result from the proposed reallocation alternatives are provided in Table 4.1.4.1. In general, it logically follows that greater shifts in allocation from the commercial sector would result in greater economic losses to the sector. Therefore, **Alternative 4**, which would shift the largest percentage of the red snapper quota away from the commercial sector, is expected to be the most onerous to the sector. Relative to the status quo allocation, the mean economic losses to the commercial sector that are expected to result from **Alternative 4** are estimated at \$2.9 million, with lower and upper bound estimates of \$2.6 million and \$3.2 million, respectively. The comparable economic losses expected to result from the remaining alternatives, status quo excepted, are estimated to range from \$0.7 million (**Alternative 7**) to \$2.5 million (**Alternative 6**).

The economic effects associated with a reduction in the allocation to the commercial sector presented here are limited to losses to red snapper IFQ participants including harvesters and individuals and entities who elect to lease their annual allocation. Losses in producer surplus incurred by economic agents operating between the harvest and the final consumption of red snapper, e.g., dealers and retailers, are not included in these estimates. The consumer surplus forgone by red snapper consumers was also not included in the estimates provided. However, if there are many substitutes for red snapper (e.g., other reef fish or imported farm-raised fish), then the loss to the retail consumer from a reduction in red snapper availability would be small, especially if there was a limited impact on red snapper prices. For a discussion on substitution between red snapper and farm-raised imports, see, for example, Norman-López (2009).

**Table 4.1.4.1.** Red snapper allocations and estimated economic losses to the commercial sector.

Alternative	Commercial Red Snapper Quota		Poundage lost relative to Alternative 1	Economic cost (losses) (\$ million)
	Million Pounds (Gutted Weight)	Percentage		
1 (No Action)	5.06	51.0	-	-
2	4.76	48.0	0.30	0.8 (0.7-0.9)
3	4.56	46.0	0.50	1.4 (1.2-1.6)
4	4.06	41.0	1.00	2.9 (2.6-3.2)
5	4.61	46.6	0.45	1.3 (1.1-1.4)
6	4.19	42.3	0.87	2.5 (2.2-2.7)
7	4.82	48.6	0.24	0.7 (0.6-0.8)

Source: Appendix G.

Estimates of the change in economic benefits to the recreational sector of the proposed alternatives to reallocate the red snapper quota between the sectors were determined by multiplying the estimated average net benefit per pound of red snapper by the change in the number of pounds of red snapper allocated to the recreational sector. The average net benefit per pound of recreationally-caught red snapper, which was estimated at \$11.21 per lb, was derived by dividing the average net benefit per two-fish by the estimated average weight of two fish based on an average weight of 6.34 lbs per red snapper (Appendix G). For each reallocation alternative, the recreational share of the red snapper quota, gains in recreational quota relative to the status quo, and corresponding average increases in economic value to recreational anglers are provided in Table 4.1.4.2.

It follows that greater shifts in allocation in favor of the recreational sector would potentially result in greater increases in economic value to recreational anglers. Therefore, **Alternative 4**, which would shift the largest percentage of the red snapper quota to the recreational sector, is expected to result in the largest increase in economic value for to the sector. Relative to the status quo allocation, the mean increase in economic value to the recreational sector that would be expected to result from **Alternative 4** is estimated to be \$9.06 million. The comparable economic benefits expected to result from the remaining alternatives, status quo excepted, are estimated to range from \$2.14 million (**Alternative 7**) to \$7.90 million (**Alternative 6**).

**Table 4.1.4.2.** Red snapper recreational allocations and estimated average economic gains to the recreational sector.

Alternative	Recreational Quota (Million pounds whole weight)	Change in Recreational Quota from Alternative 1 (Million pounds whole weight)	Change in Economic Value to Anglers Relative to Alternative 1 (Millions\$)
Alternative 1 (Status Quo)	5.39	----	----
Alternative 2	5.72	0.33	\$2.72
Alternative 3	5.94	0.55	\$4.53
Alternative 4	6.49	1.1	\$9.06
Preferred Alternative 5	5.88	0.49	\$4.03
Alternative 6	6.35	0.96	\$7.90
Alternative 7	5.65	0.26	\$2.14

Source: Appendix G.

The benefits associated with successive units of a good (marginal benefits), here pounds of fish, should typically be decreasing as the total quantity of the good increases. Estimates of these marginal benefits for recreational red snapper were not available. As a result, the aggregate benefits to the recreational sector presented were approximated by multiplying an average net

benefit per pound (\$11.21) by the total number of additional pounds. Additionally, the estimated benefits to the recreational sector presented here do not include estimates of the producer surplus that for-hire operators would enjoy should the recreational red snapper quota be increased.

**Alternative 4** is expected to result in the largest increase in economic benefits to the recreational sector because it would shift the greatest percentage of the red snapper quota to the recreational sector. The remaining alternatives are estimated to increase economic benefits to the recreational sector between \$2.14 million (**Alternative 7**) and \$7.90 million (**Alternative 6**). The relatively limited impact of reallocation alternatives compared to the recent recreational harvest overages may provide additional incentives to the Council to consider comprehensive changes to the management of the recreational sector.

To evaluate the overall economic effects, i.e., changes in economic benefits, of the proposed reallocation alternatives, the estimated economic effects were added across sectors (Table 4.1.4.3). As previously indicated, all of the reallocation alternatives considered would shift red snapper quota away for the commercial sector and in favor of the recreational sector. Furthermore, throughout the ranges of commercial and recreational quotas evaluated, the lowest recreational net benefit estimate was greater than the largest corresponding commercial estimate. For these reasons, all of the reallocation scenarios considered in this amendment would be expected to result in potential increases in economic benefits. As previously indicated, among the alternatives considered, **Alternative 4** would be the most onerous to the commercial sector and the most beneficial to the recreational sector and result in the largest increase in net economic benefits, approximately \$5.40 million.

**Table 4.1.4.3.** Recreational quota increases, economic losses to the commercial sector, gains to the recreational sector, and net changes in benefits. Quota increases are expressed in percentage of the red snapper quota.

	Recreational Quota Increase	Change in Benefits (\$ million)		
		Commercial	Recreational	Net
Alternative 2	3.00%	-\$0.80	\$2.72	\$1.92
Alternative 3	5.00%	-\$1.40	\$4.53	\$3.13
Alternative 4	10.00%	-\$2.90	\$9.06	\$6.16
Preferred Alternative 5	4.40%	-\$1.30	\$4.03	\$2.73
Alternative 6	8.70%	-\$2.50	\$7.90	\$5.40
Alternative 7	2.40%	-\$0.70	\$2.14	\$1.44

Source: Appendix G.

In addition to the preceding discussion relative to the economic changes of the proposed alternatives, several other factors should be considered in the evaluation of the potential economic effects that would be expected to result. These factors include the Magnuson-Stevens Act mandates, discrepancies between Council-determined allocations and actual percentages of total red snapper landings attributed to each sector, potential impacts of increased scarcity of IFQ



allocation, and considerations relative to which sectors may be better or worse off following a reallocation.

Provisions of the Magnuson-Stevens Act prohibit management measures, including allocation decisions, from having economic efficiency as their sole purpose (National Standard 5). Other factors that must be considered include the promotion of conservation, the prevention from acquiring an excessive share, and the fairness and equity of the measure (National Standard 4). Relative to fairness and equity considerations, the Magnuson-Stevens Act also stipulates that, should the reallocation maximize overall benefits, fairness and equity does not mean that the status quo allocation should be maintained. A concise summary of the Magnuson-Stevens Act considerations as they relate to allocation is provided by Plummer et al (2012). The purpose and need for this proposed action indicates that economic efficiency does not constitute the sole purpose for this amendment. It would not be expected that the range of allocation shifts considered would grant any one sector, entity, or individual an excessive share of the resource. However, it is not clear that the proposed reallocation alternatives would promote conservation, in light of the repeated and sizeable harvest overages recorded for the recreational sector. Fairness and equity considerations are discussed in detail in the social effects section (Section 4.1.3).

The frequency and magnitude of recorded overages have resulted in significant discrepancies between the Council-mandated allocation (51% commercial and 49% recreational) and the percentages of red snapper landings attributed to each sector (Figure 2.1.2). Given the Council's limited success in constraining landings to the mandated allocation, the relevance of reallocation efforts may be improved by management measures ensuring that a mandated apportionment would be reached and by giving more consideration to management approaches that would strengthen the property rights structure prevailing within the recreational sector and foster the use of rights-based instruments.

The decrease in the amount of IFQ allocation available to IFQ participants is expected to put upward pressure on the price of allocation. The model explaining the variability of allocation prices as a function the commercial quota and other explanatory variables presented in Appendix G suggests that a one million pound drop in commercial red snapper quota would result in approximately a \$0.20 increase in the per pound price of allocation. However, the extent to which the decreased availability of red snapper IFQ annual allocation would impact the behavior of participants in the market for IFQ allocation is not known. For example, the willingness to sell allocation could be reduced, especially in the Eastern gulf, possibly contributing to increased discards. Additional challenges to small IFQ shareholders who typically purchase allocation during the year and to potential new entrants could also result from the limited availability.

All of the proposed alternatives to the status quo (**Alternative 1**) are expected to result in increases in net economic benefits. However, because none of the proposed alternatives would allow or require compensation to the commercial sector, recreational anglers would be better off and commercial fishers worse off.

The preceding discussion relative to the changes in economic benefits expected to result from the proposed alternatives to reallocate the red snapper quota between the commercial and

recreational sectors does not consider the role of the property rights structure within each sector. While the commercial red snapper IFQ program has established relatively well-defined property rights (or privileges) within the commercial sector, access to red snapper within the recreational sector is random and therefore does not provide means to separate anglers according to their willingness to pay. When a resource is not efficiently allocated within each sector, considerations for the efficiency of resource reallocation between the sectors are of limited meaning (Holzer and McConnell 2014). In other terms, changes in net economic benefits reported in this amendment may be of limited usefulness because red snapper resources are not efficiently allocated within each sector. It is suggested that improvements to the efficiency of resource allocation should first focus on the allocation within each sector before tackling the allocation between sectors (OECD 2014).

#### **4.1.5 Direct and Indirect Effects on the Administrative Environment**

The setting of an allocation is an administrative action and it will have direct effects on the administrative environment through additional rulemaking. Because **Alternative 1** (no-action) would not require rulemaking, it would have no effect on the administrative environment. The act of setting the allocation under **Alternatives 2-4** is a one-time event, and thus these alternatives would have an equivalent burden though the minor direct administrative impacts associated with rulemaking to implement the new allocations. **Alternatives 5 - 7** would require the allocations to be changed each time the red snapper allowable biological catch (ABC) is changed. Therefore, it will trigger an additional administrative burden to the Council and NMFS to set the revised allocations and associated quotas. Under these conditions, **Alternatives 5 - 7** would have the greatest negative direct effect on the administrative environment, followed by **Alternatives 2, 3, and 4**. **Alternative 1** would have no effect.

Indirect effects of setting allocations require monitoring of the resultant quotas, enforcement of the quotas, and setting management measures to minimize the risk of quotas being exceeded (as are being proposed under Action 2). However, regardless of which alternative is selected, these management and enforcement activities need to continue. Therefore, the indirect effects from each alternative should be similar.

### **4.3. 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 2004c 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 2004c).

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,<sup>14</sup> 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 percent 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), the Gulf accounted for approximately 35% of trips and 42% of the catch in 2012 for U. S. marine recreational fishing trips by approximately 3.1 million Gulf anglers catching, with visitors, 161 million fish.

### 3. Establish the timeframe for the analysis

The timeframe for this analysis is 1984 through 2016. 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 for 2015. Should new regulations be needed for the management of this stock, they will likely not be implemented until **2016** at the earliest, or the end of the timeframe discussed in this analysis.

- The next assessment for red snapper through SEDAR is an update scheduled to occur in 2014 and a standard assessment is scheduled for 2015. 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 36 (IFQ program revision), Amendment 39 (red snapper regional management), Amendment 40 (sector separation of the recreational sector), and a generic status determination criteria amendment (update

---

<sup>14</sup>[http://sero.nmfs.noaa.gov/operations\\_management\\_information\\_services/constituency\\_services\\_branch/freedom\\_of\\_information\\_act/common\\_foia/index.html](http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/index.html)

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 2011b) 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 in response to 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. Due to 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 in response to a framework action submitted by the Council to increase the commercial and recreational quotas (GMFMC 2013d). 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.

- 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 2011b) 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 2012c), 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 2012b), 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<sup>15</sup>.**

- The Council is currently developing the following actions for red snapper.
  - 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 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).
  - Amendment 40 that would separate the federally permitted for-hire component from the private angler/non-federally permitted for-hire component. The purpose for this action is to provide flexibility in the management of the recreational red snapper component of the reef fish fishery by reorganizing the red snapper sector.
  - 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.

---

<sup>15</sup> Information on these developing actions can be found on the Council's website at [www.gulfcouncil.org](http://www.gulfcouncil.org).

- 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.
- 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, while 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 2011b) 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 impacted 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 until affected year classes of larval and juvenile fish enter the adult spawning population and are caught by the fishery. 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 a minimum. 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, Intergovernmental Panel on Climate Change has numerous reports addressing their assessments of climate change ([http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data.shtml](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. 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. While climate change may significantly impact Gulf reef fish

species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts would occur. 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.

Reef Fish Fishery

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 4.2.1). 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 4.2.1.** Number of Gulf of Mexico reef fish commercial (landing at least one pound of reef fish), for-hire, and historical captain permits by year.

Sector	Year				
	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 4.2.2.** 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 angler components of the reef fish recreational sector for the years 2008-2012.

Sector	Year				
	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 3.5.2.1.2). 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 2009 and lowest in 2010 (Table 3.5.2.1.2). 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 3.5.2.1.2).

For the reef fish recreational sector, the number of angler trips in offshore waters (Table 4.2.2; used as a proxy for recreational reef fish fishing) and on headboats (Table 3.5.2.1.5) 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 4.2.1; 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.

### 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 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 may not be known for several years until recruits born in 2010 onward start to enter the red snapper fishery as described in 4d of this CEA.

### 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<sup>16</sup>], 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.

### 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.**

---

<sup>16</sup> NOAA's Integrated Ecosystem Assessment Program (<https://www.st.nmfs.noaa.gov/iea/gulfofmexico.html>)

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.

### 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 4.2.1); 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 4.2.2. However, Action 1 would increase the recreational allocation and support more red snapper fishing days. As a result, more red snapper trips would likely be booked unless any gains derived from shifting the allocation are minimized through the Action 2 buffers used to estimate the red snapper season length. 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.

### 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 developed 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. Recreational AMs proposed in this amendment are designed to keep landings from exceeding the recreational quota and mitigate any damage to the stock should the quota be exceeded. Changing the how the ABC is allocated should not affect total landings. Thus, these actions are not likely to adversely affect the red snapper stock status.

#### 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.

#### 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 AMs reduce the frequency of quota overages as expected, this should reduce stresses on managers to respond with further regulations to control the harvest. However, if the AMs do not constrain the recreational harvest, then the stress in relation to regulatory thresholds could increase as corrective action would be required.

### **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 are listed in Figures 3.4.1.1 and 3.4.1.2, and Table 3.4.1.2. 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 top 30 list suggesting a greater importance for recreational fishing in that region.

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 2011a). Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council ([www.gulfcouncil.org](http://www.gulfcouncil.org)) and SEDAR ([www.sefsc.noaa.gov/sedar](http://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 4.2.3.



**Table 4.2.3.** 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
2000-2016	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.
2007-2016	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	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 as well as add accountability measures to reduce the probability of exceeding the recreational quota 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, seven VECs were determined to be the most important for further consideration. These are shown in Table 4.2.4.

VECs not included for further analysis were sharks and protected resources. 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 have 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.

**Table 4.2.4.** 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 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. These effects are summarized in Table 5.14.4.

### 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 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 39 and 40, should also benefit these habitats as they would also reduce or limit fishing effort.

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).

### 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 were intended to end 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 36, 39, and 40 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.

#### 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 have flexibility 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 3.5.2.1.1 (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. As discussed for the commercial sector, stocks would be harvested at a sustainable level, and at higher levels for those stocks being rebuilt. If reallocation, as proposed in this amendment, favors the recreational sector, this could provide additional red snapper fishing days and allow for more trips by the for-hire sector. 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.

#### Wholesale/retail

Reef fish dealers are primarily found in Gulf States (step 2). As of January 6, 2014, there were 202 reef fish dealer permits. In 2012, there were 82 dealers involved in buying and selling red snapper through the IFQ program (NMFS 2013c). These dealers may hold multiple types of permits. Average employment information per reef fish dealer is unavailable. The profit profile for dealers or processors is not known.

Relative to past actions, dealers have benefitted from actions that have allowed the commercial fishery to expand, as described above. However, the effect of measures constraining commercial landings both in the past, present, and RFFAs may not have negative effects on dealers. As described in step 4d, the amount of snapper and grouper imports have doubled between 1994 and 2005. In terms of pounds, 2012 imports (44.5 mp) were more than twice domestic annual Gulf snapper and grouper landings (19.6 mp; see Section 3.5.1.4). This means dealers have some ability to substitute domestic product with imports. In addition, dealers also have the ability to substitute other domestic seafood products for red snapper in order to satisfy public demand for seafood. Therefore, the negative effects from management actions for the fishery may not necessarily translate into significant negative effects for dealers, though it is recognized that foreign product is less desirable because, if not, dealers would be substituting imports instead of domestic harvest when domestic harvest is available. As domestic fish stocks are rebuilt and management programs like IFQs are instituted, a more stable supply of domestic reef fish will be available to dealers. This should improve their ability to market these products and improve the profit they receive from selling these fish. However, if a consequence of these actions is a reduction in the amount of domestically harvested red snapper, this would reduce any improvements in their ability to market red snapper.

In general, consumers of seafood may be somewhat sheltered from fluctuations in the domestic seafood supply by the availability of imported seafood. Therefore, if harvest is restricted for specific species of reef fish due to management change, there is likely some imported product that can be substituted for that species. However, the higher prices that domestically harvested reef fish generally receive compared to imports demonstrates the preference many consumers have for domestic harvest. This preference and the importance of red snapper to consumers is also supported by comments submitted during scoping. Here, they voiced their concern about



the availability of red snapper in markets and restaurants if the commercial sector's allocation is decreased

(<https://docs.google.com/spreadsheets/ccc?key=0Atgbk2rxQkqhdHByby1ad0F0THZiMGtoVTdlVDJ6cWc#gid=0>).

### Anglers

It is estimated that 3.1 million residents of Gulf States participated in marine recreational fishing (NMFS 2013b). 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.

### 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 changes 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 by providing business opportunities to service the needs of these industries. Present actions which have constrained the commercial fisheries likely have had a negative 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, 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 because angler participation has increased until recently. Actions enhancing this participation should be beneficial to the infrastructure. However, it should be noted the Council has been receiving public testimony that participation may be declining due to fuel price increases and this decline may be reflected in the decline in the number of angler trips taken. 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](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 by federal (including the Council) and state agencies that 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. The recordkeeping requirements of the IFQ programs have improved commercial quota monitoring and prevented or limited 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 the allocation and AMs for red snapper 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 sector, some effects would be likely be positive and some negative. 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 for the recreational sector by using combinations of bag limits, size limits and closed seasons and for the commercial sector through individual fishing quota programs, size limits, and season-area closures.

## **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<sup>17</sup>.

### **Unavoidable Adverse Effects**

Unavoidable adverse effects are described in detail in the cumulative effects analysis of Amendment 30B (GMFMC 2008b) and 32 (GMFMC 2011b) 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 1) which sector can harvest what percentage of the overall allowable harvest and 2) reduce the probability of the recreational sector exceeding its allocation. 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. 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.

---

<sup>17</sup> SEDAR Web page <http://www.sefsc.noaa.gov/sedar/>

## Relationship between Short-term Uses and Long-term Productivity

The primary objectives of this amendment and associated EIS are to 1) 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, and 2) establish buffers and payback provisions as additional accountability measures for the recreational red snapper sector to support management efforts to maintain landings within the recreational quota and mitigate quota overages should they occur. 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 sectors in favor of the recreational sector is expected to have a negative short-term effect on the social and economic environment for the commercial sector, and will create a burden on the administrative environment. Given the negative effects described in Sections 4.1 and 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. The establishment of buffers and payback provisions as additional accountability measures for the recreational red snapper sector supports management efforts to maintain landings within the recreational quota and mitigate quota overages should they occur. These additional accountability measures, as discussed in Sections 4.2, 4.3, and 4.4 may have negative short-term effects on this sector, but 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 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 4.1.3, 4.2.3, and 4.3.3). 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

# CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS



## 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
Stephen Holiman	Economist	Economic analyses	SERO
Tony Lamberte	Economist	Economic analyses	SERO
Mike Jepson	Anthropologist	Social analyses	SERO
Ava Lasseter	Anthropologist	Social analyses	GMFMC
Carrie Simmons	Fishery biologist	Biological analyses	GMFMC

### 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
Scott Sandorf	Technical writer and editor	Regulatory writer	SERO
Adam Brame	Biologist	Protected Resources review	SERO
David Dale	Biologist	Essential Fish Habitat review	SERO
Neil Baertlein	Biologist	Review	SEFSC
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

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

- American Fisheries Society. 2013. Common and Scientific Names of Fishes from the United States, Canada, and Mexico. Seventh Edition. Special Publication 34. Bethesda, MD.
- 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.
- Boen, C. and W. Keithly. 2012. Gulf of Mexico Red Snapper IFQ Program: Survey Results and Analysis.
- Bromley, Daniel W. 1977 "Distributional implications of the extended economic zone," American Journal of Agricultural Economics. 59:887-8921.
- Bromley, Daniel W. 1990. The Ideology of Efficiency: Searching for a Theory of Policy Analysis, Journal of Environmental Economics and Management 19:86-107.
- Carter, D. W., and C. Liese. 2012. The Economic Value of Catching and Keeping or Releasing Saltwater Sport Fish in the Southeast USA. North American Journal of Fisheries Management, 32:4, 613-625. Available at: <http://dx.doi.org/10.1080/02755947.2012.675943>
- 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/ccnepa/ccnepa.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.
- Copes, Parzival. 1997. Social impacts of fisheries management regimes based on individual quotas. In Social Implications of Quota Systems in Fisheries. Gisli Palsson and Gudrun Petursdottir, editors. Nordic Council of Ministers, Copenhagen.

Dietz, Simon and Giles Atkinson. 2010. The Equity-Efficiency Trade-off in Environmental Policy: Evidence from Stated Preferences. *Land Economics* 86(3):423-443.

Edwards, S.F. 1990. An Economics Guide to Allocation of Fish Stocks between the Commercial and Recreational Fisheries. U.S. Dept. of Commer. NOAA Tech. Memo. NMFS 94, 29 p.

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.

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.

Gislason, Gordon. 2006. Commercial vs Recreational Fisheries Allocation in Canada: Pacific Herring, Salmon and Halibut. Sharing the Fish Conference, Fremantle, Western Australia. February 26-March 2, 2006.

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. 1997. Amendment 15 to the fishery management plan for the reef fish resources of the Gulf of Mexico, includes regulatory impact review, initial regulatory flexibility analysis, and environmental assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/AMEND15.pdf>

GMFMC. 1999. Generic Sustainable Fisheries Act Amendment to the Following FMPS: Gulf Coral and Coral Reef Resources, Coastal Migratory Pelagics, Red Drum, Reef Fish, Shrimp, Spiny Lobster, and Stone Crab. Gulf of Mexico Fishery Management Council. Tampa, Florida.

