Modification to the Recreational For-hire Red Snapper Annual Catch Target Buffer

A.C.T.

Final Framework Action to the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico including EA, RIR, RFA

August 2019

This is a publication of the Gulf of Mexico Fishery Management Council Pursuant to National Oceanic and Atmospheric Administration Award No. NA15NMF4410011.

This page intentionally blank

ENVIRONMENTAL ASSESSMENT COVER SHEET

Name of Action

Framework Action to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico: Modification to the Recreational For-hire Red Snapper Annual Catch Target Buffer including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis.

Responsible Agencies and Contact Persons

Gulf of Mexico Fishery Management Council (Council)	813-348-1630
4107 W. Spruce Street, Suite 200	813-348-1711 (fax)
Tampa, Florida 33607	gulfcouncil@gulfcouncil.org
Ryan Rindone (ryan.rindone@gulfcouncil.org)	http://www.gulfcouncil.org

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

Type of Action

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

ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
AM	accountability measures
APAIS	Access Point Angler Intercept Survey
comm	commercial
Council	Gulf of Mexico Fishery Management Council
CS	consumer surplus
DPS	distinct population segment
EA	environmental assessment
EFH	essential fish habitat
EFP	exempted fishing permits
EIS	environmental impact statement
EJ	environmental justice
ESA	Endangered Species Act
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
HAPC	habitat areas of particular concern
IFQ	individual fishing quotient
IPCC	Intergovernmental Panel on Climate Change
IRFA	initial regulatory flexibility analysis
LAPP	Limited Access Privilege Program
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammals Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSST	minimum stock size threshold
NAICS	North American Industry Classification System
NARW	North Atlantic right whale
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOR	net operating revenue
OFL	overfishing limit
opinion	biological opinion
PAH	polycyclic aromatic hydrocarbons
PS	producer surplus
rec	recreational
RFA	Regulatory Flexibility Act
RFFA	reasonably foreseeable future action
RIR	regulatory impact review
RQ	regional quotient

Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment, and Review process
SEFSC	Southeast Fisheries Science Center
SERO	NMFS Southeast Regional Office
SPR	spawning potential ratio
SRHS	Southeast Region Headboat Survey
SSB	spawning stock biomass
SSC	Scientific and Statistical Committee
TAC	total allowable catch
TL	total length
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
USCG	United States Coast Guard

TABLE OF CONTENTS

Environmental Assessment Cover Sheet iii
Abbreviations Used in this Document iv
Table of Contents vi
List of Tables viii
List of Figures x
Chapter 1. Introduction 11
1.1 Background 11
1.2 Purpose and Need 15
1.3 History of Management 15
Chapter 2. Management Alternatives 19
2.1 Action 1 – Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT) 19
Chapter 3. Affected Environment 21
3.1 Description of the Physical Environment 21
3.2 Description of the Biological/Ecological Environment 23
3.2.1 Red Snapper 23
3.2.2 General Information on Reef Fish Species 26
3.3 Description of the Economic Environment 35
3.3.1 Commercial Sector 35
3.3.2 Recreational Sector 35
3.4 Description of the Social Environment 45
3.4.1 Fishing Communities 46
3.4.2 Environmental Justice Considerations 49
3.5 Description of the Administrative Environment 51
3.5.1 Federal Fishery Management 51
3.5.2 State Fishery Management 52
3.5.3 Red Snapper Management 53
Chapter 4. Environmental Consequences 54
4.1 Action 1 – Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT) 54
4.1.1 Direct and Indirect Effects on the Physical Environment 54
4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment 55
4.1.3 Direct and Indirect Effects on the Economic Environment 57

4.1.4 Direct and Indirect Effects on the Social Environment 58
4.1.5 Direct and Indirect Effects on the Administrative Environment 59
4.2 Cumulative Effects 61
Chapter 5. Regulatory Impact Review 64
5.1 Introduction 64
5.2 Problems and Objectives 64
5.3 Description of Fisheries 64
5.4 Impacts of Management Measures 64
5.4.1 Action 1: Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT) 64
5.5 Public and Private Costs of Regulations 64
5.6 Determination of Significant Regulatory Action 65
Chapter 6. Regulatory Flexibility Analysis 66
6.1 Introduction 66
6.2 Statement of the need for, objective of, and legal basis for the proposed rule 66
6.3 Identification of federal rules which may duplicate, overlap or conflict with the proposed rule 66
6.4 Description and estimate of the number of small entities to which the proposed action would apply 66
6.5 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule 67
6.6 Significance of economic impacts on a substantial number of small entities 67
Chapter 7. Agencies, Organizations, and Persons Consulted 68
Chapter 8. List of Preparers 69
Chapter 9. References 70
Appendix A: ACL/ACT Control Rule Worksheets 79
A.1 ACT/ACT Control Rule for the Private Angling and For-hire Components of the Recreational Sector for Gulf of Mexico Red Snapper 79
Appendix B: Public Comments 81
Appendix C. Other Applicable Law 82

LIST OF TABLES

Table 1.1.1. Red snapper for-hire landings and quotas/ACLs. Landings are in pounds whole weight 12

Table 1.1.2. Red snapper federal recreational season durations (in days) from 2010 - 2019 13

Table 2.1.1. Values in millions of pounds whole weight for the ACTs and ACLs corresponding to the alternatives presented in Action 1 20

Table 3.3.2.2. Discard mortality rates for red snapper by fleet and season from the SEDAR 52 stock assessment. 29

Table 3.3.2.3. Total Gulf greenhouse gas 2014 emissions estimates (tons per year [tpy]) from oil platform and non-oil platform sources, commercial fishing, and percent greenhouse gas emissions from commercial fishing vessels of the total emissions* 32

Table 3.3.2.1. Number and percentage of charter/headboat permits for reef fish by state of hailing port of vessel, 2012-2016 37

Table 3.3.2.2. Percentage of for-hire reef fish permits by state of hailing port of vessel. 37

Table 3.3.2.3. Number and percentage of permitted for-hire fishing vessels by passenger capacity as of October 24, 2017 38

Table 3.3.2.4. Range, average, median, total and percent of total passenger capacity by homeport state of vessels as of October 24, 2017 38

Table 3.3.2.5. Number of permitted vessels by passenger capacity and homeport state as of October 24, 2017 38

Table 3.3.2.6. Numbers and percentages of businesses and total permitted for-hire vessels by number of permitted for-hire fishing vessels per business, October 25, 2017. 39

Table 3.3.2.7. Number of employer establishments in NAICS code 4872012 (charter fishing and party fishing boats industry). 40

Table 3.3.2.8. Number of establishments, total receipts and average receipts establishments in NAICS code 4872012 in 2012. 40

Table 3.3.2.9. Percentage of employer establishments in NAICS code 487210 that are in the charter fishing and party boat industry. 41

Table 3.3.2.10. Number of establishments by legal form in the scenic and sightseeing transportation industry (NAICS code 487), 2015. 41

Table 3.3.2.11. Number of headboats and charter vessels, 2012 - 2016. 42

Table 3.3.2.12. Estimates of numbers of directed angler trips by for-hire component by state and percentage of total by Alabama and west Florida, 2012 - 2016. 42

Table 3.3.2.13. Estimates of economic impacts of directed angler trips by charter boats and their economic impacts to the state, by state. 43

Table 3.3.2.14. Estimates of economic impacts of directed angler trips by Texas charter vessels to the Gulf region. 43

Table 3.3.2.15. Number of annual headboat trips by length (hours) of trip, 2012 – 2016 43

Table 3.3.2.16. Percentage of annual headboat trips by length of trip, 2012 – 2016. 44

Table 3.3.2.17. Number of angler days by area, 2012 – 2016. 44

Table 3.3.2.18. Percentages of total angler days by area, 2012 – 2016. 45

Table 3.3.2.19. Number and percentage of headboats with red snapper landings in 2016 by state. 45

Table 3.4.1.1. Top ranking communities based on the number of federal for-hire permits for Gulf reef fish, including historical captain permits, in descending order. 47

Table 3.5.2.1. Gulf state marine resource agencies and web pages. 53

Table 4.1.3.1. Federal for-hire red snapper ACLs, ACTs, and ACT changes (pounds, number of fish, and value) relative to **Alternative 1**. 58

LIST OF FIGURES

Figure 1.1.1. Probability of recreational red snapper quota being exceeded in 2014 at various ACT buffer levels. 14
Figure 3.1.1. 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) 23
Figure 3.2.1.1. Recruitment (1000s of fish) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those from SEDAR 52 (2016 terminal year; red line). 25
Figure 3.2.1.2. Dead removals (millions of pounds) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those from SEDAR 52 (2016 terminal year; red line). 26
Figure 3.4.1.1. Top 20 recreational fishing communities' engagement and reliance. 46
Figure 3.4.1.2. All Gulf communities ranked by number of fish landed by headboats included in the SRHS RQ for red snapper. The actual RQ values (y-axis) are omitted from the figure to maintain confidentiality. 49
Figure 3.4.2.1. Social vulnerability indices for top recreational fishing communities. 50
Figure 3.4.2.2. Social vulnerability indices for top recreational fishing communities continued. 51
Figure A.1.1: ACL/ACT Control Rule for the private angling component of the recreational sector for Gulf of Mexico red snapper. 2017 landings are preliminary at the time of this analysis: 9 May 2018. 79
Figure A.1.2: ACL/ACT Control Rule for the federal for-hire component of the recreational sector for Gulf of Mexico red snapper. 2017 landings are preliminary at the time of this analysis: 9 May 2018. 80

CHAPTER 1. INTRODUCTION

Through this framework action, the Gulf of Mexico Fishery Management Council (Council) is considering whether to retain a reduction in the buffer between the for-hire component annual catch target (ACT) and the annual catch limit (ACL) for red snapper. The Council and the National Marine Fisheries Service (NMFS) reduced the buffer between the ACT and ACL for the federal for-hire component from 20% to 9% for the 2019 fishing year. This reduction was limited to the 2019 fishing year to coincide with the last year of exempted fishing permits (EFPs) issued to the five Gulf states to test limited state management of the private angling component's harvest of red snapper. Under these EFPs, each state was allocated a portion of the private angling ACL and could establish the private angling fishing season in state and federal waters for anglers landing red snapper in that state. The Council recently approved Amendment 50A to the Fishery Management Plan (FMP) for Reef Fish Resources in the Gulf of Mexico (Reef Fish FMP) (GMFMC 2019), which, if implemented, would delegate to each state the authority to specify specific management measures for the private angling component's harvest of red snapper. Given the Council's approval of Amendment 50A, the Council decided to consider retaining the reduction in federal for-hire buffer past 2019.

1.1 Background

Quota-based management of recreational red snapper was implemented in 1997 (GMFMC 1997) in response to a provision added to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by the Sustainable Fisheries Act of 1996. That provision, Section 407(d), requires that both the commercial and recreational red snapper harvests in the Gulf of Mexico (Gulf) be managed under a quota, and that fishing be prohibited when each respective quota is reached. The recreational and commercial quotas are equivalent to the sector annual catch limits (ACL). The recreational quota is 49% of the total red snapper ACL. Through an emergency rule, in 2015, NMFS implemented a framework action that established a recreational ACT that is 20% less than the recreational quota and is used to project the season length (GMFMC 2014b).[1]

In 2015, through Amendment 40 to the Reef Fish FMP (GMFMC 2014a), the Council established private angling and federal for-hire components of the recreational sector. The private angling component is comprised of anglers fishing from privately owned and rental vessels, and for-hire vessels that do not have a federal reef fish charter vessel/headboat permit. The federal for-hire component is comprised of all for-hire vessels with a valid or renewable federal reef fish charter vessel/headboat permit. The recreational quota is allocated as 57.7% to the private angling component and 42.3% to the federal for-hire component, and the 20% buffer implemented through the framework action was applied to each component's ACL.

Landings for the private angling component and the for-hire component of the recreational sector from 2001 – 2018 are shown in Table 1.1.1. Season durations from 2010 – 2019 are shown in Table 1.1.2.

[1] This ACT was initially established through an emergency rule published in 2014.

Table 1.1.1. Red snapper for-hire landings and quotas/ACLs. Landings are in pounds whole weight. Quotas/ACLs are in millions of pounds (mp) whole weight.

Year	Private Angling Component	For-Hire Component	Recreational Total	ACT (mp)	ACL (mp)	Percentage of ACT//ACL
2015	3,806,474	-	5,960,151	3.23	4.04	118% // 94.2%
	-	2,153,677		2.37	2.96	90.7 // 72.8%
2016	5,293,635	-	7,436,450	3.32	4.15	159.3% // 127.6%
	-	2,142,815		2.43	3.04	88.1% // 70.5%
2017	6,593,233	-	8,862,771	3.00	3.76	219.7% // 175.4%
	-	2,269,538		2.28	2.85	99.6% // 79.6%
2018	4,048,188	-	6,355,938	3.11	3.76	130.2% // 107.7%
	-	2,307,750		2.28	2.85	101.3% // 81%

Source: Southeast Fisheries Science Center (SEFSC) Recreational ACL Data (April 2019). The private angling component was managed under EFPs by the individual Gulf states for the 2018 and 2019 fishing seasons.

Table 1.1.2. Red snapper federal recreational season durations (in days) from 2010 - 2019. State seasons apply only to the private angling component.