GMFMC. 2003. Amendment 21 to the reef fish fishery management plan, 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/Amend21-draft%203.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. Secretarial amendment 1 to the reef fish management plan to set a 10-year rebuilding plan for red grouper, with associated impacts on gag and other groupers includes environmental assessment, regulatory impact review and final regulatory flexibility analyses. Gulf of Mexico Fishery Management Council. Tampa, Florida.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Secretarial-Amendment-1-RF.pdf>

GMFMC. 2004c. 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](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%202008.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](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](http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Regulatory%20Amendment%203_26_10.pdf)

GMFMC. 2011a. 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](http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf)

GMFMC. 2011b. 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](http://www.gulfcouncil.org/docs/amendments/Final%20RF32_EIS_October_21_2011[2].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-%20201-11.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-%202003-20-2012.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](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. Gulf of Mexico Fishery Management Council. Tampa, Florida. <http://www.gulfcouncil.org/docs/amendments/Final%20Amendment%2038%2009-12-2012.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 annual catch limit and bag limit for vermilion snapper, set annual catch limit for yellowtail snapper, and modify the venting tool requirement. Gulf of Mexico Fishery Management Council, Tampa, Florida. 171 p.  
<http://www.gulfcouncil.org/docs/amendments/2013%20Vermilion-Yellowtail-Venting%20Tool%20Framework%20Action.pdf>

GMFMC. 2013d. 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#](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.

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

Hamilton, A. N., Jr. 2000. Gear impacts on essential fish habitat in the Southeastern Region. , National Marine Fisheries Service, Southeast Fisheries Science Center. Pascagoula, Mississippi.

High, W. L. 1998. Observations of a scientist/dicer on fishing technology and fisheries biology. AFSC Processed Report 98-01. National Marine Fisheries Service, Alaska Fisheries Science Center. Seattle, Washington.

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.

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



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. Nieland, editors. Red snapper ecology and fisheries in the U.S. Gulf of Mexico. AFS, Symp 60, Bethesda, MD.

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](http://sero.nmfs.noaa.gov/sf/socialsci/pdfs/AlaMiss_PublicReleaseVersion_pdf_Feb06.pdf)

Impact Assessment, Inc. 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 Intergovernmental 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, United Kingdom and New York, NY, USA.

Jacob, S., P. Weeks, B. Blount, and M. Jepson. 2012. Development and Evaluation of Social Indicators of Vulnerability and Resiliency for Fishing Communities in the Gulf of Mexico. *Marine Policy* 26(10): 16-22.

Jacob, S., J. Landau, B. Blount, H. McIlvaine-Newsdad, and P. Weeks. 2013. Social Impacts of the Allocation/Reallocation of Marine Fisheries Resources on Communities in the Gulf of Mexico and South Atlantic: Development of an Empirical Predictive Model NOAA/NMFS MARFIN Grant Number NA09NMF4330149. Gulf and South Atlantic Fisheries Foundation, Tampa, FL. p.158

Jepson, M. and L.L. Colburn. 2013. Development of Social Indicators of Fishing Community Vulnerability and Resilience in the U.S. Southeast and Northeast Regions. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-129, 64 p.

Keithly, W. R. and A. Martin. 1997. Southeast finfish processing activities of federally managed species, particularly reef fish, and potential impacts of regulations. MARFIN Project No. NA47FD0290, May 1997.

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.

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.

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.

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.

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.

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>

Newell, R.G., J.N. Sanchirico and S. Kerr. 2005a. Fishing Quotas Markets. Journal of Environmental Economics and Management 4:437-462.

Newell, R.G., KL. Papps and J.N. Sanchirico. 2005b. Asset Pricing in Created Markets for Fishing Quotas. Resources for the Future. RFF DP 05-46. 30pp.

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](http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html)

NMFS. 2012a. 2013 Recreational Red Snapper Quota Closure Analysis. SERO-LAPP-2012-10. Southeast Regional Office, St. Petersburg, FL.  
[http://sero.nmfs.noaa.gov/sustainable\\_fisheries/gulf\\_fisheries/red\\_snapper/documents/pdfs/gulf\\_red\\_snapper\\_quota\\_closure.pdf](http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/documents/pdfs/gulf_red_snapper_quota_closure.pdf)

NMFS. 2012b. Five year projections of the recreational red snapper fishing season length. SERO-LAPP-2012-12. Southeast Regional Office, St. Petersburg, FL.

NMFS. 2012c. 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](http://sero.nmfs.noaa.gov/sf/ifq/2011_RS_AnnualReport_Final.pdf).

NMFS. 2013a. Updated 2013 Gulf of Mexico Red Snapper Recreational Season Length Estimates. SERO-LAPP-2013-02-Addendum. Southeast Regional Office, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, FL 33701.  
[http://sero.nmfs.noaa.gov/sustainable\\_fisheries/gulf\\_fisheries/red\\_snapper/documents/pdfs/2013\\_red\\_snapper\\_emergency\\_regs.pdf](http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/documents/pdfs/2013_red_snapper_emergency_regs.pdf)

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

NMFS. 2013c. 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](http://sero.nmfs.noaa.gov/sustainable_fisheries/lapp_dm/documents/pdfs/2013/2012_rs_annualreport.pdf)

NMFS. 2013d. 2014 Gulf of Mexico red snapper recreational season length estimates. SERO-LAPP-2013-10. Southeast Regional Office, National Marine Fisheries Service, 263 13<sup>th</sup> Avenue South, St. Petersburg, FL 33701. 15 pp.  
[http://sero.nmfs.noaa.gov/sustainable\\_fisheries/gulf\\_fisheries/red\\_snapper/index.html](http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/index.html)

NMFS. 2014. Emergency action to set red snapper accountability measures for the recreational sector 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](http://www.noaa.gov/deepwaterhorizon/publications_factsheets/documents/OilCharacteristics.pdf)

Norman-Lopez, A. 2009. Competition between Different Farmed and Wild Species: The US Tilapia Market. *Marine Resource Economics* 24:237-251.

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.

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.

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.

PFMC. 1986. Seventh Amendment to the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978. Pacific Fishery Management Council. Portland, Oregon.

PFMC. 1988. Ninth Amendment to the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978. Pacific Fishery Management Council. Portland, Oregon.

Plummer, M.L., W. Morrison, and E. Steiner. 2012. Allocation of fishery harvests under the Magnuson-Stevens Fishery Conservation and Management Act: Principles and practice. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-115, 84 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<sup>®</sup> 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/>.

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.

Siebenaler, J. B. and Winfield Brady. 1952. A high speed annual commercial fishing reel. Technical series no. 4. University of Miami Marine Laboratory: Coral Gables, FL.

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.

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.

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.

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.

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>



## CHAPTER 10. INDEX

- Accountability measure, iii, 3, 37, 68, 81, 110, 111, 149
- Allowable biological catch, 77, 99
- Annual catch limit, iii, 81, 82, 111, 112, 148, 157
- Bag limit, vii, ix, 3, 6, 15, 18, 35, 37, 38, 56, 66, 81, 82, 89, 93, 95, 98, 99, 112, 130, 141, 142, 143, 156, 162, 168, 169, 175, 177, 180
- Biomass, iii, 4, 24, 87, 88
- Bycatch mortality, 98, 129, 142, 150
- Bycatch reduction, 130, 148
- Circle hooks, 148
- Climate change, 84, 88, 93, 94, 98
- Closed season, 141, 142
- Commercial allocation, x, 34, 149
- Compliance, 98
- Council on Environmental Quality (CEQ), 78, 84, 86, 101, 107
- Cumulative effects, xii, 31, 62, 78, 86, 88, 90, 92, 98, 99, 100, 105, 107, 124
- Deepwater Horizon MC252 oil spill, ix, 17, 30, 31, 32, 50, 52, 67, 83, 85, 86, 92, 95, 96, 97, 98, 114, 116, 124
- Direct effects, 50, 63, 77
- Discard, vii, 63, 64, 65, 84, 134, 136, 145, 146, 151, 160
- Discard mortality, vii, 63, 64, 65, 84, 134, 136, 145, 146, 151, 160
- Economic benefits, xii, 4, 72, 74, 75, 77, 150, 171, 172, 174, 175, 177, 181
- Economic efficiency, x, 3, 13, 33, 66, 67, 72, 76, 181, 182
- Environmental impact statement (EIS), i, 5, 14, 108, 109, 110, 111, 112, 128
- Environmental justice, 45, 126
- Essential fish habitat (EFH), 91, 92, 107, 109, 112, 117, 128
- Fishing mortality, x, 4, 15, 25, 87, 88, 89, 93, 94, 99, 130, 143, 148, 149
- Fishing mortality (F), 149
- Fuel, 95, 97, 98
- IFQ, 130, 142
- Indirect effects, xi, xii, 50, 65, 66, 77, 78, 90
- Individual fishing quota, iii, x, xii, 6, 9, 14, 63, 72, 79, 98, 110, 112, 115, 130, 150
- Individual fishing quota (IFQ), 98
- Marine mammals, 29, 90, 102, 125, 129, 140, 149, 166
- Maximum sustainable yield, 4, 60
- National Environmental Policy Act (NEPA), i, iii, 78, 107
- Natural mortality, 25, 144
- Optimum yield (OY), x, 1, 4, 5, 87, 96, 100, 110
- Overfished, x, 2, 15, 24, 25, 28, 60, 88, 89, 93, 94, 95, 130, 140, 141, 149, 156
- Overfishing, iii, x, 2, 5, 25, 28, 34, 60, 81, 82, 86, 88, 89, 93, 95, 99, 110, 140, 141, 149, 156
- Quota, iii, vii, viii, x, xi, xii, 2, 3, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 25, 31, 34, 35, 36, 37, 38, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 79, 80, 81, 82, 86, 87, 89, 93, 94, 95, 98, 110, 111, 112, 115, 130, 141, 142, 144, 148, 150, 155, 156, 157, 159, 160, 169, 171, 172, 173, 174, 175, 177, 178, 181, 183, 191
- Reallocation, xii, 8, 13, 34, 38, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 96, 158, 159, 171, 172, 175, 176
- Rebuilding plan, x, 2, 3, 15, 37, 60, 70, 89, 93, 94, 95, 109, 110, 111, 130, 141, 149
- Recreational allocation, viii, x, xi, 6, 15, 16, 63, 70, 72, 74, 82, 87, 148, 171
- Sea turtles, 19, 29, 30, 31, 90, 102, 110, 124, 140, 145, 149, 163
- Shrimp fishery, 142
- Size limit, vii, x, 6, 15, 17, 18, 35, 62, 79, 88, 89, 93, 94, 98, 99, 130, 141, 142, 143, 144, 146, 148, 156, 168, 176
- Stock assessment, 3, 15, 24, 25, 27, 63, 64, 79, 82, 83, 86, 88, 93, 99, 107, 116, 117, 118, 120, 125, 134, 135, 148
- Stock recovery, 142, 144, 150

TAC, 6, 148

Total allowable catch, iii, 6, 11, 15, 16, 34,  
35, 80, 87, 93, 99, 108, 110, 111

Total allowable catch (TAC), 94, 95

Venting tool, 148

## 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 2004a) to address the new EFH requirements contained within the Magnuson-Stevens Act. Section 305(b)(2) requires federal agencies to obtain a consultation for any action that may adversely affect EFH. An EFH consultation will be conducted for this action.

## **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 (vermillion 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**

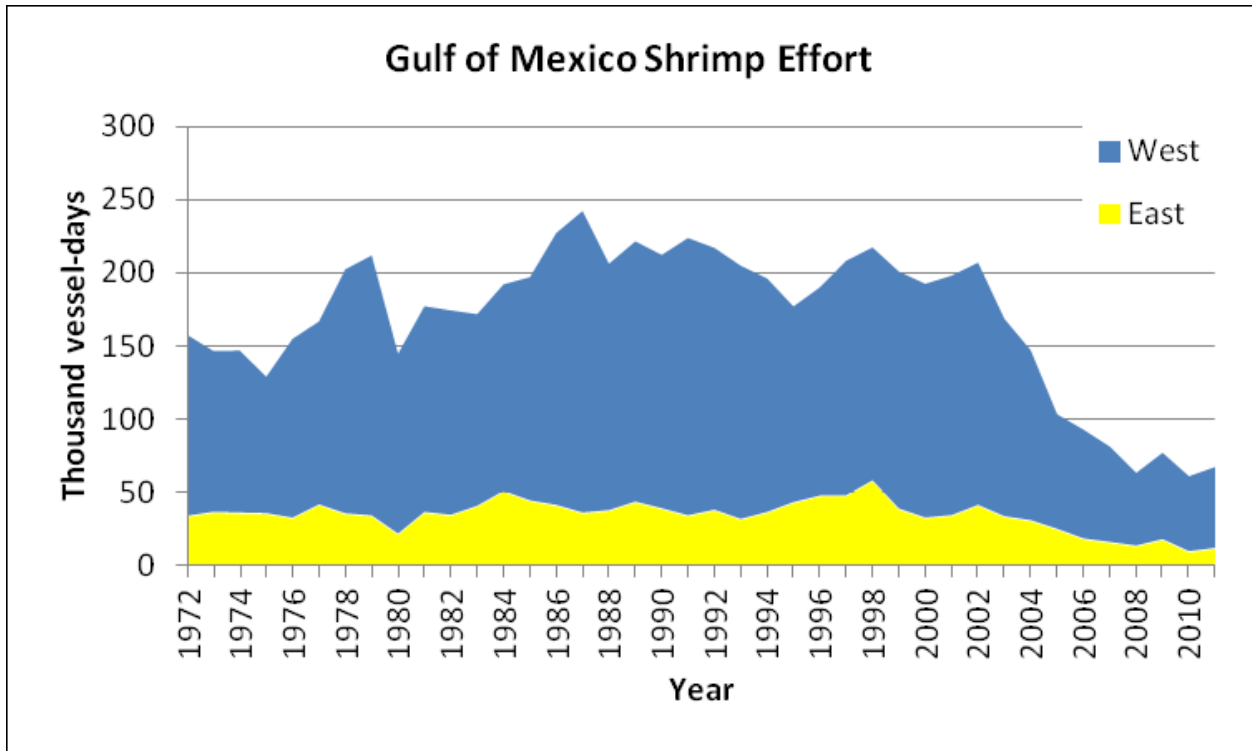
The Gulf of Mexico (Gulf) reef fish fishery directed at red snapper has been regulated to limit harvest in order for the stock to recover from an overfished condition. Regulations for the recreational sector include catch quotas, minimum size limits, bag limits, and seasonal closures. These are used 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.

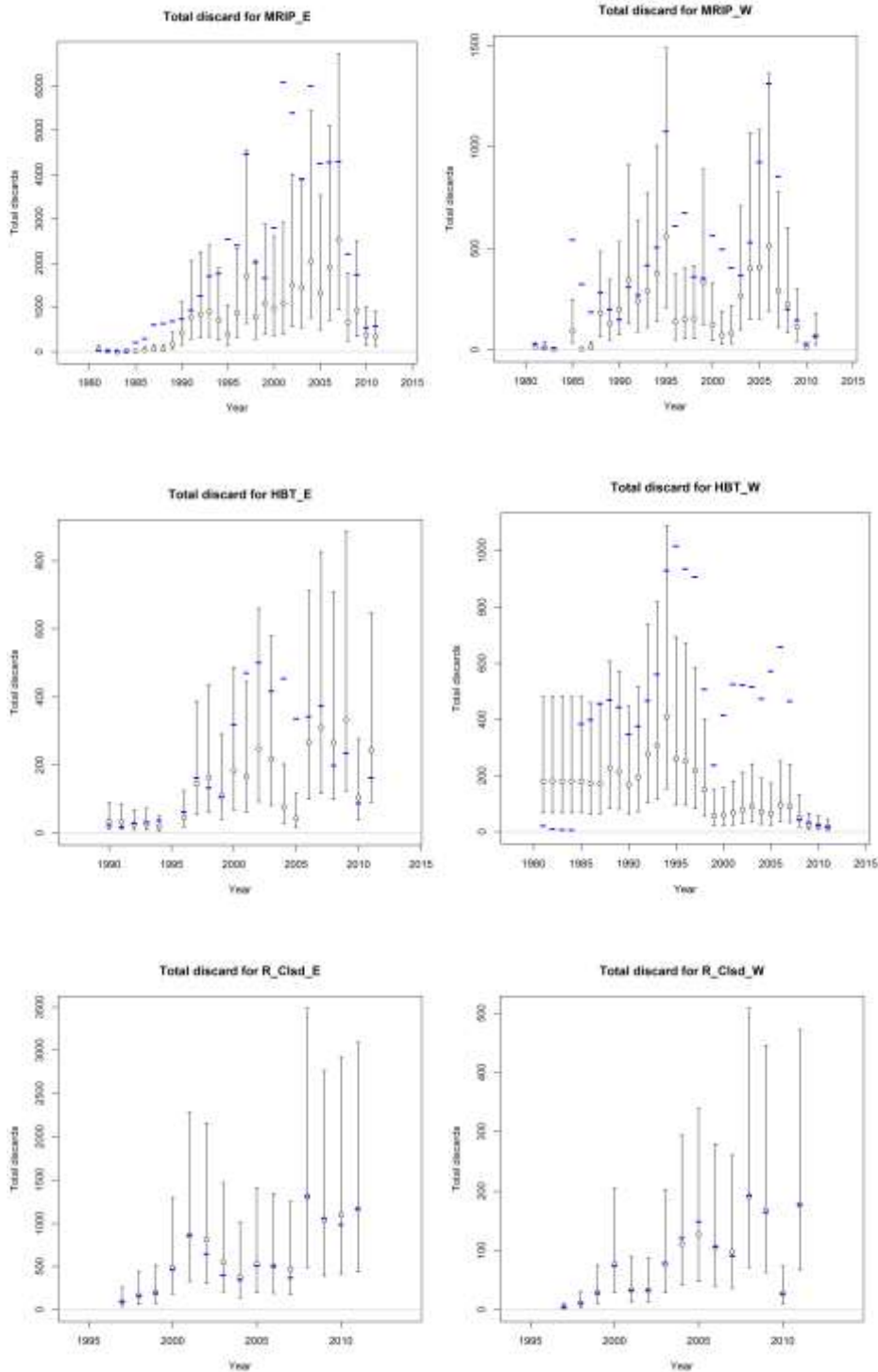
Although red snapper bycatch in the shrimp fishery is an important source of mortality for this stock, this bycatch practicability analysis will focus on the directed reef fish fishery managed under the FMP for Reef Fish Resources of the Gulf of Mexico. Bycatch from the shrimp fishery has been and will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

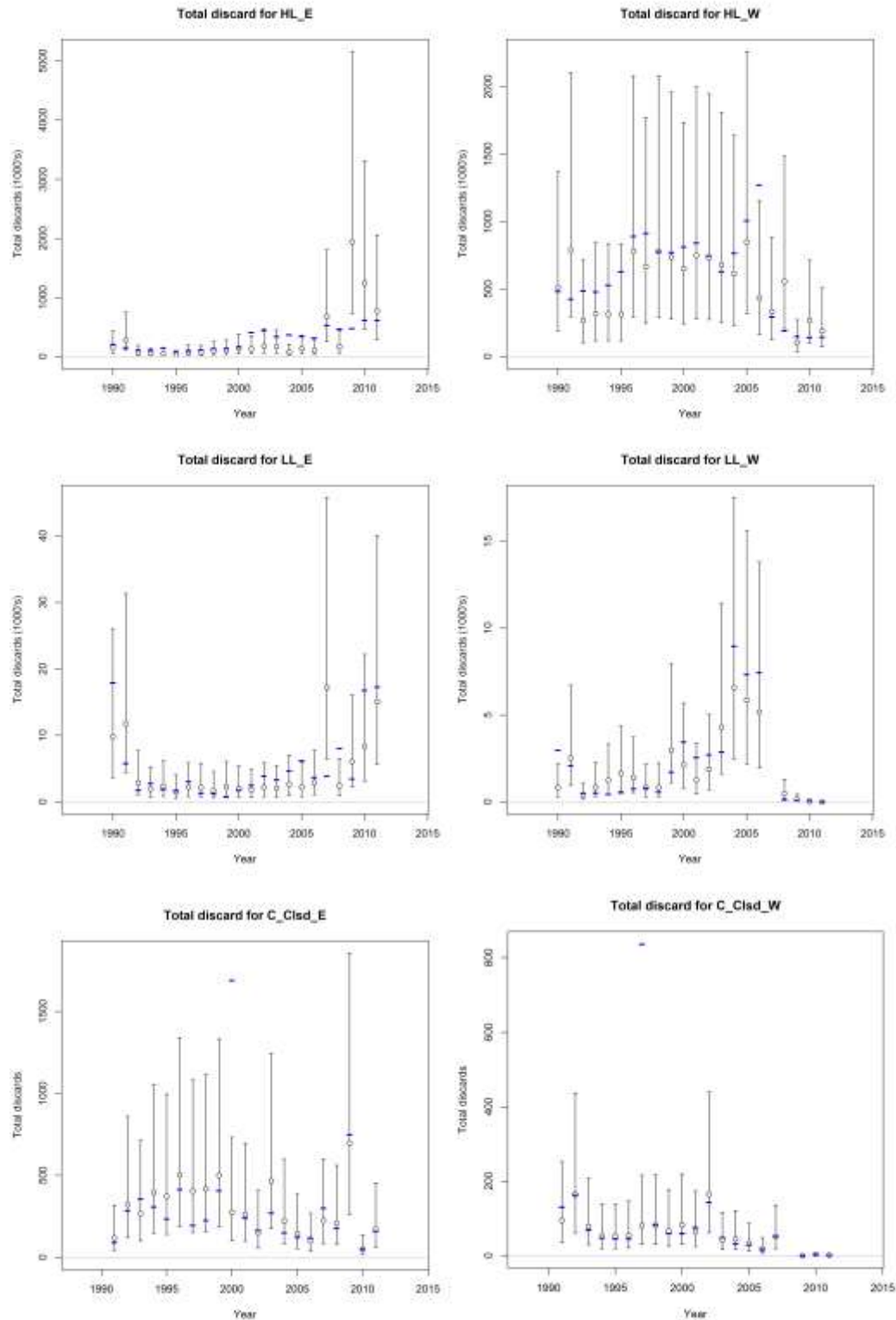
shift in fishing effort that has resulted in the program. Note that for the commercial sector, closed season discards after the IFQ program was implemented refers to vessels with little or no red snapper allocation (see SEDAR 31 2013).



**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.

Year	Recreational			Commercial		
	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.

Year	Recreational						Commercial					
	East			West			East			West		
	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.