Year	Federal Season	Federal For-Hire Season	Federal Private Angling Season	State Season				
				FL	AL	MS	LA	TX
2010	77	-	-	77	77	77	77	365
2011	48	-	-	48	48	48	48	365
2012	46	-	-	46	46	46	46	366
2013	42	-	-	65	42	42	115	365
2014	9	-	-	52	21	36	286	365
2015*	-	44	10	70	41	118	215	365
2016	-	46	11	85	66	102	272	366
2017**	-	49	42	65	67	102	135	365
2018***	***	51	***	40	24	76	60	51
2019***	***	62	***	32	27	81	****	97

* 2015 marks the first year where the federal for-hire and private angling components were managed under separate catch limits.
** The 2017 red snapper fishing season for private anglers was extended by 39 days on June 6, 2017 by the Secretary of Commerce.
*** The 2018 and 2019 fishing seasons for private anglers were/will be managed under exempted fishing permits for each Gulf state.
**** Louisiana State Season duration for 2019 will depend on the pace of landings in federal waters off that state.

Using the ACL/ACT Control Rule to Set Recreational ACTs and Project Season Lengths

Prior to 2014, the recreational red snapper season length was based on the projected time for landings to reach the recreational ACL. On March 26, 2014, in response to a legal challenge from commercial fishermen, the U.S. District Court for the District of Columbia ruled that the NMFS failed to require adequate accountability measures for the recreational sector, failed to prohibit the retention of fish after the recreational ACL had been harvested, and failed to use the best scientific information available when determining whether there should be a 2013 fall fishing season. In April 2014, in response to the Court's decision and to reduce the probability of the recreational sector exceeding its ACL, the Council reviewed an analysis of the likelihood of exceeding the ACL if the fishing season were projected to an ACT set at some percentage below the ACL (Figure 1.1.1). A 20% buffer between the ACL and ACT was expected to result in a 15% probability of exceeding the recreational ACL. The Council requested, through an emergency rule, that NMFS implement an ACT that was 20% less than the 2014 recreational ACL and use the ACT to set the season length (Figure 1.1.1). A framework action (GMFMC 2014b) subsequently established a recreational red snapper ACT that is 20% less than the recreational ACL and established an overage adjustment in the year following a quota overage, if the stock is overfished.

Buffer (%)	Rec ACT (lbs ww)	Federal Season (days)	Prob. of Exceeding Quota
0%	5.39	17	50%
20%	4.312	11	15%
30%	3.773	8	5%
40%	3.234	5	<1%
60%	1.889	0	<1%

Figure 1.1.1. Probability of recreational red snapper quota being exceeded in 2014 at various ACT buffer levels.
Source: NMFS/SERO.

The 20% buffer described above was derived by applying the ACL/ACT Control Rule developed in the Generic ACL/AM Amendment (GMFMC 2011c) to the recreational sector as a whole. The ACL/ACT Control Rule provides a target catch level that accounts for management uncertainty in maintaining catches at or below the ACL. The ACL/ACT Control Rule is intended to be applied separately to the recreational and commercial sectors because each sector has different levels of management uncertainty. The 20% buffer for the recreational sector resulted primarily because that sector experienced quota overages in three of the four years (2010-2013) used in applying the control rule. The ACL/ACT Control Rule recommended a 0% buffer for the commercial sector because the commercial red snapper harvest is managed by an individual fishing quota program, has accurate landings data, and has not exceeded its quota in the last seven years.

Application of Annual Catch Targets

In the 4 years after the ACT was used to project season length, the total recreational landings were below the total recreational ACL once (2015), and over the ACL twice (2016 and 2017). The overage in 2016 was partially the result of several Gulf states extending their state water seasons following the announcement of the federal fishing season. The overage in 2017 was the result of the reopening of the recreational red snapper season for private anglers following the initial federal fishing season announcement. In 2018, under the EFPs, there was no overage of the total recreational ACL.

When Amendment 40 (GMFMC 2014a) divided the recreational sector into the private angling and federal for-hire components, the 20% buffer between the ACL and the ACT was applied to each component's quota, meaning that the ACT for each recreational component was 20% lower than that component's allocation of the recreational ACL. The overage adjustment applies if the total recreational ACL is exceeded and red snapper are classified as overfished. Amendment 40 also established a sunset provision, which would have ended sector separation in three years.

Amendment 45 (GMFMC 2016) extended the sunset date by five years, from 2018 to 2022. In the four years since the separate components were established, the private angling component exceeded its ACT and ACL in three years and exceeded its ACT only in the other year (Table 1.1.1). The federal for-hire component did not exceed its ACT or ACL in any of the years (Table 1.1.1). The payback adjustment has only been applied once – to the 2017 recreational ACL because of a recreational ACL overage of 129,906 lbs ww, based at the time on preliminary 2016 landings. As of 2017, the red snapper stock is no longer classified as overfished and the overage adjustment does not apply (Amendment 44; GMFMC 2017).

With the 20% ACT buffer in place, the total recreational harvest (private angling and for-hire components combined) was 28% below the ACL in 2014, 15% below the ACL in 2015, 3% over the ACL in 2016, and 34% over the ACL in 2017. Under the first year of the EFPs in 2018, the total recreational harvest was 6% below the total recreational ACL.

1.2 Purpose and Need

The purpose of this action is to reduce the buffer between the federal for-hire component ACL and ACT for red snapper to a level that will allow a greater harvest while continuing to constrain landings to the component ACL, as well as the total recreational ACL.

The need for this action is to allow the federal for-hire component to harvest red snapper at a level consistent with achieving optimum yield while preventing overfishing, and while rebuilding the red snapper stock.

1.3 History of Management

This history of management covers events pertinent to red snapper allocation and setting quotas. A complete history of management for the Reef Fish FMP is available on the Council's website at http://gulfcouncil.org/fishery-management/ 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, which included red snapper.

Recreational fishing for red snapper is managed with a 16-inch total length (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. Currently this season only applies to the federal for-hire component operating under its component ACT and ACL. The private-angling component is currently being managed under state EFPs described in Section 1.1. Other management measures that affect red snapper fishing include permit requirements for the commercial and federal for-hire fleets as well as season-area closures (e.g., Madison-Swanson and the Edges).

Red snapper allocation and quotas: The final rule for **Amendment 1** (GMFMC 1989) to the Reef Fish FMP (with its associated Environmental Assessment (EA), Regulatory Impact Review (RIR), and Initial Regulatory Flexibility Analysis [IRFA]) was effective in February 1990. The amendment specified a framework procedure for specifying the total allowable catch (TAC) to allow for annual management changes. A part of that specification was to establish a species

allocation. This was 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. The recreational quota was established through a 1997 regulatory amendment (with its associated EA and RIR) (GMFMC 1995) with a final rule effective in October 1997. Prior to 1997, the recreational sector had exceeded its allocation of the red snapper TAC, though the overages were declining through more restrictive recreational management measures (see Section 3, Table 3.1.2). With the establishment of a recreational quota, the Regional Administrator was authorized to close the recreational season when the quota is reached as required by the Magnuson-Stevens Act. Commercial and recreational quotas, recreational allocations, and commercial and recreational landings are provided in Table 3.1.2.

At its April 2014 meeting, the Council requested an emergency rule to revise the recreational accountability measures for red snapper by applying a 20% buffer to the recreational quota, which resulted in a recreational ACT of 4.312 million pounds whole weight (NMFS 2014). The Council's decision to request an emergency rule was made following the decision of the U.S. District Court for the District of Columbia in Guindon v. Pritzker (March 26, 2014). A 2014 framework action created an ACT and a quota overage adjustment to apply to the 2015 fishing year and beyond (GMFMC 2014b). The action adopted an ACT based on a 20% buffer to the recreational quota. The Council also selected as preferred an overage adjustment that applies when red snapper are classified as overfished such that the amount by which the recreational quota is exceeded in a fishing season is deducted from the following year's quota.

The Council established a federal for-hire and a private angling component within the Gulf recreational sector fishing for red snapper through **Amendment 40** (with its associated EIS, RIR, and Regulatory Flexibility Act analysis) which was implemented by NMFS on May 22, 2015 (GMFMC 2014a). The federal for-hire component is comprised of all for-hire operators with a valid or renewable federal charter vessel/headboat permit for reef fish and the private angling component is comprised of other for-hire operators and private recreational anglers. Amendment 40 allocated the red snapper recreational quota and ACT among the federal for-hire (42.3%) and private angling (57.7%) components. **Amendment 45** (GMFMC 2016) extended the separate management of the federal for-hire and private angling components for an additional five years, through December 31, 2022.

Implemented in May 2016, **Amendment 28** (GMFMC 2015b) (with its associated EIS, RIR, and Regulatory Flexibility Act analysis) revised the commercial and recreational sector allocations of the red snapper ACLs by shifting 2.5% of the commercial sector's allocation to the recreational sector. The resulting sector allocations for red snapper were 48.5% commercial and 51.5% recreational and were applied to the 2016 quotas. For 2016, NMFS estimated the recreational red snapper fishing season duration in federal waters for each component and established an 11-day season for the private angling component and a 46-day season for the federal for-hire component.

On March 3, 2017, a U.S. district court vacated **Amendment 28** and subsequently ordered that the sector quotas for 2017 be set consistent with the previous sector allocations of 51% commercial and 49% recreational. For 2017, NMFS initially established a 3-day fishing season for the private angling component and a 49-day season for the federal for-hire component. The

short season was due to landings projected to occur in state waters while federal waters were closed. In addition, the total recreational sector quota was reduced in 2017 to account for an overage of the recreational quota in 2016 because the stock was classified as overfished. Shortly after the private angling season ended, NMFS reopened the private angling fishing season for an additional 39 days. During this time, the fishing season was open Fridays through Sundays, plus July 3-4 and September 4.

For-hire permit requirements: The requirement to have a federal permit to operate for-hire vessels in the Gulf exclusive economic zone for reef fish fishing was implemented through **Amendment 11** (with its associated EA, RIR, and IRFA) on April 1, 1996 (GMFMC 1995). The initial purpose of the permits was to address potential abuses in the two-day bag limit allowance. It was thought that by having a permit to which sanctions could be applied would improve compliance with the two-day bag limit. In addition, the permit requirement was seen as a way to enhance monitoring of for-hire vessels in the recreational sector. **Amendment 20** (with its associated EA and RIR; GMFMC 2003), implemented on June 16, 2003, established a three-year moratorium on the issuance of new charter and headboat Gulf federal reef fish permits to limit further expansion in the for-hire fisheries, an industry concern, while the Council considered the need for more comprehensive effort management systems. The moratorium was extended indefinitely in **Amendment 25** (with its Supplemental EIS, RIR, and IRFA, implemented June 15, 2006 [GMFMC 2006]).

2019 Reduction in the Federal For-hire Component's ACL/ACT Buffer: A framework action to modify the recreational red snapper ACT buffers (GMFMC 2018a) was implemented on April 4, 2019. This framework action established a new red snapper ACT for the federal for-hire component, set 9% below the federal for-hire component ACL for the 2019 fishing year only. The private angling component ACT remains at 20% below the private angling component ACL, with the total recreational sector ACT approximately 15% below the recreational sector ACL.

State Management EFPs for the Private Angling Component: In 2018, the five Gulf state marine resource agencies were issued EFPs to test limited state management of the red snapper private angling component. [2] The EFPs allocated a portion of the private angling ACL to each state to be harvested during the 2018 and 2019 fishing years. The EFPs allow the states to establish the private angling fishing season. Private anglers holding a valid recreational fishing license issued by the state in which they will land red snapper and who are in compliance with all other state requirements for landing red snapper are exempt from the closed fishing season in federal waters if they are landing red snapper in that state during its open season. Because each state is setting the fishing season for the harvest of its portion of the private angling ACL, NMFS is not currently using the ACT to establish the length of a Gulf-wide federal season while the EFPs are valid. Persons aboard state-licensed charter vessels without a federal for-hire permit are prohibited from possessing red snapper in or from federal waters. They may legally harvest red snapper from state waters as long as the respective state's waters are open.

Reef Fish Amendment 50A: At its April 2019 meeting, the Council approved Amendment 50A to the Reef Fish FMP (GMFMC 2019). Amendment 50A would establish a state management

[2] For more information: https://www.fisheries.noaa.gov/southeast/state-recreational-red-snapper-management-exempted-fishing-permits

program for the private angling component's harvest of red snapper. Under Amendment 50A, each Gulf state would be responsible for managing its annual allocation of the red snapper private angling component ACL, using size limits, bag limits, and seasonal closures. If a state exceeds its allocation in a given fishing year, then the amount of the overage would be deducted from that state's quota for the following fishing year. The individual Gulf states would be responsible for their own quota monitoring, and each has a data collection program in place to monitor that state's private angling landings. The individual states would determine if additional catch limit buffers (e.g., an ACT set lower than an ACL, with the fishing season based on the ACT) are necessary to successfully manage that state's allocated quota. The federal for-hire component's harvest of red snapper will continue to be federally managed.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 – Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT)

Alternative 1: No Action. The red snapper annual catch target (ACT) for the recreational for-hire component for 2019 is 9% below the component annual catch limit (ACL).[3] For 2020 and subsequent years, the ACT for the for-hire component will be 20% below the component ACL.

Preferred Alternative 2: Apply the Gulf of Mexico (Gulf) Fishery Management Council's (Council) ACL/ACT Control Rule, using federal for-hire landings data from 2014 – 2017, to set the component ACT buffer for the federal for-hire component. This results in a federal for-hire component ACT set **9%** below the federal for-hire component ACL.

Alternative 3: Apply the Council's ACL/ACT Control Rule, using federal for-hire landings from 2015 – 2018, to set the component ACT buffer for the federal for-hire component. This results in a federal for-hire component ACT set **5%** below the federal for-hire component ACL.