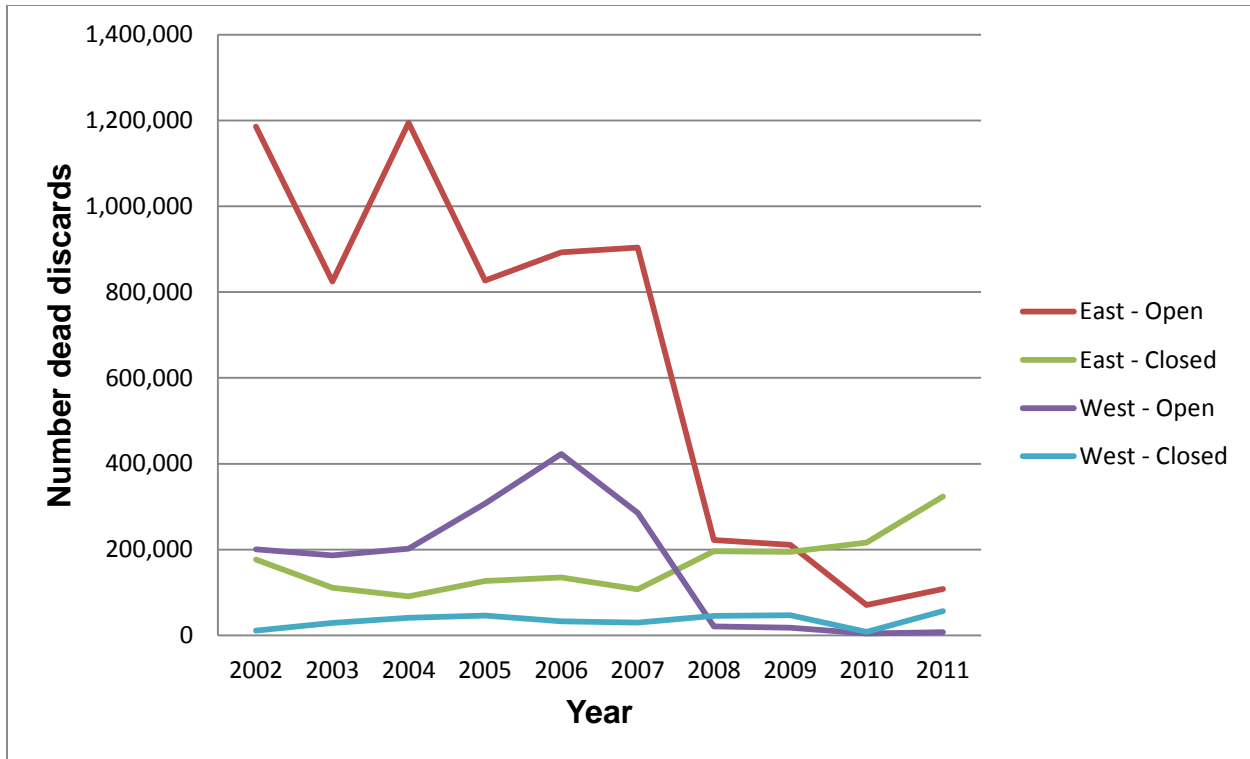
## **Practicability of current management measures in the directed red snapper fishery relative to their impact on bycatch and bycatch mortality.**

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 that 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 (mostly 19-24-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.

Year	Eastern Gulf				Western Gulf			
	Landings		Dead discards		Landings		Dead discards	
	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 allocations and accountability measures discussed in Amendment 28 (GMFMC 2014b) can indirectly affect bycatch in the Gulf reef fish fishery. These actions are primarily administrative. They would change the apportionment of fish between the commercial and recreational sector as well as affect how the recreational season is calculated. 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 revise the current red snapper allocation between the recreational and commercial sectors and so would not directly affect bycatch minimization. As discussed in Section 4.1.2 of Amendment 28 (GMFMC 2014b), the number of dead discards is estimated to be lower as a result of more recreational allocation because some fish caught could be retained rather than discarded under an increased quota. For the commercial sector, a decrease in the allocation would likely lead to more discards as a result of a reduced quota. Thus, any benefit to the red snapper stock from increasing the recreational allocation in Alternatives 2-7 would likely be offset by increases in dead discards as a result of a reduced commercial quota. As a result, it is difficult to assess whether this action, in terms of dead discards, would be beneficial, adverse, or have no effect on the red snapper stock.

This action also would add accountability measures for the management of red snapper. The proposed accountability measures, as discussed in Sections 4.2.2 and 4.3.2 of Amendment 28 (GMFMC 2014b) could also indirectly affect bycatch, but it is difficult to assess whether they would provide any benefits or not. For red snapper, the consequences of selecting accountability measures that would lead to a shorter fishing season would reduce discards during the season. However, because the reef fish fishery is a multispecies fishery, fishing effort would likely shift to some other species after the red snapper season closes. During the closure, any red snapper caught would be discarded. Given that some of these discarded fish would die, a shorter season could result in more red snapper being discarded dead.

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, this action would revise the red snapper allocation between the commercial and recreational sectors. For species with quotas (greater amberjack, gray triggerfish, and recreational red snapper), this could lead to a shift in fishing effort during 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**

Reducing the commercial allocation in Action 1, Alternatives 2-7 would result in fewer fish being landed and certainly affect fishing, processing, disposal, and marketing costs. However, because red snapper is a part of a multispecies fishery, other species could be targeted to fill any losses from reduced red snapper quotas. This action 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**

It is not possible to determine whether bycatch, including the amount of regulatory discards, will be affected following implementation of these actions. For the recreational sector, Action 1, Alternatives 2-7 are expected to increase the season length, albeit only a few days, and thus reduce discards. However, Action 2, Alternatives 2-5, could cancel out any increase in season length through the establishment of ACTs. In addition, reef fish fishing will occur when recreational fishing for red snapper is closed, so regulatory discards red snapper will occur. Thus, it is possible that the amount of recreational regulatory discards remains more or less the same with the proposed shift in allocation and additional accountability measures. For the commercial sector, individual fishing quota shareholders will need to determine if their red snapper allocation is sufficient to target red snapper, or to use the allocation to keep incidentally caught red snapper while targeting other species.

### **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 and ACTs based on stock allocation measures are currently used to regulate the commercial and recreational sectors harvesting red snapper. None of the resultant quotas 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**

Red snapper is a highly desirable target species and the proposed shift in allocation (Action 1) is intended to increase the percentage of the red snapper quota allocated to the recreational sector (and decrease the commercial sector's share by an equivalent percentage). This would be expected to improve fishing opportunities for the recreational sector, thereby increasing the economic and social benefits for recreational anglers and associated coastal businesses and communities as modified by the Action 2 and 3 accountability measures. However, this amendment would also decrease fishing opportunities for commercial fishermen, thereby adversely impacting associated businesses and communities. No effects would be expected on the non-consumptive uses of the fishery resources.

### **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 management measures could increase dead discards for the commercial sector and decrease dead discards for the recreational sector. The proposed management measures would not be expected to affect the total amount of red snapper normally harvested by anglers and commercial fishermen. However, increases in the recreational red snapper quota and decreases in the commercial quota (Action 1) are expected to result in economic benefits for the recreational sector as modified by Actions 2 and 3, and losses to the commercial 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 in the recreational sector. However, these benefits have to be balanced against the expected increases in bycatch in the commercial sector. The main benefits of reducing red snapper bycatch are less waste and 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, discard mortality is factored into the analyses to adjust the estimated reductions for losses due to dead discards. Changes in discards associated with each of these management measures are contingent on assumptions about how fishermen's behavior and fishing practices will adjust. In these actions, establishing a new red snapper allocation and adding recreational accountability measures would indirectly affect discards and bycatch. Discards and bycatch would be affected depending on the magnitude of allocation change allowed under **Action 1** and how recreational harvest is constrained under **Actions 2 and 3**.

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 FMP and Magnuson-Stevens Fishery Conservation and Management 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](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](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](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](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](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](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. Establishing Recreational Closure Authority Specific to Federal Waters off Individual States for the Red Snapper Component of the Gulf of Mexico Reef Fish Fishery. Emergency Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico. Southeast Regional Office, St. Petersburg, FL.

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, <i>Sargassum</i>	Drift algae, <i>Sargassum</i>	Drift algae, Reefs, <i>Sargassum</i>	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. SUMMARIES OF PUBLIC COMMENTS RECEIVED

This section includes four sets of public comment summaries on Reef Fish Amendment 28, Red Snapper Allocation:

- Summary of written comments received between the October 2013 and February 2014 Council meetings.
- Summary of written comments received between the February and April 2014 Council meetings.

Both sets of comments can be viewed at:

[http://www.gulfcouncil.org/fishery\\_management\\_plans/scoping-thru-implementation.php](http://www.gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php)

- Summary of scoping comments received by NOAA Fisheries on the Notice of Intent to prepare an Environmental Impact Statement (EIS)
- Summaries of comments received at public hearings (March 10-20, 2014).

### **I. Summary of written comments received between the October 2013 and February 2014 Council meetings**

- Take no action/Status quo – commercial sector supplies red snapper to the majority of the population
- Shift 5% of the existing quota to the recreational sector
- Shift 10% (or more) of the existing quota to the recreational sector
- Increase recreational quota by 8%
- Allocate 100% of future quota increases to the recreational sector if the allowable red snapper quota is in excess of 9.12 million pounds.
- Allocate 75% of quota increases if the allowable red snapper quota is in excess of 9.12 million pounds.
- Allocate 60% of the quota to the recreational sector
- Allocate 65% recreational and 35% commercial
- Allocate 75% recreational and 25% commercial
- Allocate 50/50 plus 100% of any quota increases to the recreational sector
- Allocate 55% recreational and 45% commercial
- Allocate 90% recreational and 10% commercial
- Allocate 67% recreational and 33% commercial – with the charter for-hire classified as commercial
- Allocate 50/50 quota
- Please oppose Amendment 28 and focus on real solutions for recreational anglers that will extend the season over the long-term.



- A 10% increase in allocation for the recreational sector would not increase the season length by much – but it would reduce the commercial sector’s ability to supply America with red snapper.
- Any change in allocation would have a negative effect on the commercial sector’s ability to make a living.
- Amendment 28 would hurt the region’s seafood industry by giving more allocation to a poorly managed recreational sector at the expense of commercial fishermen, restaurants, seafood markets, and the millions of Americans who don’t have the means to catch their own fish.

#### Other suggestions

- Eliminate commercial fishing until the fishery is no longer overfished, then allow commercial fishing under the same bag/size/season/gear restrictions as recreational, and auction off any commercial fishing permits.
- 4-6 month season with 4-fish bag limit
- 3-5 fish with one fish under 16” and a May 1 – October 1 weekend and holiday season.
- Charter for-hire should get 50% of the quota and each permit should receive the same amount of allocation.
- Giving more quota to the recreational sector will not solve their overfishing problem.
- 3-day weekend only fishing season.
- Close the season every ten years for one full season.
- Would support a 5-fish bag limit and 12” minimum size limit – keep the first 5 fish.
- Keep the first 4 fish – no size limit.
- Increase recreational bag limit to 10 fish.
- Allocation of any wild fish species should be relative to the numbers of recreational and commercial fishermen.
- 12” size limit/4 per person bag limit with an open season of 30 fishing days throughout the year – anglers would have to login to a computer system to declare a fishing day.

## **II. Summary of written comments received between the February and April 2014 Council meetings**

#### Comments include:

- Support for all of the Alternatives, including new Alternative 7
- Alternatives 1, 5, and 6 appear to be most popular
- Many offered support for some sort of reallocation in favor of the recreational sector, but did not specify an Alternative.

#### Others offered Alternatives not included in the document:

- A 50/50 split in allocation.

- 60% recreational allocation/30% commercial allocation, and a longer recreational season.
- 65% recreational allocation/35% commercial allocation.
- 65% recreational allocation/35% commercial allocation with a 4-fish bag limit and a longer recreational season.
- 75% recreational allocation/25% commercial allocation.
- 80% recreational allocation/20% commercial allocation.
- 95% recreational allocation/5% commercial allocation.

General Comments regarding the Amendment include:

- A shift in allocation in favor of the recreational sector, but not unless some sort of recreational accountability is put in place.
- Allocation of red snapper to the recreational fishery should be accompanied with accountability measures (AMs) to more effectively constrain the recreational sector to the prescribed annual catch limit (ACL).
- This amendment does not meet or address the stated purpose and need because increasing allocation on its own does not stabilize the fishery or prevent overfishing, nor is the amendment consistent with MSA (does not address AMs).
- Current allocation causes an increase in recreational fishing pressure.
- Reconsider the effects of removing the “30B permit provision”, sector separation and other management strategies, as well as changes to the management goal for red snapper in conjunction with this amendment.

Other Red Snapper Comments Received:

- There is a need for better quality data, which can only come from improved funding, partnerships, and proper auditing.
- Current recreational regulations promote mortality by requiring fish to be thrown back only to die.
- Support Sector Separation.
- Make red snapper a sport fish.
- If the recreational season cannot be at least three months implement some type of days at sea program.
- Open amberjack and gray triggerfish during the same time as red snapper so there are other species to fish for, making the offshore trip more worthwhile.
- Captains should not be able to have a commercial license and a Charter-for-Hire license at the same time.
- Consider allowing the commercial sale of spear fishing catches.
- Recreational sector puts more money into the economy.
- Recreational sector loses a lot of days to bad weather.
- Louisiana is ready and able to manage snapper in federal and state waters off of Louisiana.
- More artificial reefs will provide more habitat and help the stock grow.
- A viable solution is to set a minimum distance (50-75 miles) from any shoreline for commercial fishing operations.
- Eliminate the size limit.

- Better way to manage – keep every snapper caught regardless of size and set a limit per angler.
- Allow anglers to keep a 5 gallon bucket of “first caught” reef fish.
- Close the fishery during spawning season.
- Develop a program that would allow private recreational anglers to pick and choose the days they can fish for red snapper.
- Implementing a tag program or a recreational red snapper license would help the recreational sector stay within its quota as well as contribute to data collection.
- Give recreational anglers six months to fish for red snapper.
- Decrease size limit to 13 or 14”.
- Increase the red snapper bag limit.
- Increase the bag limit to 3-5 fish.
- Implement a 4-fish bag limit.
- Open red snapper season and leave it open.
- Adjust the season to accommodate the Friday before Memorial Day through Labor Day.
- Season should begin the first Friday in July and last through the last Saturday in July, but the five states should adopt the same seasons, with state waters abiding by a 2-fish bag limit while the federal bag limit increases to 4 fish.
- Implement a July – September season.
- Need separate seasons for different areas in the gulf by population.
- Implement a split, multi-season to accommodate more people.
- There should be no private “ownership” of red snapper (IFQ).
- Extend the season by 4 weeks.
- Delay the start of the season to July 1.
- Implement a 6 month season.
- If there cannot be a reasonable recreational season, there should be no commercial fishery.
- Unfair to reward the recreational sector that has consistently exceeded its quota.
- Allocating more fish to the recreational sector cannot increase the stability of the red snapper fishery, as stated in the purpose and need, because you are giving more fish to the sector that continues to exceed its quota.
- Allocation should be reviewed frequently.
- Amendment 28 is not a real solution. This amendment will only hurt more coastal businesses and commercial fishermen who depend on this fishery for a living.
- Recreational anglers should be able to keep a 2-day bag limit when on a trip in excess of 24 hours.
- Mid water trawlers should be using TEDs.

**III. Summary of scoping comments received by NOAA Fisheries on the Notice of Intent to prepare an Environmental Impact Statement (EIS) for Reef Fish Amendment 28**

The comment period was open from November 7 through December 9, 2013, and 159 comments were received. These comments may be viewed at <http://www.regulations.gov/#!documentDetail;D=NOAA-NMFS-2013-0146-0001>.

Comments in support of increasing the recreational sector’s share of the annual catch limit often cited socioeconomic gains, reducing restrictions, and providing a better sense of fairness in setting the allocation. Comments in support of the status quo or increasing the commercial share of the annual catch limit often cited fairness because the commercial sector does not exceed their quota due to better accountability of catches, the importance of providing seafood to the non-fishing public, and protecting commercial sector investments in the fishery.

The following is a breakdown of the comments. Table 1 shows the number of comments supporting each of the alternatives in Amendment 28.

**Table 1. The number of scoping comments recommending each Amendment 28 alternative.**

Alternative	Number of comments recommending the alternative
1	29
2	1
3	0
4	3
5	2*
6	19

\*Two commenters in support of Alternative 6 indicated they could also support Alternative 5

Other allocation alternatives were recommended by commenters and are shown Table 2.

**Table 2. Other allocations recommended in scoping comments on Amendment 28.**

Recreational:commercial allocation	Number of comments in support of the allocation
10:90	1
50:50	3
60:40	3
75:25	1
100:0	6

Twenty-one comments recommended an alternative similar to Alternative 5 except that if the red snapper quota is greater than 9.12 million pounds (mp), allocate 90% rather than 75% of the amount in excess of 9.12 mp to the recreational sector and 10% rather than 25% to the commercial sector.

#### **IV. Summaries of comments received at public hearings (March 10-20, 2014).**

##### **Orange Beach, Alabama March 10, 2014**

##### **Council/Staff**

Johnny Green  
Assane Diagne  
Charlotte Schiaffo

##### **68 members of the public attended.**

##### **Gary Royal- Charter**

Mr. Royal noted that he had been running a charterboat since 1997, and stated that the only sector being punished was the commercial sector. He did not support taking any commercial allocation away and suggested that the commercial sector be allocated on historical numbers. He supported Alternative 5. He added that the fishery needed to work under a system that allowed the recreational sector to fish year-round, maybe with tags, and that flexibility in regulations was needed so that everyone could catch more fish.

##### **Randy Boggs- Charter**

Mr. Boggs supported Alternative 1 and stated that the Council was pitting the sectors against each other and he could not support reallocation, or anything else, until the recreational sector was brought into compliance. He added that Alabama could not control compliance by other states and should not be punished because recreational fishers in other states were going over their quotas. He advocated making the recreational sector more accountable.

##### **Troy Frady- Charter**

Mr. Frady noted that he had been attending Council meetings for five years. He stated that all sectors needed to move towards a system that allowed flexibility. He said that the recreational harvest was running 54-56% each year even though their quota was 49%, and that about 140,000lbs of snapper were being fished across the Gulf daily. He believed that Amendment 28 was premature and suggested a fish tag system. He recommended tabling Amendment 28 until a better data collection plan was in place for about two years in order to get accurate data.

##### **David Walker- Commercial**

Mr. Walker supports Alternative 1 and stated that the amendment would cause instability in the commercial sector and rewarded the recreational sector for going over their allocation. He said that the IFQ program had been a success and that it should not be changed by the Council. He added that any allocation taken away from the commercial sector took fish away from the American consumer and that reallocation unfairly penalized the commercial sector, which followed the rules. He noted that the commercial sector had already taken a huge quota reduction while the recreational sector kept going over theirs. He believed that the commercial sector deserved to keep their historical quota and that the recreational sector needed to be held accountable. He indicated that SESSC votes are in question because one of the members may be

ineligible. He suggested that the SESSC needed to review all data on the Amendment, and that the Council should take no action until this was done.

**Shawn Miller-** Recreational

Mr. Miller felt that the amendment was good. He suggested that the fishery be shut down in June for a few years to allow the fish to spawn, and maybe even shut down for three months to all sectors, even though people would lose money in the short term. He believed such an action would allow longer seasons eventually due to more fish being spawned, thus benefitting all sectors.

**Blakeley Ellis-** Recreational

Mr. Blakely supported Preferred Alternative 5. He felt it was long overdue and was happy with any increase.

**Ben Fairy-** Charter

Mr. Fairy supported Alternative 1 (No Action). He noted that there was a commercial lawsuit against NMFS because of the recreational sector continuously going over their quota, and that the length of the season depended on the upcoming ruling. He did not support reallocation and stated that there needed to be three sectors: recreational, charter, and commercial.

**Tom Ard-** Charter

Mr. Ard supported Alternative 1. He stated that the amendment was a band aid, and that he supported dividing the charterboat industry from the recreational.

**Bobby Kelly-** Charter

Mr. Kelly supported Alternative 1 and the separation of the charterboat industry from recreational. He wanted better data collection methods and supports sector separation.

**Joe Nash-** Charter

Mr. Nash supported sector separation and believed the commercial and charterboat industries were penalized for the recreational fishers going over the allocation. He advocated more accountability in the recreational sector and noted that derby fishing was too hard on the charterboat industry.

**Dale Woodruff-** Charter

Mr. Woodruff advocated tabling Amendment 28 and expressed concern over there being no accountability in the recreational fishery. He stated that if the commercial sector had to give up some of its allocation, that it should be put in a program for everybody. He urged everyone to contact their representatives in Congress to have a plan applying only to Alabama, since other states were being non-compliant and punishing Alabama. He stated there needed to be a better reporting system.

**Gary Malin-** Recreational

Mr. Malin did not believe the recreational sector was going over its limit. He noted that bad weather had limited fishing days and advocated a tag system for all sectors.

**Mike Rowell- Charter**

Mr. Rowell expressed concern that the sectors were being pitted against one another. He supported Alternative 1. He felt that Alabama was being punished because of non-compliance by other states.

**Scott Drummond- Founder of an outdoor trade organization**

Mr. Drummond stated that the data the Council uses are not accurate, and that economic studies needed to be done for each amendment. He said that commercial fish landings had to be documented while recreational did not, and that estimates were used instead of hard data. He supported Alternative 1.

**Jim Tinker- Recreational**

Mr. Tinker agreed with other speakers that the sectors were being pitted against each other. He believed the Council was not dealing with issues or solving problems and that there were plenty of snapper in the Gulf. He stated that the season was too short, which was economically devastating and that the size limits caused too many fish to be thrown back, increasing mortality. He said the recreational industry supported the Gulf economy, and that the percentage of quota was not the problem, the counting of the fish was the problem. He did not support the amendment and believed the recreational fishery in Alabama was being destroyed. He also stated that red snapper were overwhelming other fisheries and the Council was practicing poor conservation.

**Angelo Depaula- Recreational**

Mr. Depaula stated that the problem was not the amount of fish being caught, but the counting method being used. He advocated a smaller limit, noting the mortality rate was over 50%. He supported an increased quota and a longer season (6 months).

**Mobile, Alabama  
March 11, 2014**

**Council/Staff**

Kevin Anson  
Assane Diagne  
Charlotte Schiaffo

**46 members of the public attended.**

**Ben Fairy- Charter**

Mr. Fairy supported Alternative 1. He noted that there was a federal lawsuit by the commercial industry over the recreational overages, and that the outcome of that lawsuit could determine allocations. He urged the recreational sector to be accountable and advised against the sectors pitting themselves against each other.

**George Null- Boat dealership**

Mr. Null stated that his business' sales of offshore boats had decreased in the last 3-4 years causing an economic impact to his business.

**Larry Huntley- Commercial**

Mr. Huntley supported Alternative 1, noting that giving more fish to the recreational sector took fish away from consumers, and that increasing their allocation would reward them for going over their allocation.

**David Walker- Commercial**

Mr. Walker supported Alternative 1, stating that allocation was not the problem; it was the fishery management process that was the problem. He stated that the SESSC needed to review the amendment before the Council made a decision and said that the Council should reconvene the SESSC because one vote was cast by someone who may not be eligible to serve on the SESSC.

**Donald Waters- Commercial**

Mr. Waters said that numerous fish species were given to recreational fishers and that to give them more of the red snapper quota was unfair. He stated that the recreational fishery needed to be held accountable and supported Alternative 1.

**Edwin Lamberth- Recreational**

Mr. Lamberth supported Alternative 6, but would be satisfied with Alternative 5. He stated that the recreational fishery provided \$10 billion in economic impacts. He emphasized that the Council needed to reallocate fairly based on the recreational industry's economic impact and that the data the Council was currently using to reach its allocation decisions was over thirty years old.

**Charles Rodriguez- Boat dealer**

Mr. Rodriguez did not have a preferred alternative, but suggested that there be a 3-month season with a 3-fish limit. He did not feel any of the sectors should have fish taken away from them and that the red snapper population had rebounded enough for everyone's allotment to be increased.