Discussion:

The federal for-hire and private angling components of the recreational sector have a single, combined red snapper recreational ACL, per Section 407(d) of the Magnuson-Stevens Fishery Conservation and Management Act. As a result, the total recreational ACL for the for-hire and private angling components combined can be exceeded if one component exceeds its ACL, even if the other component harvests less than its component ACL.

At its January 2016 meeting, the Council's Standing and Special Reef Fish Scientific and Statistical Committees (SSC) reviewed the methodology used by the National Marine Fisheries Service (NMFS) to set recreational red snapper season durations, which are currently based on the recreational sector ACT. The SSC discussed possible approaches that could be used to evaluate a change in the ACT buffer. However, because of the numerous sources of uncertainty, the SSC determined that there were too many unknown factors to establish a scientific justification for either changing or retaining the buffer, and suggested that the buffer be re-evaluated in three to four years when more landings data are available for the separate recreational sector components.

During its April 2019 meeting, the Council approved Amendment 50A (GMFMC 2019) to the Reef Fish FMP, which establishes a state management program for the private angling component's harvest of red snapper. If Amendment 50A is approved and implemented by the Secretary of Commerce, each Gulf state would be responsible for managing its allocation of the red snapper private angling component ACL, and the individual states would determine if additional catch limit buffers (e.g., an ACT set lower than an ACL, with the fishing season based

[3] The buffer of 9% for the federal for-hire component was implemented for the 2019 season only.

on the ACT) are necessary for management. For these reasons, changes to the private angling component buffer are not being considered in this amendment.

Alternative 1 (No Action) keeps the red snapper ACT for the federal for-hire component in 2019 at 9% below the component ACL, and for 2020 and subsequent years at 20% below the component ACL. Since the implementation of separate management for the recreational components, landings from 2015 – 2018 by the federal for-hire component have not exceeded its ACL, and have only exceeded its ACT once by 1% (2018; Table 1.1.1). This suggests the fishing season duration resulting from the current 20% buffer (**Alternative 1**) is effectively constraining harvest for the federal for-hire component to its component ACT.

Preferred Alternative 2 would set the ACT buffer for the federal for-hire component at 9% below the federal for-hire component ACL, using landings data from 2014-2017 and applying the Council's ACL/ACT Control Rule (Appendix A; Figure A.1.1). **Preferred Alternative 2** would extend the reduction of the federal for-hire ACT buffer currently in place for the 2019 fishing season (GMFMC 2018a).

Alternative 3 would apply the Council's ACL/ACT Control Rule, using landings from 2015 – 2018, to set the component ACT buffer for the federal for-hire component 5% below its component ACL (Appendix A; Figure A.1.2). The buffer under **Alternative 3** was estimated the same way as with **Preferred Alternative 2**; however, **Alternative 3** uses a time series of landings data shifted one year forward, and the recreational components during this time period were monitored independent of one another, with separate in-season accountability measures.

Table 2.1.1 shows the ACTs and ACLs corresponding to each of the alternatives presented in Action 1.

Table 2.1.1. Values in millions of pounds whole weight for the ACTs and ACLs corresponding to the alternatives presented in Action 1.

Alternative	For-hire ACL	For-hire ACT	% Difference	Pounds Difference
1 (2019)	3,130,000	2,848,000	9%	282,000
1 (2020+)	3,130,000	2,504,000	20%	626,000
Preferred 2	3,130,000	2,848,000	9%	282,000
3	3,130,000	2,974,000	5%	156,000

CHAPTER 3. AFFECTED ENVIRONMENT

The actions considered in this framework action with associated environmental assessment would affect charter vessel and headboat 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 environmental impact statements (EIS) for Reef Fish Amendments 27/Shrimp Amendment 14 (GMFMC 2007), 30A (GMFMC 2008a), 30B (GMFMC 2008b), 32 (GMFMC 2011a), 40 (GMFMC 2014a), 28 (GMFMC 2015a), the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), and the Generic Annual Catch Limits/Accountability Measures (ACL/AM) Amendment (GMFMC 2011b). Below, information on each of these environments is summarized or updated, as appropriate.

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73 º F through 83º F (23-28º C) including bays and bayous (Figure 3.1.1) 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, the Generic ACL/AM Amendment, and Reef Fish Amendments 28 and 40 (refer to GMFMC 2004a; GMFMC 2011a; GMFMC 2014a; GMFMC 2015) and are incorporated by reference and further summarized below. 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).

There are several marine reserves, habitat areas of particular concern, and restricted fishing gear areas in the Gulf. These are detailed in GMFMC (2005 and 2018b). The Bureau of Ocean Energy Management lists historic shipwrecks that occur in the Gulf. Most of these sites are in state or deep (>1,000 feet or 328 meters) waters. There is one site located in federal waters in less than 100 feet (30 meters) that could be affected by reef fish fishing. This is the *U.S.S. Hatteras* located approximately 20 miles (12 kilometers) off Galveston, Texas.

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

The *Deepwater Horizon* MC252 oil spill in 2010 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. The impacts of the *Deepwater Horizon* MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil was dispersed on the surface, and because of the heavy use of dispersants (both at the surface and at the wellhead), oil was also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed ashore in several areas of the Gulf as did non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles. A discussion of the additional impacts to the physical, biological, economic, social, and administrative environments affected by the oil spill is contained in the January 2011 Regulatory Amendment (GMFMC 2011c) and is incorporated here by reference. For more information on physical impacts of the *Deepwater Horizon* MC252 oil spill, see http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

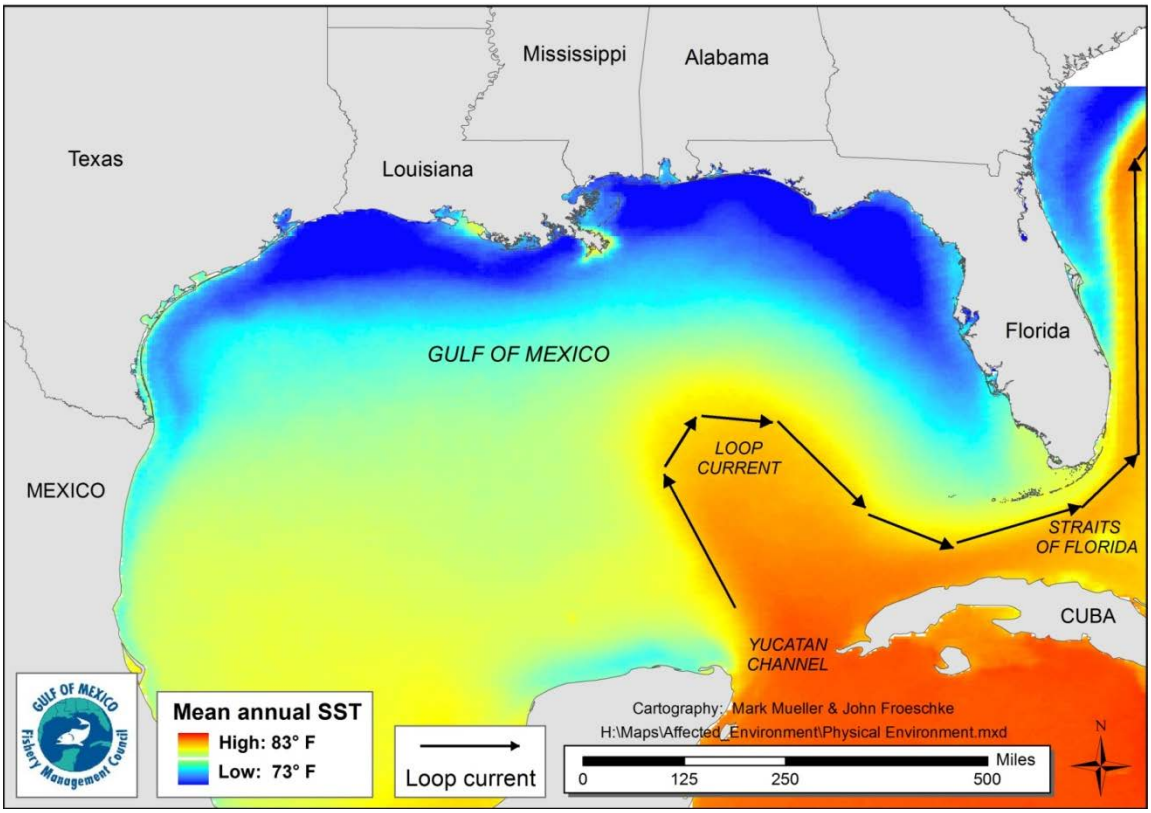

Figure 3.1.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (http://accession.nodc.noaa.gov/0072888)

3.2 Description of the Biological/Ecological Environment

The biological environment of the Gulf, including that of red snapper, is described in detail in the final environmental impact statement for the Generic EFH Amendment (GMFMC 2004a) and is incorporated herein by reference.

3.2.1 Red Snapper

Red Snapper Life History and Biology

Red snapper demonstrate the typical reef fish life history pattern. Eggs and larvae are pelagic while juveniles are found associated with bottom features or over mud bottom and oyster shell reef. Spawning occurs over firm sand bottom with little relief away from reefs during the summer and fall. Adult females mature as early as 2 years and most are mature by 4 years (Schirripa and Legault 1999). Red snapper have been aged up to 57 years (Wilson and Nieland 2001). Until 2013, most red snapper caught by the directed fishery were 2 to 4 years old, but the SEDAR 31 benchmark stock assessment suggested that the age and size of red snapper in the directed fishery has increased (SEDAR 31 2013). Additionally, red snapper in the eastern Gulf have been found to be larger in age-length analysis compared to the western Gulf. A more

complete description of red snapper life history can be found in the Generic EFH Amendment (GMFMC 2004a).

Status of the Red Snapper Stock

SEDAR 52 Assessment and Stock Status

The SEDAR 52 (2018) base model was similar to the 2014 SEDAR 31 Update, with select updates to model fitting procedures. The SEDAR 52 stock assessment found that the red snapper resource continues to rebuild from the severely overfished and depleted conditions during of the 1980s and 1990s. Under current conditions, it is expected that the resource will continue to rebuild. Biomass estimates show the western Gulf continues to rebuild, while the eastern Gulf has leveled off over the last few years. The number of older fish present has increased Gulf-wide, indicating rebuilding age structure.

The SSC reported that based on the results from SEDAR 52, red snapper, although in a rebuilding plan, is not considered to be undergoing overfishing or to be overfished. The ratio of the current fishing mortality rate (F)/maximum fishing mortality threshold (MFMT) = 0.823, which is less than 1.0 indicating the stock is not undergoing overfishing. The Gulf red snapper stock is not considered to be overfished because the ratio of the spawning stock biomass (SSB)/minimum stock size threshold (MSST) = 1.41, which is greater than 1, which is greater than 1.0. The change in the MSST value to 50% of the SSB at the maximum sustainable yield (26% spawning potential ratio [SPR]) in Amendment 44 (GMFMC 2017) was the primary reason for the change in stock status from overfished to not overfished. The stock is still in a rebuilding plan, and fishing at $F_{Rebuild}$, the stock is not expected to be rebuilt until 2032.

Definition of Overfishing

In January 2012, the Generic ACL/AM Amendment (GMFMC 2011b) became effective. One of the provisions in this amendment was to redefine the criteria used to determine when a stock is undergoing overfishing. In years when there is a stock assessment, overfishing is defined as the fishing mortality rate exceeding the MFMT. In years when there is no stock assessment, overfishing is defined as the catch exceeding the overfishing limit (OFL). The SEDAR 31 update assessment indicates that, as of the terminal year of the assessment data, 2013, overfishing was not occurring. 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.

Impact of 2017 Extended Recreational Fishing Season

Due to an extension of the recreational fishing season in 2017, the estimated provisional landings for 2017 (15.36 million pounds) at that time exceeded both the ABC (13.74 million pounds) and OFL (14.79 million pounds) for Gulf red snapper as calculated based on the 2014 SEDAR 31 Update Assessment. However, based on the SEDAR 52 reference point projections, overfishing did not occur in 2017. In the interim years between the assessments (2015 and 2016), the projected recruitment assumed in the 2014 SEDAR 31 Update projections was much lower than

estimated in the SEDAR 52 assessment (Figure 3.2.1.1), whereas the projected removals were much higher than realized (Figure 3.2.1.2). Therefore, in 2017 the Gulf-wide red snapper resource had rebuilt to a higher biomass and SPR than projected by the 2014 SEDAR 31 Update Assessment, which allowed it to undergo larger removals (i.e., a higher fishing pressure) without any major negative impacts to the rebuilding schedule. Although the result is beneficial for the future status of the red snapper resource, it cannot be expected that projections will always underestimate rebuilding success. It is possible that future recruitment may be below average, which, in combination with higher than predicted removals, would result in overestimation of rebuilding progress.