**Scott Drummond- Outdoor trade organization**

Mr. Drummond stated that the data the Council used are bad and that no one should have any fish taken from their sector. He advocated cancelling the amendment, saying it was not needed.

**Charles Beach- Charter**

Mr. Beach supported Alternative 1. He stated that the stock had recovered and that the Council was not taking into account that the commercial fishery was dealing in pounds and not numbers. He pointed out that the shrimping industry had collapsed so there was very little bycatch of juveniles which increased the stock. He added that a 40-day season was too short and that the Council needed to reassess its stock assessment methods and lower the commercial size limit since it was hurting the commercial industry.



**Tom Steber-** Alabama Charter Association

Mr. Steber supported Alternative 1 and stated that the Council was pitting the sectors against each other.

**Avery Bates-** Commercial

Mr. Bates advocated more reef building to increase stocks, noting that Alabama had a successful program. He stated that the commercial fishery was being pushed out by too much regulation, and that the fish count was incorrect. He wanted fair and equitable allocation and emphasized that the best scientific data needed to be used in Council decisions. He did not support the amendment.

**Panama City, Florida  
March 12, 2014**

**Council/Staff**

Pam Dana  
Assane Diagne  
Charlotte Schiaffo

**93 members of the public attended.**

**John Anderson-** Commercial

Mr. Anderson supported Alternative 1 and stated that taking fish away from the commercial sector would punish the consumer and the industry that followed the rules.

**BJ Burkett-** Charter

Mr. Burkett supported Alternative 1 and stated that there were too many loopholes for the recreational industry. He advocated a 150-day recreational season.

**Jack Melancon-** Commercial

Mr. Melancon supported Alternative 1.

**Pam Anderson-** Charter

Ms. Anderson supported Alternative 5, stating it was the most fair to all sectors and would create more stability in the fishery. She noted that an economic study had been done showing that taking away fish from the commercial sector was equitable and would be best for the nation. She stated that the overages reported in the recreational sector were due to bad data from NOAA. She suggested a Gulf reef permit to give researchers more accurate data.

**Ron Schoenfeld-** Recreational

Mr. Schoenfeld supported Alternative 4. He suggested an odd-even day season in order to double fishing days, and to have fish counted when boats come in to dock.

**Bart Niquet-** Commercial

Mr. Niquet supported Alternative 1 and stated that recreational anglers needed to be held accountable.

**Bob Zales- Charter**

Mr. Zales supported Alternative 5 and stated that sector separation would not work, and that separation would increase the commercial quota at the expense of the recreational. He added that data being used were not accurate.

**Jackie Rinker- Media**

Ms. Rinker supported Alternative 4 or 5, stating that money spent in the communities by recreational anglers was important to keep local communities viable.

**Chuck Guilford- Charter**

Mr. Guilford supported Alternative 6. He stated that allocation had put a lot of people out of business.

**Kenyon Gandy- Charter**

Mr. Gandy supported Alternative 1 and noted that there was too much discards in the industry because of size restrictions.

**David Krebs- Dealer**

Mr. Krebs supported Alternative 1. He advocated getting rid of the size limit. He stated that the current recreational management system was designed for failure.

**Mike Whitfield- Charter**

Mr. Whitfield supported Alternative 1. He stated that there were too many participants in the recreational fishery and that a count of them needed to be done.

**Dewey Destin- Charter**

Mr. Destin supported Alternative 1. He stated that the Council needed to change its management plan and get rid of kill and release. He stated that taking away fish from the commercial sector was not fair, and that while he did not object to an increase in the recreational quota, it should not be done at the expense of the commercial sector.

**Curtis Culwell- Recreational**

Mr. Culwell supported Alternative 5.

**Russell Underwood- Commercial**

Mr. Underwood supported Alternative 1. He stated that the commercial IFQ system was working well, and that the Council recreational management system was flawed. He suggested a tag system.

**Candy Ansard- Recreational**

Ms. Ansard did not support the amendment, saying none of the options solved the problem. She suggested building more artificial reefs and pursuing an aggressive program against lionfish.

**Charlie Saleby-** Charter

Mr. Saleby supported Alternatives 4, 5, and 6. He stated that the size limit needed to be smaller and that the season was too short, noting that smaller boats were put in danger by having to go far out in bad weather to fish.

**Donald Whitecotton-** Charter

Mr. Whitecotton supported Alternative 6, and agreed that bad weather limited fishing days.

**Stewart Miller-** Charter and commercial

Mr. Miller supported Alternative 1.

**Billy Archer-** Recreational, charter, and commercial

Mr. Archer supported Alternative 1 and suggested tabling the amendment. He also recommended a tag system for the recreational sector and sector separation.

**Kerry Hurst-** Commercial

Mr. Hurst supported Alternative 1. He recommended a national plan for both sectors and more accountability for the recreational sector.

**Dean Preston-** Recreational

Mr. Preston supported Alternative 6. He agreed that lionfish were a problem and stated that the amendment pitted the sectors against each other. He believed that the commercial sector had too large an allotment of a public resource.

**Frank Gomez-** Commercial

Mr. Gomez supported Alternative 1.

**Ken Vandirzeyne-** Recreational

Mr. Vandirzeyne supported Alternative 6.

**Gary Jarvis-** Charter and commercial

Mr. Jarvis supported Alternative 1 and advocated a management plan for the recreational sector. He encouraged Amendment 40 to be taken to public hearings and stated that Amendment 28 was the result of recreational lobbying.

**Mike Guidry-** Recreational

Mr. Guidry supported Alternative 4. He encouraged more accountability in his sector and also asked for more fishing days.

**David Underwood-** Commercial

Mr. Underwood supported Alternative 1.

**Bruce Craul-** Restaurant owner

Mr. Craul supported Alternative 1 and stated that better data were needed.

**Chris Niquet- Commercial**

Mr. Niquet supported Alternative 1 and urged the Council to get more accurate data. He stated that reallocation would cause instability in the fishery.

**Ben Seltzer- Commercial**

Mr. Seltzer supported Alternative 1.

**Frank Bowling- Recreational**

Mr. Bowling supported Alternative 5.

**Jason Smith- Charter**

Mr. Smith did not support the amendment, stating there was not enough data to make a choice.

**Gulfport, Mississippi  
March 12, 2014**

**Council/Staff**

Corky Perret

Emily Muehlstein

Phyllis Miranda

**45 members of the public attended.**

**Robert Cullimber-**

Mr. Cullimber supports Alternative 4.

**Tony Dees- Owner of retail fishing store**

Mr. Dees supports Alternative 4 because in the last ten years he has seen an approximately 80% decrease in tackle sales and 90% decrease in SCUBA sales for spearfishing.

**Donny Waters- Commercial**

Mr. Waters said the ITQ program initiated 8 years ago is probably the most successful program initiated by Council; 40% less fish are killed to bring quota to the dock. He doesn't feel it's right to reallocate fish from a sector that has been accountable, and commercial fishermen should not be penalized for the Council's inability to create a good fishing plan for the recreational fishery. He feels that the recreational sector wants to be accountable. The commercial sector cannot take a fish home, and they are feeding 97% of the population that cannot go recreational fishing. He does not want to take anything away from anybody but feels that this allocation will wreak havoc in the commercial fishery. His money goes back into his business. The answer is not to take from one sector to give it to another. This amendment does not promote any conservation because of the bycatch in the recreational fishery and it will create bycatch in the commercial fishery.

**FJ Eicke- Recreational**

Mr. Eicke supports Alternative 5 because the commercial sector won't lose anything. The recreational sector has increased in numbers significantly since the initial allocation was set.

Recreational angling has a tremendous economic and social value. The initial allocation was set using the time period of 1979-1987 and there was no recreational data at that time so the initial allocation was flawed from the start. The recreational fishery has put up with limited seasons and limited bag limits, and he feels that now there is a chance to do something right. The Council should reallocate on a fair and equitable basis.

**Jordan White-** Recreational

Mr. White prefers Alternative 1 because he doesn't support taking any red snapper quota away from commercial fishermen.

**David Walker-** Commercial

Mr. Walker does not want to attack the recreational fishermen themselves; it's their management plan that is the problem. The seafood industry is not the problem. Less than 2% of anglers in the U.S. are recreational and most of the nation depends on the seafood supply chain to get seafood. The commercial management plan is working. A new management plan needs to be developed for the recreational fishery, and reallocation is not the answer. Recreational fishermen need to get proactive not just in developing a new management system for themselves. Robbing from Peter to pay Paul is not the answer. Commercial fishermen had to make sacrifices. Alternative 5 does not enhance the net benefits of fishing, it only increases fishing days in a minor way. You could reallocate 100% to the recreational sector and they would still continue to lose days. Economic value cannot be the sole purpose for allocation. He supports Alternative 1: no action, because the commercial sector should not be penalized for following the rules. Reallocation is not justified when it comes to conservation. Also, there should be an outreach program (like the RAP sessions) for the seafood supply chain.

**JR Titnus-** Recreational

Mr. Titnus said the recreational season lengths projections are dependent on estimated weights and catches. Commercial fishing harvest is not an estimation. He has only been asked about his harvest once. There needs to be reliable data to make any decisions.

**Tom Becker-** President of Mississippi Charter Boat Captains Association

Mr. Becker said the fishing season is too short and he has different feelings about when to fish throughout the year. He supports Alternative 5. He has seen that commercial fishermen will drive by while he's fishing, take his number, and then fish his spot and empty them out.

**John Bullok-** Recreational

Mr. Bullok supports Alternative 1. Before the Council decides where the fish go, there needs to be a better way to check the recreational fishermen to determine if they deserve more pounds. When he goes out to the rig under this 2-snapper per person limit, he sees dead discards all over. Recreational fishermen are hi-grading and not venting. Stability of the recreational fishing sector should not be measured in length of season or allocation, but in the quality of fish. Commercial fishermen are checked 100% of the time for both harvest and other regulatory compliance, but he as a recreational angler hasn't been checked in 5 years.

**Johnny Marquez-** Executive Director of CCA Mississippi

Mr. Marquez supports Alternative 5 because for many years the season has gotten shorter and shorter and something different needs to be done. The initial allocation is outdated, it didn't take into account the economic and social concerns for the fishery. There have been tremendous changes in the fishery since that initial split. Economics should play an important role in the allocation decision. As the species rebounds, Alternative 5 wouldn't take away from the commercial fishery; it only takes the excess. We're back at the high-water mark for the commercial fishery and it's fair and equitable to give more to the recreational sector.

**Nathan Witonovich**

Mr. Witonovich supports Alternative 5.

**Phillip Horn-** 3<sup>rd</sup> generation seafood dealer and former Council member

Mr. Horn has been involved in the red snapper war since it began. He was involved in the development of the IFQ program and supports Alternative 1. The commercial industry has a tough row to hoe. Texas has never closed their state waters; Florida left their fishery open one year for a rodeo; Louisiana is open on weekends and claiming 10 miles; yet, the states all receive money for enforcement. The commercial industry suffered when quotas began and snapper needed help. The industry was closed over and over, and the agencies and the charter captains used to say 'catch something else.' Alternative 5 would only increase the recreational season by 4 days. The year the 9.12 million pound quota was put in place, the recreational sector overfished their quota. Members of the commercial industry were forced out when the IFQ program was put in place and the same may need to happen in the recreational fishery to reduce effort. The biggest problem is stock assessments. We continue to increase quotas. The red snapper average size started at 2 pounds now we're catching bigger fish. We can't predict the weather with 8 different models, and the red snapper stock is managed under a single model; we need to argue about assessments not allocations.

**Gary Smith-** Recreational and AP member

Mr. Smith would like to correct some errors. Last year in a red snapper Advisory Panel meeting these issues came up: there needs to be a plan to let new people in. It needs to be addressed. He does not support any alternatives because none of them do anything to solve the recreational issues. The problem is the data and the people in charge. It's the NMFS's Council and the Council members just go along without doing anything. Dr. Crabtree is responsible because NMFS has openly said they want a catch and release fishery in the recreational sector. Mr. Smith wants accountability. He has asked for a boat permit and he only gets excuses as to why he can't do it. He does not believe it is possible that the recreational sector catches the number of fish that NMFS says they do. It is about shutting the Gulf down. He said we need to ban together and demand accountability.

**Keith King-** Owner of the largest boat dealer in Mississippi

Mr. King supports Alternative 5 because it's a compromise that doesn't impact the commercial sector in any way. Council needs to find a way to increase the accuracy of the data. The initial allocation split was determined long ago and was based on failed info. The data collection methodology is inaccurate. The economic benefits of the recreational sector are not being considered. The shortened season has impacted the sale of offshore boats and that needs to be

taken into consideration. He wants accurate data and feels decisions should not be made today based on the data we do have. The stocks are improving, and although there is a problem with the harvest count, it's obvious that effort is overstated.

**David Floyd-**

Mr. Floyd supports Alternative 1, do not reallocate red snapper.

**Nicky Cvitanovich-** Currently recreational; has done commercial and charter

Mr. Cvitanovich said this shouldn't be a commercial vs. recreational fight. The Council needs to fix the recreational management plan so that the season isn't so short. It's also a problem that you can't catch snapper and amberjack at the same time. The fishery service doesn't want you to catch fish. Most everyone has shifted to inshore speckled trout fishing now. He supports Alternative 5, but would rather the recreational management plan be fixed.

**Dustin Trochesset-** 3<sup>rd</sup> generation charter captain

Mr. Trochesset supports Alternative 5. He is displeased with the handling of the red snapper fishery in the MSA. The Act was created to be fair and equitable to all fishermen. How is it fair for the commercial guys to have more fish and the luxury under the IFQ program to fish when they want? The recreational guys are given condensed time and commercial fishermen can target the spots before recreational anglers are allowed to fish. There is nothing fair and equitable about that. The charter industry is negatively impacted by the short season. They were cut short last year and had to cancel trips. He doesn't believe that 200 boats are fishing every day and wonders if the weather is taken into account. He would like the Council to be fair and equitable and there is not much that is fair about the commercial fishermen getting more allocation. The other states open their seasons and that hurts Mississippi, because the stuff they're catching counts against the Gulf-wide quota.

**Scott Drummond-** President of an outdoor trade organization

Mr. Drummond supports Alternative 1, because we don't understand the economic impact of what we do.

**Kenner, Louisiana  
March 13, 2014**

**Council/Staff**

Harlon Pearce  
Emily Muehlstein  
Phyllis Miranda

**48 members of the public attended.**

**Pierre Villere-**

Mr. Villere said the current recreational allocation was set in the 1970's based purely on catch history. Using only catch history is a bad way to determine allocation. There are fewer boats in the commercial fishery than ever, and they continue to have the most harvest. What is the

impact of shorter seasons on bait shops, marinas, and hotels? At such a high price per pound, red snapper is not protein for America. Pollock is a more accurate example; it's cheap and there's lots of it. Counting every fish is the wrong path and it's a waste of time and resources. Trying to manage 1 million recreational fishermen is unusual and can't be done. The Council should set a bag limit and a decent season of 2-fish for the summer months, especially if the stock keeps expanding like it is.

**James Schere- Charter and commercial**

Mr. Schere supports Alternative 1. Transferring quota to the recreational sector won't help anyone, especially if the season remains open during the hottest time of the year. No one goes fishing only for red snapper; they catch 100 trout then go out for snapper. It takes one stop and 30 minutes of fishing and makes up a fraction of what's being caught in a fishing day. Customers don't book charter trips based on red snapper. It doesn't affect his [charter] business at the busiest fishing time of the year. Adding a few days won't help him and won't hardly affect any charter folks. Also, he doesn't think it will help private recreational anglers that much, because they're not targeting just red snapper on their trips.

**George Heuey- Recreational**

Mr. Heuey supports Alternative 5. From his fish camp, he catches trout near shore and then he runs his bay boat out to catch his two fish. His big problem is the verification of the recreational catch. If there was a way to count the recreational catch like the commercial catch is counted, then it would solve problems. But, that will never happen because of the number of ports and boats that recreational fishermen are using. The recreational sector gets the short end of the stick, and he thinks the allocation should expand in their favor. He loves to eat red snapper and wants it to remain in restaurants, and he wants charter fishermen to continue to have their business.

**Dax Nelson – Commercial**

Amendment 28 is wrong and Mr. Nelson supports Alternative 1. We've built this fishery. He remembers when we didn't have any snapper at all. Adding allocation to the recreational fishery won't help the recreational sector. The recreational sector has gone over its allocation in 6 of the last 7 years. If we do this amendment, it will only add two days to fish.

**Steve Loop- Recreational**

Mr. Loop is in favor of reallocation since it hasn't happened for the last 20 years, and the recreational sector is in need of a greater share of the snapper in the Gulf. The recreational sector gives more income to the government with all the taxes and money they spend to fish. The recreational sector has never caught over their limit, the federal government overestimates. Commercial fishermen are sitting at home making money renting out their licenses; that's not right and it's not fair. The Council should do the right thing and reallocate to the recreational sector.

**Louis Valet- Recreational**

Mr. Valet supports reallocation. He has seen so many changes in the Gulf since he started fishing. He doesn't think the changes in stock abundance happen because of fishermen fishing. God intended to feed the world with fish; that's why a fish lays a million eggs. What needs to be



done to promote those million eggs to grow into a million fish? We need to focus on clean water, habitat, and food. Farmers understand how to plant and grow plants but the stupid people regulating fish in the Gulf don't. Fish need to eat, but we wipe out porgy so that the red snapper won't be able to eat and grow. These fish have to eat something and they'll eat little red snapper and trout. The bonita and triggerfish are gone because they have nothing to eat.

**Thally Stone- Commercial**

Mr. Stone supports Alternative 1. He is just now making a decent living as a commercial fisherman. He earned every pound of allocation he got and nothing was given to him.

**Doug Hawkins-**

Mr. Hawkins supports Alternative 1. The fish are coming back and the Council shouldn't change things. Giving the allocation to recreational fishermen won't solve the problems in the recreational fishery.

**Russell Underwood – Commercial**

Mr. Underwood supports Alternative 1. We have rebuilt the fishery both commercially and recreationally. It took seven years to get a true stock assessment before the quota was increased. The problem is not the average guy who wants to catch a red snapper in the afternoon; the problem is with the Council system itself and whether the use of all the tools in the toolbox has been considered. He is worried about the resource. Seven years ago, there were hardly any people at these meetings. There was hardly any fish either; now, we have brought the fishery back. It was overcapitalized commercially, and there used to be a lot more boats. But, the IFQ program reduced the fleet and brought the fishery back. Recently, the commercial sector got a quota increase, and now they want to take it back. 500,000 pounds of snapper will only give an extra 2-3 days for recreational fishing. Is it fair for Texas to fish year round and the rest [of the Gulf] has a 30 to 40-day season? The problem is not allocation, the problem is the Council system.

**Charlie Capplinger - Recreational**

Mr. Capplinger said the system doesn't work. Recreational fishermen spend a lot of money on fishing. He supports Alternative 5, because it does not take any fish from the commercial sector. If there is additional allocation, than everyone will get more fish. The allocation is based on old data from 20 years ago. The demographics in the Gulf have changed. The economic value of the recreational fishery is enormous, and the number of fishermen targeting red snapper commercially is small. The allocation should have been different a long time ago. No one targets only red snapper, and no fisherman can fish during the week. The season is not set up for a recreational fisherman at all. The Council should increase the recreational sector's allocation to achieve the greatest economic impact and social impact for the largest user group.

**Daryl Prince- Commercial**

Mr. Prince supports Alternative 1. When he first started, there was hardly any fish in the Gulf. All the regulations have allowed the stock to improve because commercial fishermen have stopped hammering them. There are plenty of fish. Taking them from the commercial guys will not solve a thing. Sports fishermen won't have a better fishery by taking away allocation from the commercial sector.

**Christopher Gray - Commercial**

He used to wonder where the fish were, and now they're starting to see lots of fish. If you take 500,000 pounds from him by selecting Alternative 5, you're throwing him in the back of the bus. He should be standing in the front, because he made the fishery better as a commercial fisherman, by making sacrifices to rebuild the stock. He supports Alternative 1.

**Michelle Malony- Louisiana Wildlife Federation**

Ms. Malony said that outdoor recreational public access is just as important as habitat, and she expects improvement in data collection to show a robust recovering stock. She supports Alternative 5.

**Gunner Waldmann- Recreational**

Mr. Waldmann supports Alternative 5 with some caveats. The data collection is antiquated and needs to be improved. Alternative 5 does not take anything away from commercial fishermen. If the quota is over 9.12 mp, then the commercial sector will still gain 25% more of the allocation. As a safety consultant, he won't work for a company that removes oil platforms. It shouldn't be okay for them to blow up platforms and kill thousands of pounds of fish without anything being allocated for that damage.

**Chuck Laday- Recreational**

Mr. Laday is a member of CCA and an avid inshore angler. He occasionally fishes for red snapper. He would like to fish more but due to the short season, weather, and fatherhood, he doesn't have as much opportunity as he wants. His sons would really like to fish if there is a longer season. He supports Alternative 5 and applauds the Council. It's a fair and modest change to the current allocation that is based on old data. Under Alternative 5, the commercial sector loses nothing.

**Robert- Recreational**

Robert believes Alternative 5 seems like the right thing to do, adding that we all agree that something needs to be done for the management of the resource for our kids and grandkids. We need to work with the Council to come up with a different way to manage. We all need to come together to solve the problem because the fish are here. We don't see the croakers and triggerfish like we used to and we need to use data that isn't 25 years old. The Council is managing for the whole Gulf, and Louisiana is different than the other states. We need to come up with a subcommittee to recommend to the Council how to manage Louisiana. CCA is a good group that cares about conservation, and everyone should ban together to come up with meaningful management and [supporting] studies.

**Chris Marcusio-**

Mr. Marcusio is in favor of Alternative 5. In the last year, he has worked with some recognizable and seasoned fishery managers, economists, and advocates across the country to develop a report to reflect the culture and needs of the saltwater fishing public. One recommendation that came from the report was to examine allocation. It is set based on old data. If we're not managing fish for the best socioeconomic value and for conservation, then why are we managing? All allocations need to be examined, not just red snapper.

**Woody Cruse- Recreational**

Mr. Cruse said commercial and recreational fishermen are being pitted against each other, and it's unfortunate that we can't manage the resource together. He is a private angler and time on the water with his family is being limited. He has an expensive boat and he targets red snapper. It is terrible that amberjack is closed when red snapper is open. He is not anti-commercial, he just wants more time to fish. He has little confidence in the recreational harvest numbers.

**Steve Tomeny- Commercial**

Mr. Tomeny supports the Alternative 1 -no action. At this time, taking fish away from the commercial sector to add an extra two days to the recreational season is a no win situation. The system the recreational anglers are fishing under is broken. Adding pounds won't fix it, and the allocation is always overrun. The recreational fishery is an unlimited user group and as the fishery has recovered, more and more people want to go. The numbers should be lower than they are and he advocates a tag system. Sector separation would create more accountability, and we're still pushing for alternative management ideas. The SESSC should review Amendment 28 before final action is taken.

**Ed Petrey- Charter and commercial**

Mr. Petrey is against reallocation and supports Alternative 1. Reallocation won't solve anything and the only way we will solve something for the recreational sector is using some type of tag system to figure out what they're catching. The population has increased a lot and we're doing a lot better charter-wise. We need to leave allocation the way it is.