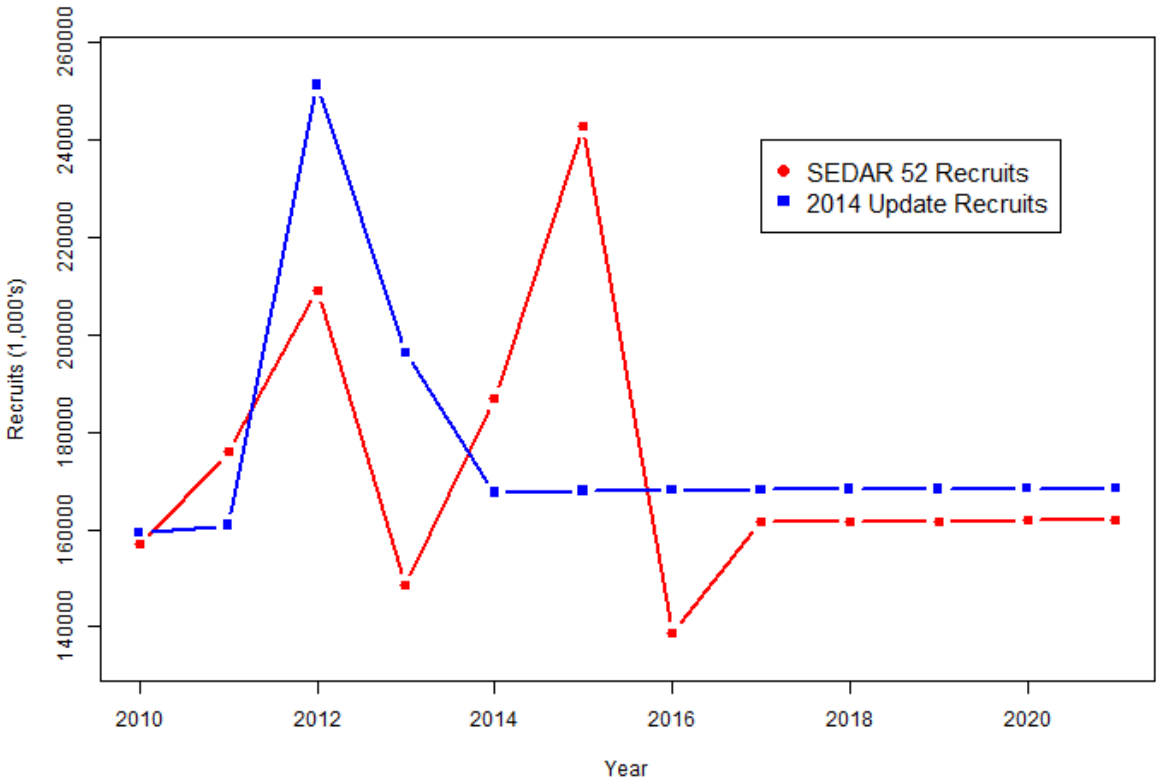

Figure 3.2.1.1. Recruitment (1000s of fish) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those from SEDAR 52 (2016 terminal year; red line).

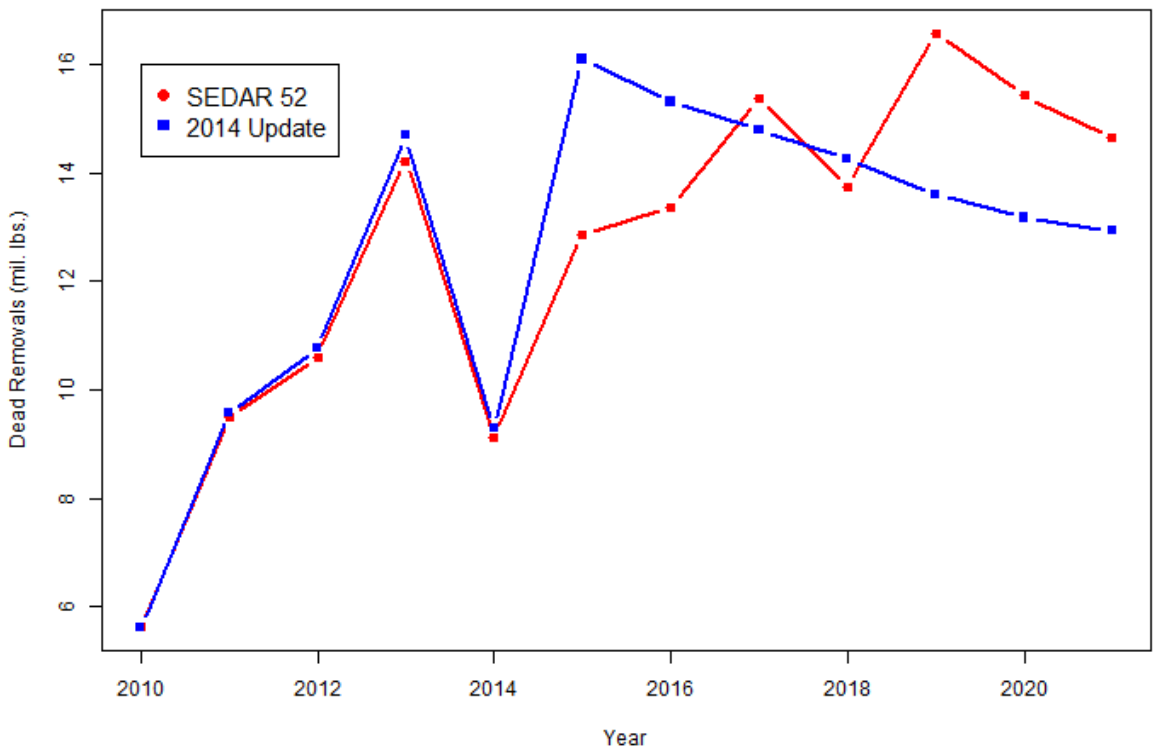

Figure 3.2.1.2. Dead removals (millions of pounds) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those from SEDAR 52 (2016 terminal year; red line).

3.2.2 General Information on Reef Fish Species

The National Ocean Service collaborated with the National Marine Fisheries Service (NMFS) and the Council to develop distributions of reef fish (and other species) in the Gulf (SEA 1998).

Reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. In general, both eggs and larval stages are planktonic. Larval fish feed on zooplankton and phytoplankton. Gray triggerfish are exceptions to this generalization as they lay their eggs in nests on the sandy bottom (Simmons and Szedlmayer 2012), as are gray snapper whose larvae are found around submerged aquatic vegetation.

Status of Reef Fish Stocks

The Reef Fish Fishery Management Plan (FMP) currently encompasses 31 species (Table 3.3.2.1). Eleven other species were removed from the FMP in 2012 through the Generic ACL/AM Amendment (GMFMC 2011a).

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress[4] on a quarterly basis utilizing the most current stock assessment information. Stock assessments and status determinations have been conducted and designated for 12 stocks and can be found on the Council[5] and SEDAR[6] websites. Of the 12 stocks for which stock assessments have been conducted, the first quarter report of the 2019 Status of U.S. Fisheries classifies only one as overfished (greater amberjack), and two stocks as undergoing overfishing (gray snapper and lane snapper).

Stock assessments were conducted for seven reef fish stocks using the Data Limited Methods Toolkit (DLMToolkit; SEDAR 49 2016). This method allows the setting of overfishing limit (OFL) and acceptable biological catch (ABC) based on limited data and life history information, but does not provide assessment-based status determinations. The following stocks did not have enough information available to complete an assessment even using the DLMToolkit. These stocks are not experiencing overfishing based on annual harvest remaining below the OFL, but no overfished status determination has been made (Table 3.3.2.1). Lane snapper was the only stock with adequate data to be assessed using the DLMToolkit methods resulting in OFL and ABC recommendations by the Scientific and Statistical Committee (SSC). The remaining species within the Reef Fish FMP have not been assessed at this time. Therefore, their stock status is unknown (Table 3.3.2.1). For those species that are listed as not undergoing overfishing, that determination has been made based on the annual harvest remaining below the OFL. No other unassessed species are scheduled for a stock assessment at this time.