**James Bruce- Commercial**

Mr. Bruce said that when the industry signed up and voted for the IFQ program, they got cut off. Now for the first time, people are here in the room saying they're not taking fish from the commercial guys that made sacrifices. The recreational fishermen need sector separation and a tag system. The pie is only so big, and not everyone can catch fish. That's what the commercial guys had to do; limit entry. It's time for the recreational sector to do something. Keep allocation at status quo and choose Alternative 1.

**Bobby Jackson-**

Mr. Jackson is in favor of Alternative 1. He feels that everything should be left as it is now. All the people should be glad they live in Louisiana where you can go out and catch trout and mangrove snapper, and the state is giving us extra days in state waters. He doesn't think that 2 or 3 more days of fishing is worth taking away from the commercial fishermen.

**Brent Fay- Recreational**

Mr. Fay thinks the population is healthy and that management is flawed. He supports Alternative 5. As a citizen of Louisiana, he thinks it's wrong if he can't fish but he can go to the grocery store and buy fish. He thinks he should be able to catch red snapper at any time.

**Andy Leblanc- Recreational**

Mr. Leblanc is more of an inshore fisherman and only has a 22 foot boat. The weather limits his red snapper fishing. He supports Alternative 5, because it's not doing any harm to the commercial guys. The restaurants and stores won't run out of fish.

**Joe Macaluso-**

Mr. Macaluso said the Council has driven a wedge between the commercial and recreational sectors. We have fish in Louisiana; Florida and Alabama don't. We have fish and we're fighting about who gets to catch more than the other guys. He has seen more than his share of mismanagement, but in this instance, there is a problem that won't be solved by Alternative 1 or 5. We have fish and we need to make sure that Louisiana has the right amount of red snapper they deserve (70% of the fish with 20% of the effort). This is a band-aid and we need the wound to heal.

**Bill LaJune- Recreational**

Mr. LaJune supports Alternative 5 with some changes. A recreational season should be on weekends, and the state does a good job of knowing how to best govern.

**John Abair-**

Mr. Abair supports Alternative 5 because it's a fair distribution of the resource. We all need to ban together and attack the administration that is removing rigs. We don't need to argue over the amendments as much as we need to stop rig removal.

**John Cappell- Recreational**

Mr. Cappell supports Alternative 5. He advocates for future generations. The fishery has improved and it's easy to wipe the snapper out. We need a bigger pot and we need habitat. We need to stop [removing] idle iron. The vertical reef structures hold fish and make fish. We also need better data collection. We don't need to fight each other; we need a bigger, better managed pot of fish.

**Walter Heathcock- Commercial**

Mr. Heathcock is against Amendment 28 and prefers Alternative 1. Changing the allocation won't solve anything. Red snapper is already a pricey fish, and he doesn't want to increase the price any more. All the fish commercial fishermen catch are going to the American public. This quota was set a long time ago and it has been fair for 24 years, but somehow it's a problem this year.

**Andre Thomas-**

Mr. Thomas supports Alternative 5. He feels it is a public resource and should not belong to the private sector. He said we need to address how fish are counted. He would like to divide the Gulf and manage fish separately.

**Archie-**

He is against any type of reallocation and supports Alternative 1 because it's a public resource. Not everyone that wants to eat fish has the opportunity to fish. The American public needs access to seafood. There are lots of fish that commercial fishermen can't catch, and it seems like the recreational fishermen always want more.

**Dante Nelson-**

Supports Alternative 1 because the commercial fishermen should still have fish. Fish are going to continue to be here until we're dead and gone.

**Corpus Christi, Texas**  
**March 17, 2014**

**Council/Staff**

Robin Riechers  
Emily Muehlstein  
Karen Hoak

**38 members of the public attended.**

**Charlie Alegria-** Morgan Street Seafood owner

Mr. Alegria supports Alternative 1 because the commercial guys seem to give things up and never get them back. He thinks we should do nothing and leave businessmen alone.

**Blaine Wise-**

Mr. Wise supports Alternative 5 because it's a win-win situation for both sides.

**Shane Cantrell-** Charter

Mr. Cantrell supports Alternative 1. He opposes action because it gives a false promise to the recreational sector and won't increase their season at all. We will actually still be losing days because Florida is non-compliant. This isn't a sustainable fishery management plan. It violates National Standards 1 and 4, and is missing accountability measures to keep recreational anglers within their allocation.

**Alan West-** Recreational

Mr. West supports Alternative 5, as it would benefit recreational fishermen without cutting into commercial fishermen's allocation. He believes it makes good sense, because there are a substantial number of recreational fishermen in the state.

**Ron Dollins-** Recreational

Mr. Dollins supports Alternative 5. He supports the 400 commercial fishermen, but it's time to give fairness to thousands of recreational fishermen. Recreational fishing supports many varied industries, and they don't fish for profit; they fish for the love of it. The value of fishing is not measured by numbers at the dock. It's the time they [recreational anglers] spend on the water and building relationships, and the large number of people using the resource need the support of fisheries managers.

**Don Wilkinson-**

Mr. Wilkinson supports Alternative 5 because it offers the best economic benefit. The commercial harvest wouldn't be diminished, it would actually increase. He suggests the following: adopt an adaptive management plan that has demonstrated its effectiveness in other fisheries such as Atlantic striped bass. Stop all fishing during spawning and allow commercial fishing to be done after peak spawning in June-August. This would allow an increase in productivity because you're not removing the larger spawning fish from the resource, and this wouldn't cause any net loss for the commercial fisherman. Consider segmenting the Gulf

according to recruitment; he has heard and supports the idea of dividing the stock, perhaps at the Mississippi River.

**CJ Garcia-** Business owner, commercial red snapper fisherman

Mr. Garcia supports Alternative 1 and opposes reallocation because it won't solve the problems in the recreational fishery. Anglers consistently overharvest in the recreational fishery and if given more fish, will over harvest more. It will also cause instability in the commercial fishery. Increasing the amount of pounds won't decrease the recreational overage. He suggests working with the recreational fishermen to give them a real solution to the problems in the recreational fishery. The SESSC should review the analysis of Amendment 28 before the Council takes final action; their vote was null and void because a member of the SESSC shouldn't have been there. They should re-vote before the Council takes final action. This is honestly offensive to those who make a living on the water.

**Tylor Scott-** Commercial

Mr. Scott is new to the fishery and opposes reallocation because it doesn't solve the problems of the recreational fishery and will cause instability in the commercial sector. He supports Alternative 1.

**Nena Hale-** Owns a business catering to recreational fishermen

Ms. Hale said it's hard for her to have to take a stance on this issue, because without commercial and recreational fishermen, Port Aransas wouldn't be the town that it is. There is an abundance of fish now, and there are so many that you have to release that die while targeting other species. She is not sure where she stands on this issue but feels that there has to be a middle ground that will help both sectors. It is recreational fishers who come to her boutique; they support her business and she depends on them for her livelihood, so she wants them to have more fishing opportunities.

**Ken Sims-** Boat captain; has worked in both sectors

Mr. Sims opposes reallocation and supports Alternative 1 because it won't solve any problems. This needs to be solved with a different way of managing the recreational sector. We should try tags or licenses like the red fish program in Texas. Giving more fish to the recreational sector will ensure higher discard mortality, because they continue to fish and discarded fish float off dead and are then eaten by other predators, which is ridiculous. Fifteen years ago, fishermen used to struggle to catch fish. What we are doing is working. Today, the snapper are huge. Commercial fishermen are not harming the rebuilding plan because they are accountable. What we're doing in the recreational sector is wrong; charter guys need their own regulations, and everyone needs to play by the rules.

**Scott Hickman-** Charter and commercial

Mr. Hickman said the CFA has been begging for a new management system for the recreational fishery for 5 years, and he is disappointed that this is what we get. We're going to take fish from an accountable fishery and dump it into the unaccountable side for two more fishing days? That is silly and won't help his charter business. Until we work to get a new management system, we're never going to fix our problems. Why are we working on this instead of Amendment 39 [regional management], where Texas can manage their own fish through tags, or however they

want? The Council needs to do something different. He supports Alternative 1, no action on this amendment.

**Pete Petropoulos**- Recreational

Mr. Petropoulos is a capitalist and believes there is no reason to take anything from the commercial fisherman. He supports Alternative 1.

**Kevin Haller**- Charter and commercial

Mr. Haller sees both sides and opposes reallocation because it doesn't solve the problems in the recreational fishery. It will cause instability to the commercial fishery, and the recreational sector will continue to overharvest their allocation without accountability. He supports Alternative 1, status quo. The recreational sector needs a real solution to protect the resource. The SESSC should review the analysis, and it should be re-done before the Council takes final action.

**Mike Hurst**- Representing S.E.A.

Mr. Hurst does not think it's right that anglers have 20 days to fish during the worst wind of the year. He prefers Alternative 6, but since that option was not on the table to solve that problem, they would like to ask for Alternative 5.

**Norman Oats**- Recreational

Mr. Oats was fishing in the 1980's when the stock was ok. He then came back in 2001 when it was very hard to catch a snapper. Now, for 10 years they have only had a month of fishing. If we don't increase the quota, we're all in trouble. He supports Alternative 5 because he wants to fish more than 30 days a year. Under that alternative, if the ACL is increased we all benefit. The Council is losing credibility because the ACL is wrong. Nice size snapper are everywhere. He says to do more offshore research and see; don't just look at the closest rigs, but study some hilltops and use data that is not 20 years old. Start with a 3 month season and a 4-fish per person bag limit and if the stock decreases, then cut it. Do real research. He catches snapper in 35' of water.

**Corey Garcia**- Commercial

Mr. Garcia opposes reallocation and supports Alternative 1 because it will not solve problems in the recreational fishery, overharvests will continue, and [reallocation] will cause instability in the commercial sector. He suggests working with recreational fishermen to give them a real solution like tags so they can fish year round. There are plenty of fish out there and the Council needs to find a way to let them fish. The SESSC should review the amendment before the Council takes final action.

**Mike Miglini**-

Mr. Miglini said Amendment 28 is an insult to those trying to actually get a fishery management plan in place that will bring results. It will not solve the problems of the recreational fishery and will result in further overharvest. It's not the private recreational angler or the charter industry's fault that the Council has consistently failed to address a management system that provides both accountability and flexibility. The recreational sector needs to end derby fishing and start using tags for private anglers, just like the red drum system in Texas, so they can fish on their schedule

not when the government tells them to fish. The charter guys need their own sector allocation. Fishermen need to give up good harvest data from recreational anglers on private boats, from charter/headboats, and continue to get data from the commercial industry. This amendment and this reallocation is a false promise and the Council must develop a management plan that works. It's like putting more fuel in a boat that has autopilot moving in the wrong direction. We'll continue to see shorter and shorter seasons even with the reallocation of fish. We need to manage in a way that is efficient. Dumping fish back instead of using a tag system is an insult to conservation and the MSA. He supports status quo (Alternative 1). The SESSC should review Amendment 28 before the Council takes final action, because the initial vote to accept the methodology was null as a member was in conflict [of interest]. We have more than a ton of red snapper here, and we need a world class management system that allows us to harvest recreationally, in a sustainable manner, without wasting fish. Amendment 28 will not do that.

**Gus Lopez- Commercial**

Mr. Lopez supports Alternative 1, no action. They do this for a living; it's not for fun. If you're here you like to fish, but for commercial guys, it's their livelihood. It seems unfair to take from them and give it away for recreational purposes. It doesn't solve problems. Instead, he suggests letting the recreational sector fish whenever they want using a tag system. World class red snapper fishing is in our back yard, so why strip it back to making it hard to fish? Why take fish from an accountable sector and dump them into a system that isn't accountable? There are a lot of changes that will have to take place to make the recreational sector accountable like the commercial sector, which is law abiding, non-wasteful, and protective for the future generations. The SESSC needs to review Amendment 28 before the Council takes final action. What are the real reasons for changing allocation? He wondered what net benefits we were striving for.

**Michael Matthews- Commercial and former headboat fisherman**

Mr. Matthews is against the amendment; he supports Alternative 1, no action. He opposes reallocation because it won't solve the issues in the fishery and will cause problems on the commercial side. We need to work with recreational fishermen and find something that will work for them. Reallocation will only make things worse for the recreational fishery and for him.

**Brenda Ballard- Recreational**

Ms. Ballard supports Alternative 5. She doesn't want to take anything away from commercial fishermen. She doesn't have a yacht; she has a 25-foot boat and it's hard for them to get out. The inshore rigs are fished out and they have to go further. She only gets to fish five days out of the year, because she works for a living and she wants more opportunities to fish. She does not believe that Alternative 5 will hurt commercial fishermen in any way. Fishing is fun and she wants to be able to use the additional 75% to increase their opportunity for more fishing days.

**Russell Sanguinet- Headboat operator**

Mr. Sanguinet does not support any part of the amendment because there is an overabundance of fishing regulations. He is an active participant in the headboat cooperative (EFP) and he is 100% accountable. The problem is not the fish, it's the lack of enforcement and the bad management. The enforcement needs to account for everyone, not just the for-hire sector. This is a temporary patch on the problem, and it's not going to fix anything.



**Paul Kennedy, III- Recreational**

Mr. Kennedy gets out 8-10 times a year and he likes to take friends and family fishing. Red snapper is his most consistent fish. He doesn't understand the way it's managed and the limits put on them. The fish are so plentiful, he needs to avoid them and he doesn't understand management. He wants to bring a few home to eat and he can catch them in state waters. These are the strictest limits we have on any fish and they are the most abundant species. These regulations are ridiculous. Recreational fishermen are not being tracked like the headboats. It's his goal that recreational fishermen can fish year round. With a 2-fish per person bag limit, we will never overfish the red snapper. He is allowed to catch 10 speckled trout in the bays, but can rarely catch the limit. Red snapper is a mismanaged resource and the Council should give a longer season because it's not overfished. He wants to see some better data on catch. He wonders about how the management system is set up so when everyone goes out, they can catch their limit, but they are only allowed 2 fish.

**Gary Hough- Recreational**

Mr. Hough has seen a major comeback in the number of fish that are available in both the well-known and the more secretive spots. He supports an increased allocation for the recreational fishermen. Alternative 5 is the most palatable. He does think it should be tilted even more towards the recreational fishermen. On this side of the coast, it is dangerous to fish the first two weekends of snapper season because of the wind. The first of June is a horrible time to fish. There is no way the amount of recreational fish being caught could be harming the population.

**Jerry Bravenec-**

Mr. Bravenec said one of the biggest issues is accountability. The thing that concerns him most is that Texas continues to be penalized for other areas overharvesting red snapper. Red snapper don't move around too much. There has been a major rebound in the past five years, and he does not want to be penalized by the other areas overfishing. Alternative 5 is good for recreational fishermen without harming the commercial sector. TPWD needs to manage the resource and we need to be managing based on the fish we have locally.

**San Antonio, Texas  
March 18, 2014**

**Council/Staff**

Patrick Riley  
Emily Muehlstein  
Karen Hoak

**36 members of the public attended.**

**Jason Belz- Recreational**

Mr. Belz wants a longer snapper season. It's rough in Texas and they like to catch billfish, but it's nice to have something to eat, something that they can catch on the way back in especially since they burn a lot of fuel. Red snapper are everywhere; they come to the surface in 300 feet of water. He does not want commercial fishermen to have 51% while the public has only 49%.

**David Triplett- Recreational**

Mr. Triplett questions the red snapper data and where the statistics are coming from that says recreational fishermen are catching the amount of pounds that they are. He does it as a hobby for his family, and there are very few days they can get out, especially with the high winds in June. The statistics seem very inaccurate, and he can't catch anything else. They run into them everywhere and, if you catch red snapper while trolling there is something wrong; the system is broken. He wants to see a longer season and he thinks there is a better way to count the catch in the recreational sector.

**Michael Jacob-**

Mr. Jacob said the rules don't reflect what anglers are seeing. He is conservation minded and follows the rules all the time. He used to have trouble catching snapper, but now you can free-line dead shrimp or troll wahoo lures in 200 feet of water and catch red snapper during amberjack season. He kills 10 snapper for every amberjack he catches. There is a nuisance with dolphin; you feed red snapper directly to them or the sharks. They are not releasing any of the fish. He catches between 25 and 75 fish during the entire season and feeds around 500 fish to predators. The commercial guys are likely more important and he doesn't want to take away from them. The amount of fish that go to the dolphins and sharks is insane. We are doing nothing about it but sitting on our hands. The numbers are inaccurate and it's getting hard to follow the rules.

**Liz Hewitt-**

Ms. Hewitt supports Alternative 5, or possibly Alternative 6. She wonders why we don't have a federal fishing license to track catch.

**Ray Weldon-Recreational**

Mr. Weldon supports Alternative 6, although it's not really reallocation. According to the American Sportfishing Association, recreational fishermen catch 2% of fish but provide 3 times more value to the gross domestic product than commercial landings. For every 1 pound of fish caught, they add \$152 to the GDP. There are about 400 shareholders holding 51% of the red snapper fishery and they don't even put enough money back to cover the cost of monitoring the program itself. The EDF, restaurant chefs, and fishermen are using the slogan "protein for America," but they are getting wealthy providing fish for the wealthy at \$18 a pound. No one will be put out of business with any of these reallocation options. There are less commercial fishermen now than ever catching more fish than ever. They are looking towards sector separation and inter-sector trading so they can sell quota to charter captains who will then sell them back to the recreational fishermen. I guess the commercial fishermen don't really care about feeding America. Mr. Weldon sat on the Ad Hoc Private Recreational Data Collection Advisory Panel and has not seen the improvements he's looking for. The MRIP data is messed up and NMFS is still not getting the data they need from the MRIP states. Louisiana dropped out [of MRIP] and is now getting their own data, just like Texas. It's not the best, but when in 1996 you could catch 7 fish per person for 360 days and catch 4 million pounds and now, in 2012, you can catch 2 fish per person and fish for 30 days and you are catching 5 million pounds? Impossible!

**Jean Streetman- Recreational**

Mr. Streetman supports Alternative 5 and agreed with the comments of others.

**Norman Long- Recreational**

Mr. Long has been fishing for over 50 years. Alternative 5 is his choice if he has to pick one. They are using a 30-year old allocation and data, and everything is out of whack and in need of a total overhaul. Last summer, he fished 20 days and left state waters once or twice because he didn't need to. There are more red snapper out there than he can chase. You can catch all you want at 8-9 pounds. Why can't we seem to get a longer season in federal waters? We need new science, new data, and new rules. It's ludicrous to give 51% of the fishery to 400 people. They have a place in the overall picture but not a guaranteed deal like they have now. There are plenty of fish out there. He remembers days when that was not the case so we need to be careful to not overharvest. By setting good limits, we now have plenty again.

**Jerry Walker-**

Mr. Walker said we need to have a new look at what's going on in the Gulf. You try to catch a different species and you're inevitably catching snapper because they're everywhere, top to bottom, every wreck, every rig, solid fish. The ecosystem is out of sync; we need to increase the limit and the number of days to fish.

**Gary Johnson- Texas Restaurant Association**

Mr. Johnson said that at current levels, the commercial industry stands to lose ½ million pounds with the current allocation, which will affect the portion sizes on plates for people supplied with fish. There are places not near the water, customers that don't fish, all who want to eat snapper. We need to somehow look into regional management. He supports Alternative 1, no action.

**Leonard Philipp-**

Mr. Phillip supports Alternative 5 and agrees with the others.

**Michael Miglini-**

Mr. Miglini supports Alternative 1, no reallocation. He thinks it's a false promise for the recreational fishery. For years the charter boats have tried to bring real solutions to the Council. Reallocating only feeds more fish to a broken management plan. There are a ton of red snapper out there and reallocation is barely going to give more days. There needs to be a fish tag program like the red drum that allows 365 days of fishing a year, along with accountability and reliable data on the total count of fish harvested. The charter industry needs their own allocation and the private sector needs a system that doesn't force them to throw back dead fish. He suggests focusing on meaningful solutions to the problems in the recreational fishery.

**Bobby Hinds- Recreational**

Mr. Hinds supports Alternative 5. There are so many fish out there, it's ridiculous. They can limit out a full boat without going into federal waters. The quota should be raised and the season should be longer in federal waters.

**Pam Baker** – Environmental Defense Fund

Ms. Baker supports Alternative 1. Allocation has been on the table for a really long time and is choking progress on other issues such as federal fishing licenses and predators eating discards. The amendment doesn't have the opportunity to achieve its objectives, and it pits fishermen against each other. The demand for fresh fish is strong, but fishing recreationally is also a valuable use of the resource. The stated purpose of increasing net benefits cannot be achieved by increasing the number of fish in a common pool, managed by bag/size limits. No group or individual is benefiting from that. The other stated purpose is to increase stability of the fishery. Maybe reallocation will increase the recreational fishery by 2 or 3 days, but it doesn't increase the stability or predictability of the season. Stability is about increasing opportunity and predictability. Reallocation does not do that. The Council is avoiding tackling the improvements that are needed to solve the issues with the fishery.

**Wes Galloway**- Recreational

Mr. Galloway doesn't want to change things for the commercial fishery; it's got the IFQ and that is fine. He felt that 51% of the public resource going for commercial use is backwards. Half of the alternatives are not reallocation at all. No movement can be made towards reallocation because IFQs are already out there. For alternatives beyond the quota, he supports Alternative 5.

**Scott Hickman**- Charter, commercial, boat dealer

Mr. Hickman supports Alternative 1. He is offended that the Gulf Council has come to the recreational fishermen with a plan offering two extra days. With Florida non-compliance, we likely won't even see that possible increase but rather, a reduction in days. It's ludicrous. He demands that the Council do something real. He asks why CCA is pushing Amendment 28; what about Amendment 39 so Texas can get its own piece of the pie? Reallocation is a poor plan for the recreational fisherman. If that's the best we can do, we're in trouble. He demands accountability and flexibility through tags or something else that allows fishermen to select when to fish. Amendment 28 is a joke and will not help. The Council has pitted fishermen against one another. He wants status quo (Alternative 1), and to go back to the table. Fix the problem so people can fish when they want to fish. He supports fish tags, regional management, and he likes iSnapper.

**David Ruthmann**- Recreational

Mr. Ruthmann is not opposed to any of the allocation options but that's not the end solution to the problem. We're talking about adding a few days to a 1 or 2 fish per person limit when it's too rough for Texans to get out on the water. There must be more to it. We are oversimplifying a process that is broken. Regional management is a good idea, especially because our water is shallower here than in other parts of the Gulf.

**Buddy Guindon**- Commercial

Mr. Guindon grew his family business around fixing the fishery. He believes that they [recreational anglers] should have the right to fish, but also to use a program to report data and get an accurate count. The Harte Research Institute already has a program that can be used for them to report their fish. As a commercial fisherman, he doesn't represent himself; he represents anyone who goes to a restaurant or grocery store or fish market and buys a fish to eat. You're not going to hurt him by taking 50% of his fish, but you'll harm the new entrants, the people who

are struggling to get IFQ and start in the industry. When you say 400 people, think of 400 businesses. If we don't allow them to grow, they're going to fail. They need the opportunity to be successful and to grow. Let these people do their job. Commercial fishermen are not at fault for the current situation. Force the fishery managers to do their job and let them know you want to be accountable. Also, understand that Florida has 250 fishermen for every one we have. The east is taking away your fish by allowing the other areas to harvest the fish. Of the fish consumed in this country, 97% of it comes from a grocery store. Commercial fishermen catch inexpensive fish as well as red snapper (blue fish). Don't listen to what CCA pounds into your head; get real solutions. Alternative 5 won't give you anything more. A good management system will give you what you want: year round fishing.

**Shane Cantrell- Charter**

Mr. Cantrell said it's a mess that we're here and discussing moving 500,000 pounds from the commercial industry to give the recreational sector 2-4 extra fishing days. He questions moving fish from the commercial fishery, which is accountable, and giving them to an unaccountable system for 4 extra days. That is a management issue. We need tags or regional management. He travels the coast and there is an incredible number of fishermen on the east side that take trips 2 and 3 times a day fishing red snapper. It's not fair to Texas. He has a hard time believing that Texas can't get past the 1% of the allocation from Florida to implement a regional management plan. Disturbing.

**Brian Wyatt- Recreational**

Mr. Wyatt got to this meeting and it seemed chaotic because everyone is passionate. He's been fishing for a long time and his dad was a commercial fisherman. The Gulf is broken due to federal management. Texas could manage the waters much better than the federal government. He doesn't like Alternative 5 fully; he supports it most because the economic value of the recreational fishery is much greater. This is a publicly owned resource and the 51/49% split is out of line. We all pay our fair share, but recreational fishers are stuck on the dock, some with a \$200,000 boat, and they can't fish unless they pay a charter boat? That is not right. Fish tags aren't right either. For private recreational anglers, these measures are nowhere near enough. For every 1 million pounds over the TAC that the federal government says can be caught, 25% goes to commercial and 75% to the recreational fishery. Every million pounds equates to \$35 million. Everyone should be able to fish every day they want to for red snapper because there are plenty of them.

**Galveston, Texas  
March 19, 2014**

**Council/Staff**

Patrick Riley  
Carrie Simmons  
Emily Muehlstein

**35 members of the public attended.**

**Scott Hickman-** Charter and commercial

Mr. Hickman said the plan to save the recreational fishery only gives two days to the recreational sector. The plan is to take fish away from a system where people fish accountably and provide fresh fish year round and transfer it to a rotten system. You're not even going to see the fish you take from the commercial fishermen. Florida has just gone non-compliant and those extra fish are going to disappear. Mr. Hickman wants a completely different system; something that works like the commercial system. He says no to Amendment 28. He supports Alternative 1. The Council needs to find a better management system and leave us a legacy of fishing.

**Steven Myer-** Recreational

Mr. Myer has spoken to TPWD and knows they don't have landings on the recreational side, and he doesn't understand where we're getting our data. Nine times out of 10, the weather is too bad for fishing during the recreational season. There needs to be a better way to determine what we're landing, and the quota needs to be fixed.

**Kristen McConnell-** Environmental Defense Fund

Ms. McConnell encourages the Council to choose Alternative 1, no action, and move reallocation off the table to make room for better work. This issue has been choking progress on other management plans that will actually fix things. There is high demand for both fresh seafood and recreational fishing opportunities and we should not have to decide between the two. This document does nothing to meet the objectives stated in the document. The economic value won't be realized by the recreational fishery if you continue to use a common pool of fish regulated by days and bag limits. Stability is frustrating, because allocation won't change the stability of the recreational red snapper fishery. We've had increases in the TAC over the years and it hasn't solved the season problem or the issue of stability. Reallocation won't fix that problem. There are a variety of ideas; regional management, tags, charter IFQ, and days at sea, that could be actual solutions. The Council needs to stop this and do something real.

**Billy Wright-** Recreational and charter

Mr. Wright supports Alternative 1, No action. Moving fish to the unaccountable sector doesn't seem like the right thing to do.

**Tom Hilton-**

We've had this allocation for years and we should have looked at it according to the NOAA policy but, now there is staunch opposition. The commercial IFQ program has privatized our fish and turned them into stock basically. The commercial guys have a stock portfolio and he is in favor of Alternative 5. Recreational fishermen don't want to cut commercial fishing out or act like they don't have a place at the table. If we choose alternative 5 about 17 million dollars of fish will be transferred to the recreational fishery. A high-liner that owns 6% of the red snapper shares (share cap) is worth about 11 million dollars and he can retire sell them to make money for his retirement. I don't agree with any plan that privatized the resources. This is not the solution and wont fix our red snapper problems but Alternative 5 is a step in the right direction. We need data. We should implement Alternative 5 and let the states take the bull by the horns with data collection.

**Bruce Daneki- Recreational**

He doesn't begrudge anyone earning a living by catching red snapper. It is an endangered public resource and he's against anyone having ownership. There are clearly more fish but despite this the recreational fisherman continues to be penalized. While the TAC increases and the commercial fishery gets more pounds and money and the recreational fisherman gets a shorter season as the fish get bigger. Success of stock improvement isn't shared with the recreational fishery. He supports Alternative 5. We're not greedy and everyone should benefit but the recreational sector has been struggling in the recent past. Jim Donofrio said ownership of our nations public resourced are replenished and the commercial sector was gifted their allocation and they paid nothing for their private rights. Against catch shares and a special program for headboats.

**Fred Howard- Recreational**

He is in favor of Alternative 5, not because it's a solution but because it's a first step that needs to be taken. Why can't the Gulf Council separate the fishery from the fishery in Texas.

**Bill Hull-**

Mr. Hull is in favor of Alternative 5.

**David Conrad- Charter**

Mr. Conrad favors Alternative 1. We need to work on a system that makes the recreational sector accountable. We don't want to move fish from the accountable sector to the non accountable one.

**David Cochraine- Charter**

Mr. Cochraine supports Alternative 1 because reallocation is not a solution. We should not take fish from commercial fishermen to add 2 extra days to the recreational fishery. Recreational management needs to be improved. We have a management problem and a data collection/accountability problem not an allocation problem. Accountably is the key to a better management system.

**David Cuiton-**

It appears that the harvest data for the recreational fishermen is off. Whatever the solution is to the problem he hops that we can mutually work it out.

**Jaron Cressi- Commercial and recreational**

Mr. Cressi is against reallocation and supports Alternative 1.

**Buddy Guindon- Commercial**

Reallocation won't hurt him, he is a big share holder and he was catching fish before the catch share program was implemented. He knows how to fish. The problem he sees with reallocation is that it will hurt small businessmen the new entrants into the fishery. Taking 8% of the commercial quota and giving it to the recreational fishery will get 700 recreational fishermen to go out and catch a fish but it will put the little guy out of business. Recreational fishermen can catch what they want and when we consider what's best for the red snapper fishery we need to get an accountably system. We don't have to wonder if the federal management is doing a good

job because you'll be part of that system. Self reported data like the iSnapper system will ensure that the government knows exactly what was harvested. Reallocation is a game so the Council can say "look what we gave you", but it does nothing to solve the problem. I promise the recreational season will continue to collapse. We've rebuild the fishery but the federal government hasn't given recreational fishermen the tools to stay within the catch limits. The state representatives don't want accountability to happen. CCA doesn't bring solution to the table the only tell you what's wrong. They did this with redfish, trout, and flounder; they promised to give back commercial harvest once the stocks were healthy, but never did. I'll never have the opportunity to catch them again. We need a management plan to fix these problems.

**Bill Cochraine-**

Mr. Cochraine supports Alternative 1: no action. He thinks everyone agrees that there is a problem with recreational accountability. We all know that once there is an accountably system in place then we can get some real data. Were going in the wrong direction by trying to fix a problem with reallocation; there are more fish than ever but we need to count. Choosing any of the alternatives besides Alternative 1 will set a bad precedent; and if this is done he is worried that this will continue to happen. When 2 days are added then the recreational anglers are going to keep asking for more each year.

**KP Burnette-** Commercial

Supports Alternative 1; no action.

**Sean Warren-** Charter

Supports Alternative 1; no action, and suggests Council move forward with sector separation.

**Dan Green-**

Against reallocation and supports Alternative 1. Why take fish out of an accountable sector and give it to a non-accountable one. We work on a new management plan for the recreational anglers.

**LG Boyd-**

Supports Alternative 1 and suggests the Council fix management first.

**Shane Cantrell-** Charter

We're not trying to take anything from anyone. Commercial fishermen are not hoarding these fish in their house, they're harvesting them for the American public. The guy from Kansas who fishes with me doesn't want to own a boat and it makes no sense, but if he wants fish he should be able to buy fish from a restaurant or fish on my boat. You're proposing to take fish from the commercial fishermen to give recreational anglers 2 more days. It's a band-aid on a sinking ship and we need to find a real solution for the recreational fishery instead.

**Garrett King-** Charter and commercial

Supports Alternative 1; no action.



**Mark Friedberg-** Seafood dealer

Mr. Friedberg supports Alternative 1. NMFS is trying to pit the commercial fishermen against recreational fishermen. We commercial folks all started fishing as recreational fishermen. As a recreational fishermen I wouldn't settle on two extra days from the Council. Recreational anglers need to demand a different plan.

**Jamie Cantu-** Charter

Mr. Cantu supports Alternative 1 and supports sector separation

**John Spike-** Recreational

Mr. Spike wants to clarify that he is checked all the time for his data.

**Jason Delgado-** Recreational

He is a boat owner and went of 10 times last season with lots of friends. On average they took 18-20 pound fish. He would support Alternative 5 reasoning that if the rising tide lifts all boats then increases in ACL should benefit the recreational anglers as well. He has not heard anyone say that they don't want to be accountable and there have been conversations about tags and other methods of accomplishing that. He would like the recreational fishermen to have a better system. The people we fish with all follow the rules and we support better accountability.

**Larry Millican-** Recreational

Supports Alternative 5 because the numbers are skewed in the recreaitonal catch data. In the 1960's you could catch all kinds of fish whenever you tried. In the 70's and 80's it got tough, but recently that's drastically improved because of the rules. He doesn't like 2 fish bag and short season and he wants more, but he also cautions that when you take your boat offshore now he doesn't see may people even with all the technology we have. In the 80's and 90's there were people and boats everywhere, and has a hard time believing that effort is increasing because there's no one out there. I've never been stopped in all my days of fishing and he would like catch be recorded better. In his opinion the recreational fishermen are not taking near what Council thinks is being harvested.

**Bill Evans –**

Mr. Evans supports Alterative 5.

**St. Petersburg, Florida  
March 24, 2014**

**Council/Staff**

Martha Bademan

Assane Diagne

Carrie Simmons

**30 Members of public attended.**

**Steve Maisel- Commercial**

Mr. Maisel was in favor of no reallocation of red snapper, No Action; Alternative 1.

**Bill Tucker- Commercial**

Mr. Tucker was in favor of No Action; Alternative 1. He said the recreational sector has already landed 56% of the quota, not the 49% they are currently allocated. He has no personal ill feelings about the recreational sector, but feels it is no surprise that the recreational sector is meeting their quota earlier and the season length is getting shorter. He believes that there are more people in the recreational fishery, with more access to the fishery due to the recovering red snapper stock and a more affluent society. Mr. Tucker stated he wanted the anglers from the recreational sector to discuss other avenues to increase the season length, such as agreeing to go down to a 1-fish bag limit, instead of taking fish away from the commercial sector. He also stated there was a lot of misinformation going around about charter vessels being tied to the dock when red snapper season is closed, but in reality they were out fishing. He asked why you would reallocate to 1-3% of the U.S. population, when it is clearly not good practice to reward a sector that is unaccountable.

**Ed Maccini- Commercial, President of S.O.F.A.**

Mr. Maccini is in favor of No Action; Alternative 1. He knows the red snapper stock is recovering in the Gulf of Mexico, and knows that the recreational sector is catching the bag limit and the red snapper are larger, due to the management efforts the Council has completed to date. Because of the rebuilding efforts both sectors participated in, both sectors need to fish as many days to achieve their limit. For example, since the commercial sector was moved to an IFQ system, he fishes fewer days, fishes when he wants, and his vessels yield greater catch in a shorter number of days. He said the consumer is involved in the recreational sector and he would like see the recreational sector develop a management plan to increase the season length on their own, with a program such as days-at-sea.

**Jim Zurbrick- Commercial, Steinhatchee**

Mr. Zurbrick stated he was in favor of No Action, Alternative 1. He said many of the recreational fishing clubs (CCA and FRA) claimed to be conservationists, but when he attended a meeting hosted by Florida FWC to improve data collection for offshore recreational fishermen, the idea was met with much resistance. He wants the recreational sector to come to the podium with a solution. If they don't want the FWC developed offshore vessel permit, then the recreational fishery should consider a days-at-sea program, tagging program, or any other fishery management plan that would address the problems in the recreational sector's accountability. He agrees the fishery in Florida is not the same as it was years ago and he believes it will never be the same, due to the number of people participating in the private recreational fishery. Mr. Zurbrick stated if the private recreational anglers do not become accountable for their own fishery and think outside the box, they could end up with a 20-day or less red snapper fishing season.

**Mike Colby- Charter, Clearwater Marine Association and Charter Association**

Mr. Colby said in preparation of this meeting he reviewed the comments online and a majority of them were rambling comments that had nothing to do with Reef Fish Amendment 28. He hopes the Council considers the quantity and quality of comments submitted online. He said he would like to see a sound recreational management plan. Mr. Colby stated the data being used for Reef

Fish Amendment 28, has been considered in the past to be fatally flawed. Yet now that same data is being used to reallocate in favor of the recreational sector. So, for reallocation some recreational anglers think it is okay to use the data, in fact embrace it, since it gives them the personal solution they are seeking. Further, if this same data is fatally flawed then there are no reasons or excuses why it can't be used in the development of Reef Fish Amendment 40-Sector Separation. Until a better data collection system is developed he can't endorse any of the alternatives, except No Action; Alternative 1.

**Wayne Werner-** Commercial, F/V Sea Quest

Mr. Werner stated he was in favor of No Action; Alternative 1. He stated he did not understand how anyone could be in favor of taking away 500,000 meals from consumers, for 2 extra days to fish in the recreational sector. He said he had great concerns about overharvest by the recreational sector and didn't see any justification for giving them any additional fishing days. Mr. Werner stated the recreational data used in the economic efficiency analysis was fatally flawed, in fact most of the recreational data used in that analysis came from recreational anglers in the South Atlantic. He suggested that Amendment 28 was a "feel-good" amendment for the CCA. He pointed out that there had been studies done by NMFS that showed recreational anglers would rather have 1 larger fish and more days than to catch 2 fish and have a shorter season. He stated he did not agree with the Council putting Mr. Gentner on the Socio-economic SSC. Mr. Gentner was the deciding vote and he was in violation of the Council's policies to serve on an advisory committee.

**Thomas Shook-** Seafood company owner, Clearwater

Mr. Shook stated he was in favor of No Action; Alternative 1. He said the commercial sector has to become accountable for every pound of red snapper landed and that he didn't see why there couldn't be more accountability for the recreational sector.

**John Schmidt-** Commercial

Mr. Schmidt is in favor of No Action; Alternative 1. He stated that Amendment 28 was supposed to increase net benefits to the nation, not net benefits to the recreational sector. Most of the American public doesn't have access to federal waters and must access the resource through the commercial fishery. Since the Council implemented a strict rebuilding plan, there has been an incredible recovery and advances in the fishery. During these rebuilding efforts, the commercial sector had never gone over its allocation and had never asked for any of the recreational sector's allocation. Mr. Schmidt stated he felt Amendment 28 had been rushed, more so than many of the other Council actions. He stated he was not happy with the membership on the Socio-economic SSC, especially when the deciding vote was cast by a CCA representative. He is unsure why the Council ever considered putting such an individual on the panel. He felt moving forward with Reef Fish Amendment 28 – reallocation was not a solution; instead it is unfair, and not based on sound science.

**Tom Wheatley-** PEW Charitable Trusts

Mr. Wheatley stated although this seems like a simple amendment (and he agrees that there should be a fair and systematic review of sector allocations), he does not think the current document supports the red snapper rebuilding plan. He would like to see in-season and post-season accountability measures added to the current draft of the amendment; without these, he

does not understand how these shifts in allocation could be biologically safe. Therefore, if a new action was added to this amendment that would ensure the rebuilding plan for red snapper was not compromised, he could see this document moving forward. But until then, PEW was not in support of this action.

**Frank Chivas-** Restaurateur and recreational

Mr. Chivas is in favor of No Action; Alternative 1. He noted that he had been fishing since 1968 and seen the results of overfishing happen in 3 years, (by 1971) red snapper were almost gone. He credited conservation measures with bringing the stock back. He knows red snapper is the fish of choice in many restaurants. In his restaurants, over 20% of fish sold is red snapper, and now more grocery stores are selling red snapper as the stock recovers. He personally has seen more red snapper in the last 3 years than ever before. He believes the rebuilding plan is working fine and should be left as is.

**Eric Mercadante-** Dual-permitted federal charter and commercial

Mr. Mercadante said he lands 90% of his red snapper commercially. He said he is closely checked and monitored when he lands his catch commercially, but none of his charter trips have ever been checked. He said, recreationally everyone wants a trophy fish, especially a large red snapper. He would like to see the recreational sector get away from a short derby fishing season. He is in agreement that the recreational sector should get together and discuss licenses, tagging, and accountability for what they are catching and landing. Until the recreational sector does this he is in favor of No Action; Alternative 1.

**Shawn Watson-** Commercial

Mr. Watson is in favor of No Action; Alternative 1.

**Jason DeLaCruz-** Commercial and seafood dealer

Mr. DeLaCruz is in favor of No Action; Alternative 1. He has a fuel dock at John's Pass and he is unsure how the two additional fishing days in the current preferred alternative are going to help the recreational sector or his business. He doesn't think fish should be taken away from the commercial sector and that such rules will make it hard for them to make a living. He thinks that is the real economic impact of the preferred alternative, versus the economic analysis cited in the amendment. He said the Socio-economic SSC said it was okay to move forward with reallocation, but voted it was based on poor economic data and the Socio-economic SSC were only in consensus on minimal changes to the current allocation.

**Gregg Pruitt-** Commercial and dealer Fish Busters, Madeira Beach

Mr. Pruitt is in favor of No Action; Alternative 1 until the recreational sector can be constrained to their current allocation and become more accountable. He stated that it is possible that the recreational sector may need to pay for a data collection system or program like the commercial sector does which contributes 3% of their ex-vessel value of landings to the agency for program operations.

**Dennis O'Hern-** Recreational, FRA

Mr. O'Hern stated the recreational sector has requested better data collection for years and it is the Office of Science and Technology's fault for not improving the survey system, not the

recreational anglers. In fact, recreational anglers have requested an improved survey system since 2000 and it still hasn't been completed. He emphasized that the recreational sector was being accountable every year. He complimented the State of Florida's efforts for taking the lead on strategies to improve data collection and applauded the efforts of the Louisiana Department of Fisheries and Wildlife. He stated if there was better data collection for the recreational sector, there would be a 6 month, 3-fish bag limit as once suggested by Dr. Shipp. He suggested more and better surveys of anglers would help this happen. Mr. O'Hern said until NMFS and the Office of Science and Technology improve the data collection program for recreational anglers, and were held accountable for their actions. The FRA was not in support of moving forward with this amendment, so he supports No action; Alternative 1.

**Jim Bonnell- Commercial**

Mr. Bonnell supports No Action; Alternative 1. He stated he has been fishing for 30 years and doesn't understand how commercial logbooks can be questioned, when recreational anglers can just tell the samplers how many fish they caught without any validation. He doesn't see how the recreational survey could be adequate to determine landings or support any modifications to the allocation.

**Ricky Baker- Commercial**

Mr. Baker is in favor of No Action; Alternative 1. He has spent 30 years commercial fishing and feels the recreational data collection system is flawed. He noted that there were worries when logbooks were first required, some people felt the government would know what they were doing and where they were fishing and of course people didn't like that, but the system worked. He explained that in 1980, red snapper were almost gone and now they are everywhere.

**Sean Wert- Commercial**

Mr. Wert is in favor of No Action; Alternative 1. He stated he does not understand how the agency can make commercial fishermen jump through so many hoops compared to the recreational sector, yet they are going to get more fish. Mr. Wert stated he didn't understand how the agency had any idea what the recreational landings are based on the current collection system.

**Cody Chivas- Commercial and restaurateur**

Mr. Chivas is in favor of No Action; Alternative 1. He stated that he did not understand how the commercial sector has to be accountable for every single pound, compared to the recreational sector, yet the agency is looking at giving them more fish.

**Jackson Beatty- Recreational and diver**

Mr. Beatty said he wanted to be an accountable angler and was willing to go to a 1-fish bag limit if it meant a longer fishing season. He wanted to work with other recreational anglers to improve accountability and increase fishing opportunities. He supported No Action; Alternative 1.

**James Coble- Recreational and tackle shop owner**

Mr. Coble stated he was in favor of Alternative 5: If the red snapper quota is less than or equal to 9.12 mp, maintain the commercial and recreational red snapper allocations at 51% and 49% of the red snapper quota, respectively. If the red snapper quota is greater than 9.12 mp, allocate

75% of the amount in excess of 9.12 mp to the recreational sector and 25% to the commercial sector.). He felt it was the most viable option in the amendment. He didn't understand why it was such a bad alternative for the commercial sector. He stated that the recreational fishery has to get more bang out of every fish they catch, and needs to be more accountable. He noted that no recreational fishers had VMS on their boats and that they didn't report their catches. He urged recreational anglers to step up to the plate and help get the fishery in shape.

**Webinar  
March 20, 2014**

**Staff**

Emily Muehlstein  
Charlene Ponce

**10 members of the public attended.**

**David Krebs- Commercial**

Supports Alternative 1; no action. Flexibility and accountability need to be built into the recreational sector before any other action is taken.

**Eric Brazer-**

Supports Alternative 1. There are no effective accountability measures for the recreational fishing sector. Until we solve that problem the recreational sector will continue to over harvest their portion of the allocation. Do not take final action on Amendment 28 until or unless the SESSC does a final analysis of the methodology used.

**Brian Jilek-**

Meetings should be held on weekends so that more people have an opportunity to attend.

**Ken Haddad-**

All the information that has come to the Council has said that the snapper allocation needs to be revisited. The recreational sector is in agreement that Alternative 5 is a stabilizing action that will allow the Council to focus on a new management regime for red snapper.

# APPENDIX E. 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 F. 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.

# APPENDIX G. ECONOMIC ANALYSIS OF RED SNAPPER ALLOCATION ALTERNATIVES FOR AMENDMENT 28 TO THE GULF OF MEXICO REEF FISH FMP

Juan J. Agar, David W. Carter

*Southeast Fisheries Science Center*

*National Oceanic and Atmospheric Administration*

*75 Virginia Beach Drive*

*Miami, FL 33149*

## Contents

1. ....	Introduction	214
2. ....	Commercial Sector Analysis	215
	Specification and Data for the Allocation Price Regression.....	216
	Commercial Sector Results.....	217
3. ....	Recreational Sector Analysis	218
	Background and Assumptions .....	218
	Calculation of the Net Benefit of Two Red Snapper Harvested per Trip.....	221
	Recreational Sector Results .....	223
4. ....	Results and Conclusions	224
5. ....	References	233
	Appendix A: Discussion of the Derived Demand Approach to Benefits Estimation in the Commercial Sector.....	234
	Appendix B: Materials for the Monte Carlo Simulation in the Recreational Sector Analysis ...	236

## **Introduction**

This report investigates the economic effects of the alternatives proposed in Amendment 28 to the Reef Fish Fishery Management Plan (FMP) of the Gulf of Mexico. Amendment 28 considers revising the 51% commercial/49% recreational allocation formula set in Amendment 1 to the Reef Fish FMP. Specifically, alternatives 2 through 4 consider increasing the recreational sector allocation by 3%, 5% and 10%, respectively; whereas alternatives 5 and 6 would only reallocate quota increases when the red snapper quota is greater than 9.12 million pounds (mp) whole weight (ww) (Table 2). Alternative 5 would allocate 75% of quota increases (above 9.12 mp) to the recreational sector and 25% to the commercial sector, whereas alternative 6 would allocate 100% of the quota increases (above 9.12 mp) to the recreational sector.

Conceptually, the economic value of a two-sector fishery, given a set quota level, reaches a maximum when quota is efficiently allocated among the two sectors. This occurs when the net benefit of the last unit of quota allocated to one sector equals the net benefit of the last unit of quota allocated to the other sector. If these marginal net benefits are not equal, then the economic benefits to the nation can be improved by shifting quota from the sector with the lower marginal net benefit to the sector with the higher marginal net benefit for a unit of quota.

In the 2012 red snapper allocation analysis (Agar and Carter 2012a), we found that the current allocation was not economically efficient because the marginal net benefit for an additional unit of quota differed between the commercial and recreational sectors. However, we cautioned that the extent to which economic benefits could be increased via reallocation could not be adequately determined at the time. We noted that additional research, improvements in the quality of existing data collections, and new data collections were necessary in order to estimate the economic effects of non-marginal changes to allocation. The caveats mentioned in Agar and Carter (2012a) also

apply to this analysis. The methods used in this analysis follow our earlier work with red snapper and grouper species (Agar and Carter 2012a, b; Carter et al. 2008).

The remainder of the report is structured as follows. Section 2 describes the estimation of the commercial net benefits for the proposed reallocation alternatives. Section 3 describes the calculation of the recreational net benefit for the proposed allocation changes. The last section summarizes the economic effects of the proposed reallocation alternatives and discusses the key results of the analysis.

### **Commercial Sector Analysis**

We explored the economic effects of alternative red snapper quota reallocations using two alternative approaches. The first approach attempted to estimate a derived demand model for red snapper allocation (leased quota) from indirect, trip-level revenue (profit) functions analogous to the framework used by Squires and Kirkley (1995), Carter et al. (2008), and Gentner et al. (2010). Unfortunately, this approach proved unfruitful because the absence of data on rental prices limited our ability to estimate how quasi-fixed input usage would change in response to quota changes (see, Appendix A for discussion); hence, we pursued a second approach to estimate the economic effects of changes in the allocation formula. The second approach used a reduced form, linear equation to examine the relationship between red snapper allocation prices and quota levels (Newell et al. 2005). In the red snapper commercial fishery, IFQ allocation is the actual poundage of red snapper that shareholder or allocation holder can possess, land, or sell during a given calendar year.

We use allocation prices because they serve as sound proxies for net economic benefits because fishermen will only purchase additional units of allocation as long as the expected net revenue of the last unit of allocation purchased equals or exceeds the allocation price. At the margin, the

net revenue of last unit of allocation purchased should equal the allocation price. In other words, the market based allocation prices are expected to reflect the expected net revenue from holding additional units of allocation (Clark, 1982; Newell et al. 2005).

In well-behaved quota markets, we expect allocation prices to be a function of, among other things, output and factor prices, harvesting technology, fish abundance, and quota. In particular, we expect the allocation price for red snapper to be positively related to the dockside price of red snapper and negatively related to input prices such as fuel. Also, all other things being equal, as quota levels increase, allocation prices are expected to fall.

### **Specification and Data for the Allocation Price Regression**

We used a specification for the allocation price equation that is similar to the one put forth by Newell et al. (2005). However, our specification is considerably more parsimonious given data limitations and the number of observations available. Specifically, we modelled the average monthly red snapper allocation prices as a function of red snapper dockside prices, diesel fuel price index, annual red snapper quota levels, and dummy variables for quarter and year.<sup>18</sup>

Data on quota levels, and allocation and dockside prices were obtained from the Southeast Regional Office (SERO) IFQ Database.<sup>19</sup> The diesel (#2, WPU057303) price index was obtained from the U.S. Bureau of Labor Statistics along with the consumer price index (CUSR0000SA0) that was used to adjust all prices to 2012 dollars. The analysis focused on the 2007-2012 period when the IFQ program was in place. About 80 percent of the allocation transactions reported zero or very low allocation prices because many participants were concerned about privacy and also because many of the transactions are believed that to have involved non-arm length transfers

---

<sup>18</sup> We tried other specification that regressed allocation prices against the number of monthly allocation transfers, monthly landings and cumulative landings but these were not statistically significant.

<sup>19</sup> In the commercial red snapper fishery, landings are usually expressed in pounds gutted weight (gw) and dockside, share and allocation prices in dollars per pound of gw. The whole weight to gutted weight conversion factor is 1.11.

between related accounts. Therefore, we created monthly allocation price averages using only observations with values greater or equal \$1.2 but less or equal than \$5. In addition, because many dockside prices for red snapper were reported as net of allocation price (i.e., dockside price minus allocation price) we generated monthly dockside prices using observations with prices equal or greater than \$2.6 and but less than \$10. The values generated for monthly allocation and dockside prices follow the guidelines used in the 5 year review of the red snapper IFQ program. The descriptive statistics of the variables used in the analysis are found in Table 3.

### **Commercial Sector Results**

Table 4 shows the OLS results of 4 different models that considered the relationship between red snapper allocation prices and dockside prices, diesel price index, quarterly and yearly variables, and quota levels. In general, the results show that much of the variation in average allocation prices is explained by yearly dummies. Most of the explanatory variables such as dockside prices, diesel 2 index, are not statistically significant when yearly dummy variables are included (Models 2 and 3). Only Model 4 yields a quota parameter that is negative and statistically significant at the 5% level.

To predict the effect of changing quotas on allocation prices while controlling for dockside price, diesel fuel prices and quarterly and yearly fixed effects we use Model 4. The predicted mean allocation price over a range of quotas levels is shown in Table 5 along with the lower (95Lower) and upper (95Upper) confidence estimates of the mean. Table 6 shows the estimated forgone annual net economic benefits from reallocating quota from the commercial to the recreational sector. Alternative 2 (3% change in allocation) was the least onerous alternative to the commercial sector resulting in a net annual loss of \$0.8 million, whereas alternative 4 (10% change in allocation) and 6 (100% allocation of quota increases above 9.12 mp) were the most onerous

alternatives to the commercial sector resulting in an annual loss in net benefits of \$2.9 million and \$2.5 million, respectively.

### **Recreational Sector Analysis**

This section describes the methods used to determine the change in economic net benefits to the recreational sector associated with the allocation alternatives proposed for red snapper in the Gulf of Mexico. The general method is simple: the net benefits of a change in allocation equal the implied change in harvest times the net benefit per pound of fish. Most of this section is spent discussing the approach used to calculate the net benefit for a pound of fish in the recreational sector. We provide further discussion of the concept of net benefit, or willingness-to-pay (WTP), in our previous report on red snapper (Agar and Carter 2012b).

### **Background and Assumptions**

There is no quota market (e.g., ITQ) for recreationally harvested red snapper in the Gulf of Mexico. Nor are harvest estimates timely enough to allow “real-time” quota monitoring in the recreational sector. Therefore, any additional quota allocated to the recreational sector must be distributed via changes in fishing regulations (e.g., bag limits and season length). The regulations used to distribute additional quota can influence the amount of economic benefit generated, if any. In fact, preliminary research at the University of Maryland suggests that the way the recreational sector is managed has important implications for the way we should *measure* the economic benefits of reallocation. Discussion of this issue is beyond the scope of this report, but should be kept in mind as many of the margins we discuss below (trips per season, harvest per trip, etc.) are irrelevant to the analysis if there is no mechanism in place to sort anglers along the margin according to their preferences.



Consider the ways in which aggregate recreational harvest might increase given a reallocation. That is, how can an increase in harvest allocated to the recreational sector be absorbed? In general, aggregate harvest can increase if more pounds are harvested per trip or if more trips are taken. Pounds per trip can increase when more or bigger fish are harvested per trip either because of improvements in the stock, a change in the bag or size limit, changes in technology, or an increase in the time spent fishing per trip. An increase in trips occurs when new anglers start fishing, existing anglers take more trips, or existing trips are redirected from other species to harvest red snapper.

Based on discussions with Council and SERO staff, we assume that there will be no change in the number of pounds harvested per trip, primarily because the Council is unlikely to change the bag or minimum size limits. The Council is likely to extend the red snapper fishing season to allocate additional harvest to the recreational sector. Given data and model limitations we are forced to take a narrow view regarding the effect of the longer season on fishing activity. Specifically, we assume that no new anglers will start fishing and that existing anglers will not change the number of trips they take when the season is extended. If there are no new anglers or trips and the harvest per trip is unchanged, then aggregate harvest can only increase if anglers previously fishing for other species *redirect* to harvest red snapper when the season is open. These assumptions were implicit in our previous analyses, but were somewhat less controversial because we were measuring economic value at the margin or evaluating very small allocation changes. Presently, the Council is considering relatively larger changes in allocation (e.g., 10 percent) and the assumptions of no new anglers or trips are more tenuous. In any case, if new anglers or trips result from the increase in allocation to the recreational sector and the extension of the season, then the increase in economic benefits would probably be higher than measured in this report.

We make five other methodological assumptions:<sup>20</sup> 1) anglers harvest the bag limit, i.e., harvest two red snapper per trip; 2) the average weight per red snapper is 6.34 based on the average from 2011; 3) the net benefit of two red snapper harvested per trip is the same for all trips taken over the season; 4) the net benefit curve for the number of red snapper harvested per trip is estimated using data from 2003; and 5) changes in net benefits to for-hire operators are not measured. Currently, the daily bag limit of red snapper is two fish. Figure 1 demonstrates the potential sensitivity of our results to the different assumptions about the average fish weight and the number of red snapper harvested per trip. In general, the heavier the fish on average, the lower the measures of net benefit. This somewhat counterintuitive outcome is because lower weight fish means more fish can be caught for a given quota increase. Similarly, if we were to assume that only one fish is harvested per trip, instead of two fish, then the measures of net benefit would be higher, as the preference for a second fish is less than for the first.

As we describe below, our estimate of angler benefit for fish on a trip is based on data from 2003 (inflation adjusted). Currently an economic survey of anglers in the Gulf of Mexico is being fielded and is scheduled to end in spring of 2014. We will have some preliminary results by the end of the year. Until then, however, we do not know whether estimates using more recent data would be higher or lower than the estimates from the 2003 data. Consequently, we cannot speculate as to how our measures of the economic value associated with increased quota in the recreational sector would change with more recent data.

We do not attempt to measure changes in economic value (producer surplus) accruing to operators/owners in the charter and head boat industry. In fact, by assuming that trips do not

---

<sup>20</sup> As in the previous analyses, we also ignore dynamic feedbacks (e.g., congestion or stock effects) because this type of response is unlikely to be significant in the short-term, i.e. one year.

change, we are also assuming that the only way to have changes in producer surplus would be for for-hire profits to be relatively higher on trips that offer red snapper. The angler benefit estimates described below suggest that some anglers are indeed willing to pay a premium for trips that offer red snapper. However, for the analysis we assume that trip costs are same regardless of species offerings such that the all economic value increase (surplus) from longer seasons accrues to anglers. Our estimates of the economic value associated with increased quota in the recreational sector would be higher if we were to include the value accruing to the for-hire sector operators/producers. The potential consequences for our results of relaxing the key assumptions we have described are summarized in Table 7 .

### Calculation of the Net Benefit of Two Red Snapper Harvested per Trip

Following Agar and Carter (2012a,b) we use the results from an analysis of a stated preference choice experiment conducted in 2003 (Carter and Liese 2012). In this analysis, the total benefit<sup>21</sup> for harvest of species  $j$  per trip by angler  $i$  is given by

$$(1) \quad TB_{ij}(h) = \beta_{ij} \sinh^{-1} h_j$$

where  $\beta_{ij}$  is a preference parameter for the harvest of  $h_j$  number of fish of species  $j$ . The preference parameters are randomly distributed and correlated across species as a multivariate normal:  $\beta_{ij} \sim N(\bar{\beta}_j, \Omega)$  where a  $\bar{\beta}_j$  is the mean vector and  $\Omega$  is the covariance matrix for the joint distribution. Expression 1 measures the amount of money you would have to take from angler  $i$  to make him indifferent to harvesting  $h$  fish per trip versus no fish per trip. Figure 2 shows the total benefit function plotted over the number of fish harvested per trip for each species evaluated at the

<sup>21</sup> Total benefit is measured by the compensating variation that equates the indirect utility of a trip harvesting  $h$  fish of species  $j$  with the indirect utility of a trip that harvests zero fish of species  $j$ .

mean value of the preference parameter.<sup>22</sup> This figure suggests that the average angler would be willing to pay around \$200 to keep two red snapper on a trip versus a trip where no red snapper could be kept. Note, however, that we are assuming that red snapper harvest increases with an extended season because anglers redirect from harvesting another species. Therefore, we need to subtract the total anglers get from the harvest of their next preferred species to get a net benefit for the opportunity to harvest two red snapper on a trip. We used the following Monte Carlo simulation to estimate this net benefit and associated confidence bounds:

1. Draw 10,000 vectors of 14 parameters from the multivariate normal, including 4 species preference parameters,  $(\bar{\beta}_1, \bar{\beta}_2, \bar{\beta}_3, \bar{\beta}_4)$ , and the 10 components,  $(\rho_{11}, \rho_{21}, \rho_{22}, \rho_{31}, \rho_{32}, \rho_{33}, \rho_{41}, \rho_{42}, \rho_{43}, \rho_{44})$ , of the lower triangular Cholesky factorization matrix corresponding to the estimate of  $\Omega$ . The mean preference parameters and Cholesky terms along with the corresponding covariance matrix are shown in the Appendix.
2. For each of the 10,000 vectors of preference parameters and lower triangular Cholesky factorization matrix elements drawn in step 1:
  - a. Draw 10,000 “anglers” or coefficient vectors,  $(\bar{\beta}_{i1}, \bar{\beta}_{i2}, \bar{\beta}_{i3}, \bar{\beta}_{i4})$ , from the multivariate normal using the mean preference parameters and the Cholesky factorization matrix terms as follows:

$$\begin{pmatrix} \beta_{i1} \\ \beta_{i2} \\ \beta_{i3} \\ \beta_{i4} \end{pmatrix} = \begin{pmatrix} \bar{\beta}_1 \\ \bar{\beta}_2 \\ \bar{\beta}_3 \\ \bar{\beta}_4 \end{pmatrix} + \begin{bmatrix} \rho_{11} & & & \\ \rho_{21} & \rho_{22} & & \\ \rho_{31} & \rho_{32} & \rho_{33} & \\ \rho_{41} & \rho_{42} & \rho_{43} & \rho_{44} \end{bmatrix} \begin{bmatrix} \zeta_{i1} \\ \zeta_{i2} \\ \zeta_{i3} \\ \zeta_{i4} \end{bmatrix}$$

<sup>22</sup> The graph is plotted from zero to five fish, but the original experiment did not include alternative trips in which no fish were harvested. Hence the value of one fish is an out-of-sample extrapolation. Zero marginal value for zero fish is a quite plausible assumption.

where the  $\zeta$  terms are drawn from the standard normal distribution.

- b. Calculate total benefit for two fish per trip for each species for each of the 10,000 “anglers” drawn in 2a using equation 1.
  - c. Based on the results in 2b, keep the “red snapper anglers” where the total benefit for red snapper is greater than the total benefit for other species.
  - d. For each “red snapper angler”, calculate the net benefit as the total benefit for red snapper minus the total benefit for the species with the next highest total benefit.
  - e. Return the mean (and median) net benefit over the vector calculated in 2d.
3. Calculate the mean and confidence bounds based on the 10,000 estimates of the mean and median net benefit generated by evaluating step 2 on each of the vectors drawn in step 1.

This measure of net benefit is converted to net benefit per pound by dividing by the pounds per fish and the number of fish harvested on the trip, assumed to be two fish based on the current bag limit.

The results of the simulation are shown in Table 8. On average around 20% of the 10,000 anglers “preferred” red snapper over the other three species, i.e., these anglers had a total benefit for red snapper that was higher than the total benefit for any other species. The mean and confidence bounds are shown for the simulated mean and median net benefit estimates in 2003 and 2012 dollars. We also show the results converted to the net benefit per pound. The estimates range from \$8 to \$12 per pound in 2012 dollars. Note that these confidence bounds only account for parameter uncertainty and the heterogeneity angler preferences. There are other potential sources (e.g., structural or model) of uncertainty that are not captured.

### **Recreational Sector Results**

Table 9 shows the economic value of changes in the red snapper allocation to the recreational sector. The allocation is shown in the first column and the change in the allocation from the Alternative 1 (status quo) is shown in the second column. The numbers in the second column are multiplied by the *mean* net benefit per pound in 2012 dollars (\$11.21) from Table 8 to get the change in economic value relative to the status quo that is presented in the last column. This simple method ensures that the change in economic value moves in the same direction and is proportional to the change in allocation to the recreational sector.

## **Results and Conclusions**

Amendment 28 to the GOM Reef Fish FMP is revisiting the existing allocation formula between the commercial and recreational sectors. Specifically, the Amendment is considering alternatives that would increase the recreational sector allocation between 3% and 10% or assigning 25% or 100% of the quota increases to the recreational sector when snapper quota is greater than 9.12 mp ww.

This analysis shows that on economic efficiency grounds, benefits to the nation could be increased by redistributing some of the quota from the commercial to the recreational sector. In general, the larger the share of quota redistributed to the recreational sector, the greater the economic benefits to the nation. The analysis suggests that the 10% redistribution alternative generates the most benefits to the nation, at about \$6.16 million annually whereas the 3% redistribution alternative generates the least benefits to the nation of about \$1.92 million annually. Table 9 summarizes the key results of the analysis. We caution, however, that the results of this analysis are conditional on a number of simplifying assumptions and, strictly speaking, apply at the margin and to the quota level at the time the data were collected. The methods and assumptions become tenuous at “large” reallocations. As emphasized in our previous allocation work (Agar

and Carter 2012a, b), more and better data and analysis are necessary to accurately measure the potential economic implications of relatively large reallocations of fishery stocks as well as adequately capture other economic surpluses in the wholesale and retail markets. However, some of these surpluses are not expected to be large due to the presence of substitutes.

Finally, it should be pointed out, that National Standard 5 of the Magnuson Stevens Reauthorization Act of 2006 states “Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.” In other words, economic efficiency considerations alone should not be the only guiding criteria for making re-allocation decisions.

Table 2. Gulf of Mexico Red Snapper Allocation Alternatives

Alternative	Commercial Sector		Recreational Sector	
	Quota (Million Pounds Whole Weight)	%	Quota (Million Pounds Whole Weight)	%
1 (Status Quo)	5.610	51.0	5.390	49.0
2	5.280	48.0	5.720	52.0
3	5.060	46.0	5.940	54.0
4	4.510	41.0	6.490	59.0
5	5.121	46.6	5.879	53.4
6	4.651	42.3	6.349	57.7

Table 3. Descriptive Statistics of the Variables Used in the Analysis (n=72)

Variable	Mean	Median	Std. dev.	Min	Max
Red snapper monthly allocation price (\$/lb)	2.84	2.98	0.34	1.99	3.31
Red snapper monthly dockside price (\$/lb)	4.37	4.42	0.13	4.05	4.54
Diesel #2 price index	0.85	0.83	0.21	0.44	1.36
Red Snapper commercial quota (Million Pounds Gutted Weight)	2.81	2.99	0.52	2.30	3.71

Sources: NOAA IFQ Database and BLS. All prices are adjusted to 2012 dollars using the CPI.



**Table 4. Allocation Price Regression Results (n=72)**

<b>Independent Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<b>Intercept</b>	-6.70523*** (0.61902)	-6.81492*** (0.60554)	0.77921 (1.31535)	1.51673 (1.43179)
<b>Monthly dockside price</b>	2.13208*** (0.14335)	2.15326*** (0.14021)	0.45214 (0.29226)	0.34118 (0.30846)
<b>Diesel #2 price index</b>	-0.12826 (0.09848)	-0.16243** (0.09714)	-0.15544 (0.13327)	-0.23727* (0.13504)
<b>Commercial Quota</b>	0.11914*** (0.04145)	0.13078*** (0.04237)	-0.09668 (0.06520)	-0.20046** (0.08734)
<b>Quarter 2</b>		0.05893 (0.05162)		0.05401 (0.04198)
<b>Quarter 3</b>		0.05534 (0.05287)		0.13020** (0.04961)
<b>Quarter 4</b>		-0.06062 (0.05252)		0.06270 (0.05119)
<b>Year 2008</b>			0.20261** (0.08427)	0.20201*** (0.08185)
<b>Year 2009</b>			0.52325*** (0.09461)	0.50200*** (0.09345)
<b>Year 2010</b>			0.68000*** (0.10973)	0.72767*** (0.11596)
<b>Year 2011</b>			0.74341*** (0.12851)	0.85477*** (0.14463)
<b>Year 2012</b>			0.76603*** (0.14856)	0.91003*** (0.17169)
<b>R Squared</b>	0.7976	0.8176	0.8851	0.8978
<b>Adjusted R Squared</b>	0.7886	0.8008	0.8705	0.8791
<b>F Value</b>	89.31	48.56	60.66	47.92
<b>Prob.&gt; F</b>	<.0001	<.0001	<.0001	<.0001

Table 5. Predicted Mean Allocation Price at Different Quota Levels

Quota (Million Pounds Gutted Weight)	Predicted Price (\$/lb)		
	Mean	95Lower	95Upper
4.06	2.95	2.69	3.21
4.19	2.93	2.66	3.19
4.56	2.85	2.56	3.15
4.61	2.84	2.55	3.14
4.76	2.81	2.50	3.12
5.06	2.75	2.41	3.10

**Table 6. Annual Economic Cost (Losses) to the Commercial Sector of the Various Reallocation Alternatives.**

Alternative	Quota (Million Pounds Gutted Weight)	Quota share (%)	Poundage lost relative to Alt. 1	Economic cost (losses) (\$ million/year)
<b>1 (Status quo)</b>	5.06	51	-	-
<b>2</b>	4.76	48	0.30	0.8 (0.7-0.9)
<b>3</b>	4.56	46	0.50	1.4 (1.2-1.6)
<b>4</b>	4.06	41	1.00	2.9 (2.6-3.2)
<b>5</b>	4.61	46.6	0.45	1.3 (1.1-1.4)
<b>6</b>	4.19	42.3	0.87	2.5 (2.2-2.7)

Table 7. Effect of Relaxing Key Assumptions in Recreational Sector Analysis

Assumption	Relaxing Assumption Makes Results
No new anglers or trips	Higher
All trips harvest two red snapper	Higher
Data from 2003	?
Only measured value to angler (i.e., for-hire operators not included)	Higher

Table 8. Net Benefit for Two Red Snapper Keep Calculated from the Simulation

	Simulated Mean	Simulated Median
--Net Benefit (2003 dollars)--		
Mean	\$114.06	\$92.75
95Lower	\$104.71	\$84.09
95Upper	\$123.73	\$101.74
--Net Benefit (2012 dollars)--		
Mean	\$142.11	\$115.56
95Lower	\$130.46	\$104.76
95Upper	\$154.16	\$126.76
--Net Benefit per pound (2012 dollars)--		
Mean	\$11.21	\$9.11
95Lower	\$10.29	\$8.26
95Upper	\$12.16	\$10.00

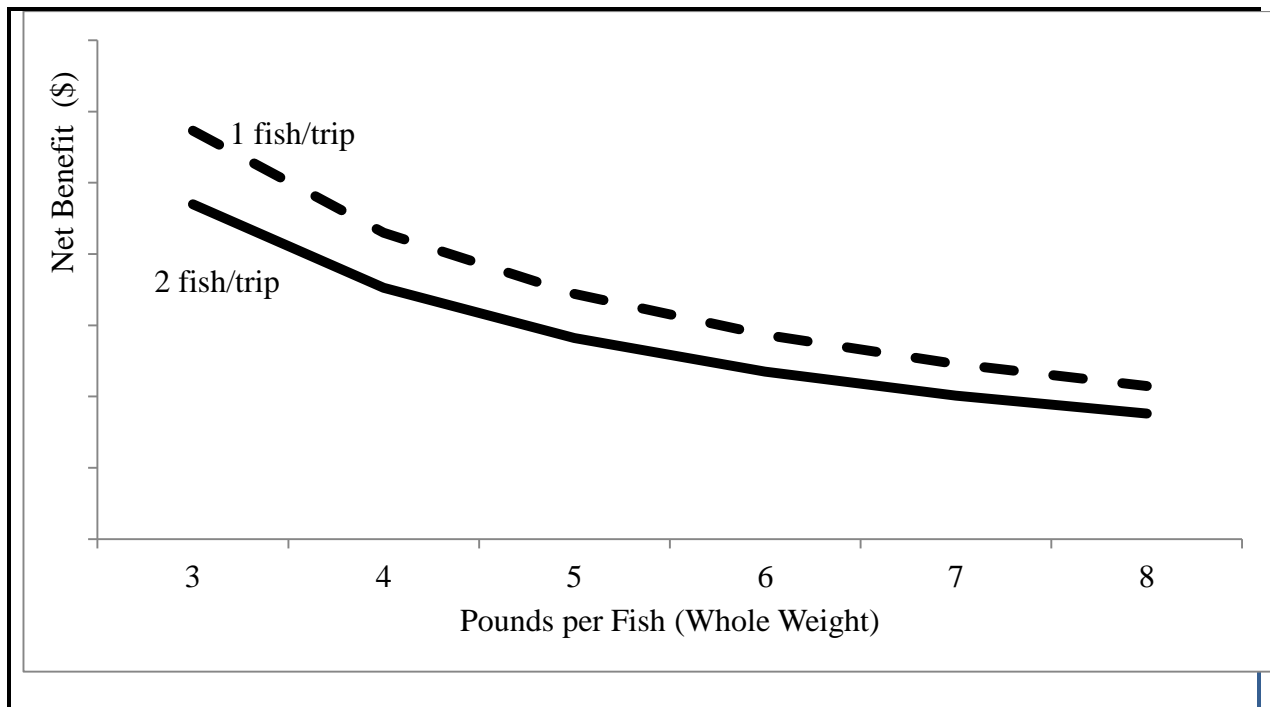
Notes: The 2003 dollars are inflated to 2012 dollars using the January CPI from series CUSR0000SA0. The net benefit per pound is based on two fish at 6.34 pounds each.

Table 9. Economic Value of Changes in the Red Snapper to the Recreational Sector

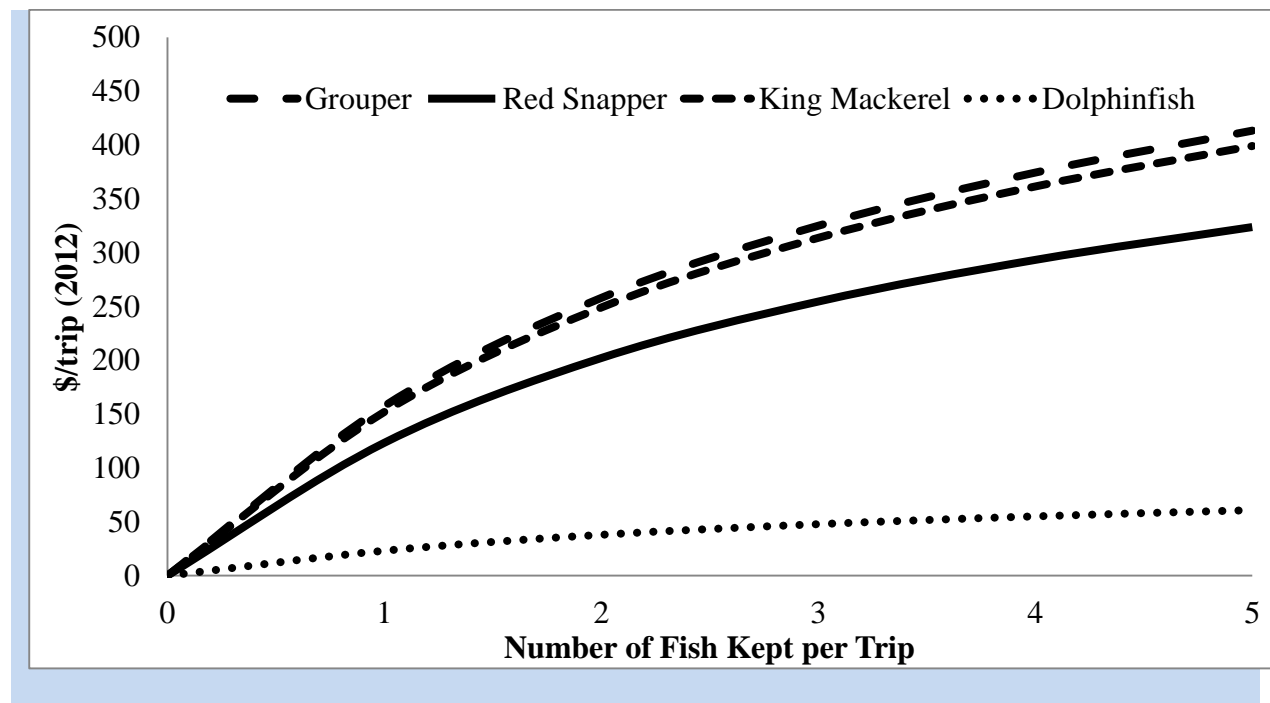
Alternative	Recreational Allocation (Million Pounds Whole Weight)	Change in Recreational Allocation from Alt1	Change in Economic Value to Anglers Relative to Alt1 (Millions\$)
1 (Status Quo)	5.39		
2	5.72	0.33	\$2.72
3	5.94	0.55	\$4.53
4	6.49	1.1	\$9.06
5	5.88	0.49	\$4.03
6	6.35	0.96	\$7.90

Table 10. Change in Benefits (Millions of Dollars) to the Commercial and Recreational Sectors and the Net Benefits of the Alternative Allocations Relative to the Status Quo (Alternative 1)

Alternative	Commercial	Recreational	Net
2	-\$0.80	\$2.72	\$1.92
3	-\$1.40	\$4.53	\$3.13
4	-\$2.90	\$9.06	\$6.16
5	-\$1.30	\$4.03	\$2.73
6	-\$2.50	\$7.90	\$5.40



**Figure 1. Sensitivity of Recreational Net Benefit Calculations to Pounds per Fish and the Number of Fish Harvested per Trip.**



**Figure 2. Average Angler Total Benefit by Number of Fish Kept per Trip for each Species**

## References

- Agar, J.J. and D.W. Carter. 2012a. "Is the Allocation of Red Snapper in the Gulf of Mexico Economically Efficient?" NOAA Fisheries, Southeast Fisheries Science Center, Miami, Florida.
- Agar, J.J. and D.W. Carter. 2012b. "Are the Allocations of Gag, Red, and Black Grouper in the Gulf of Mexico Economically Efficient?" NOAA Fisheries, Southeast Fisheries Science Center, Miami, Florida.
- Carter, D.W., J.J. Agar, and J.R. Waters. 2008. Economic Framework for Fishery Allocation Decisions with an Application to Gulf of Mexico Red Grouper. *NOAA Technical Memorandum NMFS-SEFSC-576*, 96 p.
- 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.
- Clark, C.W. 1982. "Towards a predictive model for the economic regulation of commercial fisheries." *Canadian Journal of Fisheries and Aquatic Sciences*, 37:1111-1129.
- Gentner, B., J. Kirkley, P. R. Hindsley, and S. Steinback. 2010. Summer Flounder Allocation Analysis. *NOAA Technical Memorandum NMFSF/SPO-111*, 93 p.
- Newell, R.G., Sanchirico, J.N. and Kerr, S. 2005. "Fishing Quota Markets." *Journal of Environmental Economics and Management* 49: 437-462.
- Squires, D. and J. Kirkley. 1991. "Production Quota in Multiproduct Pacific Fisheries." *Journal of Environmental Economics and Management* 21: 109-126.
- Squires, D. and J. Kirkley. 1995. "Resource Rents from Single and Multispecies Individual Transferable Quota Programs." *ICES Journal of Marine Science*, 52 (2):153-164.

## Appendix A: Discussion of the Derived Demand Approach to Benefits Estimation in the Commercial Sector

This approach models how fishermen choose their profit maximizing species mix at the trip level given quasi-fixed inputs (e.g., capital and labor available), weather, resource constraints, relative product prices, etc. These models can examine how fishermen would change their harvest mix and revenue stream if either quota(s) were imposed or quota levels were changed. This can be done by imputing a *virtual or net dockside price* (i.e., *dockside price minus allocation price*) for each of the quota-constrained species.<sup>23</sup> After determining the impact of virtual prices on the harvest level and mix of the fleet, the economic impact of quota changes can be calculated by integrating under the allocation price curve.

For the red snapper allocation analysis, we estimated the output (harvest) supply functions derived from two different Leontief revenue specifications. The first specification included two species (i.e., red snapper and other species) and the second one included three species (i.e., red snapper, other mid-water snappers-mainly vermilion snapper, and other species). These models regressed each species (or species' group) harvest per trip against relative dockside prices (virtual price for red snapper since it was quota constrained), quasi-fixed input (i.e., crewdays\*vessel length), and dummy variables for quarter, year, and region (i.e., Panhandle Florida plus Alabama and Mississippi, Non-Panhandle Florida, Texas, Louisiana).

In general, we found that own-price elasticity of supply of red snapper was positive but fairly inelastic suggesting that fishermen have limited ability to re-adjust their production of red snapper in response to changes in its own-virtual price. To examine the economic effect of changing quota levels, we assumed that fishermen would take same number of trips as in 2012 and would readjust

---

<sup>23</sup> Virtual prices are equivalent to those 'net' dockside prices (i.e., dockside price minus allocation price) that would induce a fishing vessel operating without quota constraints to operate in the same manner as when faced with quotas (Squires and Kirkley, 1991).



their catch mix in response to changes in red snapper's virtual price. Unfortunately, these models predicted that the fleet could not exhaust the 36.4% increase in red snapper quota, from 3.71 mp gutted weight (gw) in 2012 to 5.06 mp gw in 2013, by re-organizing their product mix at the 2012 effort levels indicating that the relatively large quota increase could only be absorbed with additional trips. Because we do not have the information on rental prices for quasi-fixed inputs (i.e., of crew days times vessel length) currently we cannot determine how effort would change in response to changes in the quota/virtual price (Squires and Kirkley, 1991).

## Appendix B: Materials for the Monte Carlo Simulation in the Recreational Sector Analysis

Table B.1. Mean Parameters

Species	Type	Symbol	Mean Estimate	Covariance Matrix Label
dolphin	Beta	$\beta_3$	2.1	d
dolphin, grouper	Cholesky	$\rho_{13}$	0.549	dg
dolphin, red snapper	Cholesky	$\rho_{23}$	0.423	dr
grouper	Beta	$\beta_1$	1.43	g
king mackerel	Beta	$\beta_4$	1.38	k
king mackerel, dolphin	Cholesky	$\rho_{34}$	0.985	kd
king mackerel, grouper	Cholesky	$\rho_{14}$	0.813	kg
king mackerel, red snapper	Cholesky	$\rho_{24}$	0.0242	kr
red snapper	Beta	$\beta_2$	1.12	r
red snapper, grouper	Cholesky	$\rho_{12}$	0.859	rg
dolphin, dolphin	Cholesky	$\rho_{33}$	10.7	dd
grouper, grouper	Cholesky	$\rho_{11}$	1.51	gg
king mackerel, king mackerel	Cholesky	$\rho_{44}$	1.69	kk
red snapper, red snapper	Cholesky	$\rho_{22}$	1.03	rr

Table B.2. Covariance Matrix

	d	dg	dr	g	k	kd	kg	kr	r	rg	dd	gg	kk	rr
d	0.0873	0.00136	0.00101	0.00349	0.00422	0.00201	0.00111	2.96E-05	0.0028	0.00115	-0.00072	0.00217	0.00243	0.00158
dg	0.00136	0.00159	0.000848	0.000605	0.00048	0.00111	0.000153	3.24E-05	0.000396	0.000316	0.00495	0.000587	0.000635	0.000371
dr	0.00101	0.000848	0.00127	0.000445	0.000372	0.000806	0.000184	-5.6E-05	0.000309	0.000256	0.00438	0.000434	0.0005	0.000343
g	0.00349	0.000605	0.000445	0.00365	0.00171	0.000997	0.00079	6.19E-05	0.00131	0.000792	0.00982	0.00159	0.00168	0.00102
k	0.00422	0.00048	0.000372	0.00171	0.00416	0.000905	0.000852	3.23E-05	0.0012	0.000784	0.00925	0.00134	0.00166	0.000872
kd	0.00201	0.00111	0.000806	0.000997	0.000905	0.00269	0.000479	5.12E-05	0.000694	0.000566	0.00843	0.000982	0.00114	0.000656
kg	0.00111	0.000153	0.000184	0.00079	0.000852	0.000479	0.0022	-0.00019	0.000613	0.000656	0.00636	0.000971	0.000918	0.000552
kr	2.96E-05	3.24E-05	-5.6E-05	6.19E-05	3.23E-05	5.12E-05	-0.00019	0.000841	1.44E-05	-5.6E-05	-0.00015	6.38E-05	0.000101	6.16E-05
r	0.0028	0.000396	0.000309	0.00131	0.0012	0.000694	0.000613	1.44E-05	0.00291	0.000575	0.00713	0.00106	0.00118	0.00071
rg	0.00115	0.000316	0.000256	0.000792	0.000784	0.000566	0.000656	-5.6E-05	0.000575	0.00146	0.00632	0.00103	0.000991	0.000559
dd	-0.00072	0.00495	0.00438	0.00982	0.00925	0.00843	0.00636	-0.00015	0.00713	0.00632	0.132	0.0103	0.012	0.00657
gg	0.00217	0.000587	0.000434	0.00159	0.00134	0.000982	0.000971	6.38E-05	0.00106	0.00103	0.0103	0.00239	0.00172	0.00101
kk	0.00243	0.000635	0.0005	0.00168	0.00166	0.00114	0.000918	0.000101	0.00118	0.000991	0.012	0.00172	0.00312	0.00111
rr	0.00158	0.000371	0.000343	0.00102	0.000872	0.000656	0.000552	6.16E-05	0.00071	0.000559	0.00657	0.00101	0.00111	0.00144

**Mathematica Notebook for the Net Benefit of 2 Red Snapper Harvested on a Trip (referred to as “Net WTP” in the Notebook)**

Total willingness-to-pay (WTP) function

```
twtp=b ArcSinh[h];
```

**Parameters from the 2003 SPCE model (grouper, red snapper, dolphinfish, and king mackerel)**

Mean (scaled) random parameter vector and corresponding covariance matrix

```
betas={1.430,1.120,2.100,1.380} ;  
cov={{3.450,1.510,5.901,0.205},  
      {1.510,1.970,4.543,0.557},  
      {5.901,4.543,115.000,10.579},  
      {0.205,0.557,10.579,4.840} };
```

Select the number corresponding to the species for the rest of the analysis (red snapper is species 2)

```
sn=2.;
```

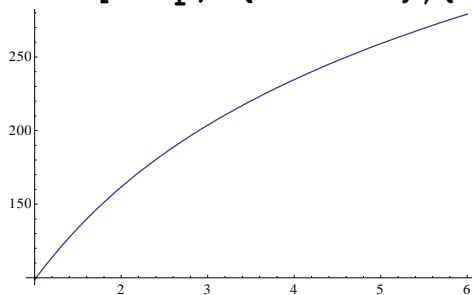
**Plot of total willingness-to-pay parameterized with the mean species parameter from the 2003 SPCE model**

Select the mean parameter of the species of interest and rescale

```
beta=betas[[sn]] 100.;
```

Plot of the total from one to six fish

```
Plot[twtp/.{b→beta},{h,1,6}]
```



Total WTP per trip at one and two fish

```

twtp/.{b→beta, h→1}
twtp/.{b→beta, h→2}
98.7138
161.687

```

Set seed for random draws

```
SeedRandom[1234];
```

Function to select rows from a matrix based on criteria applied to one column.

```

select[table:{colNames_List,rows_List},where[condition_] :=
With[{self=Apply[Function,Hold[condition]/.Dispatch[Thread
[colNames→Thread[Slot[Range[Length[colNames]]]]]]}],Select[
{rows},self@@@#&]];

```

Parameter estimates and related covariance matrix from the RPL model, including the heterogeneity (covariance) terms.

```

betas0={2.1,0.549,0.423,1.43,1.38,0.985,0.813,0.0242,1.12,0
.859,10.7,1.51,1.69,1.03};
cov0=Import["C:\\Users\\dcarter\\Desktop\\working\\projects
\\seConjoint2003\\output\\BIOGEME\\runToGetVCOV\\vcov.csv"];

```

Create a multivariate normal distribution with the mean parameter estimates and related covariance matrix from the RPL model.

```
betasn0=MultinormalDistribution[betas0,cov0];
```

Draw 10,000 vectors of the parameter estimates from the RPL model, including the heterogeneity (covariance) terms.

```
betasn0100=RandomVariate[betasn0,10000.];
```

Functions to correctly order the parameter vector and Cholesky matrix and to reconstruct the covariance matrix of the random parameters.

```

cbetas[b_]:= {b[[4]],b[[9]],b[[1]],b[[5]]}
ccol[c_]:=
(
cc={
{c[[12]],0,0,0},
{c[[10]],c[[14]],0,0},
{c[[2]],c[[3]],c[[11]],0},

```

```

        {c[[7]],c[[8]],c[[6]],c[[13]]}
    }
)
ccov[c_] :=
(
    ccol[c].ConjugateTranspose[ccol[c]]
)
MatrixForm[ccol[betas0]]
MatrixForm[ccov[betas0]]
MatrixForm[cov]
(_{
    {1.51, 0, 0, 0},
    {0.859, 1.03, 0, 0},
    {0.549, 0.423, 10.7, 0},
    {0.813, 0.0242, 0.985, 1.69}
}_)
(_{
    {2.2801, 1.29709, 0.82899, 1.22763},
    {1.29709, 1.79878, 0.907281, 0.723293},
    {0.82899, 0.907281, 114.97, 10.9961},
    {1.22763, 0.723293, 10.9961, 4.48788}
}_)
(_{
    {3.45, 1.51, 5.901, 0.205},
    {1.51, 1.97, 4.543, 0.557},
    {5.901, 4.543, 115., 10.579},
    {0.205, 0.557, 10.579, 4.84}
}_)

```

Function to calculate the net WTP for *fish* red snapper on a trip when red snapper is available given  $d$  draws from a multivariate normal distribution of random parameters given a vector *betasa* including the four preference parameters and the 10 elements of the lower triangular Cholesky matrix corresponding with the preference parameter covariance matrix.

```

netWTP[fish_,d_,betasa_] :=
(
betasns100=Table[cbetas[betasa]+Transpose[ccol[betasa]].RandomVariate[NormalDistribution[],4],{i,1,d}] 100;
wtp2=Table[twtp/.{b->betasns100[[All,i]],
h->fish},{i,1,4}];
wtp2[[3,All]]=wtp2[[3,All]]/10;

```

```

wtp2t=Transpose[wtp2];
tt=Table[Max[wtp2t[[i,All]]]==wtp2t[[i,2]],{i,d}];
wtp2tf=MapThread[Prepend,{wtp2t,tt}];

wtp2tff=Prepend[wtp2tf,{"rsmax","wtp2g","wtp2r","wtp2d","wtp2k"}];

wtp2tff0=select[wtp2tff,where["rsmax"==True]];
tt2=Table[wtp2tff0[[i,3]]-
Max[wtp2tff0[[i,{2,4,5}]]],{i,Length[wtp2tff0]}];
drs=Length[tt2];
{N[drs/d],If[drs==0,0,Mean[tt2]],If[drs==0,0,Median[tt2]]}
)

```

Test evaluation for 2 fish using 10,000 draw and the means of the four preference parameters and the 10 elements of the lower triangular Cholesky matrix

```

netWTP[2,10000.,Mean[betasn0]]
{0.2328,114.867,93.2638}

```

Launch the kernels used for parallel evaluation and distribute the netWTP function to each kernel.

```

LaunchKernels[]
DistributeDefinitions[netWTP]

{KernelObject[1,local],KernelObject[2,local],KernelObject[3,local],KernelObject[4,local],KernelObject[5,local],KernelObject[6,local]}

```

Use the 10,000 vectors of the parameter estimates from the RPL model to run the net red snapper WTP function 10,000 times.

```

netWTPmc=ParallelTable[netWTP[2,10000.,RandomVariate[MultinormalDistribution[betas0,cov0]]],{i,1.,10000.}];

```

Summary statistics from the run of the net red snapper WTP function 10,000 times

```

Mean[netWTPmc]
Median[netWTPmc]
Quantile[netWTPmc,1-.975]
Quantile[netWTPmc,.975]
(Quantile[netWTPmc,.975]-Mean[netWTPmc])/Mean[netWTPmc]

```

**(Quantile[netWTPmc, .025] - Mean[netWTPmc]) / Mean[netWTPmc]**

{0.22749, 114.063, 92.7491}

{0.2274, 114.066, 92.6894}

{0.2032, 104.709, 84.086}

{0.2525, 123.732, 101.737}

{0.109939, 0.084772, 0.0969103}

{-0.106774, -0.0822161, -0.0934628}



## APPENDIX H RECREATIONAL RED SNAPPER AVERAGE WEIGHTS

**Table H-1. Gulf of Mexico recreational red snapper landings and average weights, 1996-2013.**

<b>Year</b>	<b>Numbers</b>	<b>Pounds</b>	<b>AvgWeight</b>
1996	1,190,120	4,690,917	3.94
1997	1,606,560	5,873,155	3.66
1998	1,256,725	4,233,104	3.37
1999	1,033,978	4,246,230	4.11
2000	1,024,616	4,069,528	3.97
2001	1,108,288	4,447,073	4.01
2002	1,425,435	5,553,810	3.90
2003	1,309,059	5,181,545	3.96
2004	1,493,608	5,540,101	3.71
2005	1,037,629	3,953,838	3.81
2006	1,198,923	4,024,849	3.36
2007	1,444,532	4,768,107	3.30
2008	834,217	3,628,435	4.35
2009	987,560	4,774,895	4.84
2010	451,343	2,277,410	5.05
2011	676,243	4,305,989	6.37
2012	733,492	5,146,485	7.02
2013	1,359,183	9,541,328	7.02

<-- preliminary data

Source: Southeast Fisheries Science Center Recreational (MRIP-based) ACL Dataset (Feb 2014) with preliminary (expanded) 2013 headboat landings.