[4] http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html
[5] www.gulfcouncil.org
[6] www.sedarweb.org

Table 3.2.2.1. Status of species in the Reef Fish FMP grouped by family.

Common Name	Scientific Name	Stock Status		Most recent assessment or SSC workshop
		Overfishing	Overfished	
Family Balistidae – Triggerfishes				
gray triggerfish	*Balistes capriscus*	N	N	SEDAR 43 2015
Family Carangidae – Jacks				
greater amberjack	*Seriola dumerili*	N	Y	SEDAR 33 Update 2016a
lesser amberjack	*Seriola fasciata*	N	Unknown	SEDAR 49 2016
almaco jack	*Seriola rivoliana*	N	Unknown	SEDAR 49 2016
banded rudderfish	*Seriola zonata*	Unknown	Unknown	-
Family Labridae – Wrasses				
hogfish	*Lachnolaimus maximus*	N	N	SEDAR 37 Update 2018
Family Malacanthidae – Tilefishes				
tilefish (golden)	*Lopholatilus chamaeleonticeps*	N	N	SEDAR 22 2011a
blueline tilefish	*Caulolatilus microps*	Unknown	Unknown	-
goldface tilefish	*Caulolatilus chrysops*	Unknown	Unknown	-
Family Serranidae – Groupers				
gag	*Mycteroperca microlepis*	N	N	SEDAR 33 Update 2016b
red grouper	*Epinephelus morio*	N	N	SEDAR 42 2015
scamp	*Mycteroperca phenax*	Unknown	Unknown	-
black grouper	*Mycteroperca bonaci*	N	N	SEDAR 19 2010
yellowedge grouper	*Hyporthodus flavolimbatus*	N	N	SEDAR 22 2011b
snowy grouper	*Hyporthodus niveatus*	N	Unknown	SEDAR 49 2016
speckled hind	*Epinephelus drummondhayi*	N	Unknown	SEDAR 49 2016
yellowmouth grouper	*Mycteroperca interstitialis*	N	Unknown	SEDAR 49 2016
yellowfin grouper	*Mycteroperca venenosa*	Unknown	Unknown	-
warsaw grouper	*Hyporthodus nigritus*	N	Unknown	-
*Atlantic goliath grouper	*Epinephelus itajara*	N	Unknown	SEDAR 47 2016
Family Lutjanidae – Snappers				
queen snapper	*Etelis oculatus*	N	Unknown	
mutton snapper	*Lutjanus analis*	N	N	SEDAR 15A Update 2015
blackfin snapper	*Lutjanus buccanella*	N	Unknown	-
red snapper	*Lutjanus campechanus*	N	N	SEDAR 52 2018
cubera snapper	*Lutjanus cyanopterus*	N	Unknown	-
gray snapper	*Lutjanus griseus*	Y	Unknown	SEDAR 51 2018
lane snapper	*Lutjanus synagris*	Y	N	SEDAR 49 2016
silk snapper	*Lutjanus vivanus*	Unknown	Unknown	-
yellowtail snapper	*Ocyurus chrysurus*	N	N	SEDAR 27A 2012
vermilion snapper	*Rhomboplites aurorubens*	N	N	SEDAR 45 2016
wenchman	*Pristipomoides aquilonaris*	N	N	SEDAR 49 2016

Note: *Atlantic goliath grouper is a protected grouper (i.e., ACL is set at zero) and benchmarks do not reflect appropriate stock dynamics.

Bycatch

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. Bycatch practicability analyses of the reef fish fishery, and specifically red snapper, have been provided in several reef fish amendments (GMFMC 2004b, GMFMC 2007, GMFMC 2014a, GMFMC 2015b). Red snapper fishing may result in the bycatch of red snapper, other reef fish species, protected species, and birds. Discard mortality rates for red snapper from the most recent stock assessment (SEDAR 52 2018) are shown in Table 3.3.2.2.

Table 3.2.2.2. Discard mortality rates for red snapper by fleet and season from the SEDAR 52 stock assessment. The discard mortality rate has been found to increase with depth and decrease with venting. "East" and "West" are defined as Gulf of Mexico waters east and west of the Mississippi River. Although venting has not been mandatory since 2013, limited information was available to determine discard mortality rates for the most recent time block. Therefore, the values from the mandatory venting period were maintained from 2013 – 2016.

Sector	Venting Y/N	Year Pre/Post 2008	East Closed	East Open	West Closed	West Open
Recreational	N	Pre	0.21	0.21	0.22	0.22
Recreational	Y	Post	0.118	0.118	0.118	0.118
Commercial vertical line	N	Pre	0.74	0.75	0.87	0.78
Commercial vertical line	Y	Post	0.55	0.56	0.74	0.6
Commercial longline	N	Pre	0.74	0.81	0.87	0.91
Commercial longline	Y	Post	0.55	0.64	0.74	0.81

Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). A very brief summary of these two laws and more information is available on NMFS Office of Protected Resources website[7]. There are 21 ESA-listed species of marine mammals, sea turtles, fish, and corals that may occur in the EEZ of the Gulf. There are 91 stocks of marine mammals managed within the Southeast region plus the addition of the stocks such as North Atlantic right whales (NARWs), and humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA.

[7] http://www.nmfs.noaa.gov/pr/laws/

Of the four marine mammals that may be present in the Gulf (sperm, sei, fin, and Gulf of Mexico Bryde's), the sperm, sei, and Gulf of Mexico Bryde's whale are listed as endangered under the ESA. Bryde's whales are the only resident baleen whales in the Gulf and are currently listed as endangered under the ESA (84 FR 15446; April 15, 2019). Manatees, listed as threatened under the ESA, also occur in the Gulf and are the only marine mammal species in these areas managed by the U.S. Fish and Wildlife Service.

The gear used by the Gulf reef fish fishery is classified in the MMPA 2019 List of Fisheries as a Category III fishery (84 FR 22051). 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 the reef fish fishery. Bottlenose dolphins prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery. They are also a common predator around reef fish vessels, feeding on the discards. Marine Mammal Stock Assessment Reports and additional information are available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/sspecies/.

Sea turtles, fish, and corals that are listed as threatened or endangered under the ESA occur in the Gulf. These include the following: six species of sea turtles (Kemp's ridley, loggerhead (Northwest Atlantic Ocean distinct population segment (DPS)), green (North Atlantic and South Atlantic DPSs), leatherback, and hawksbill); five species of fish (Gulf sturgeon, smalltooth sawfish, Nassau grouper, oceanic whitetip shark and giant manta ray); and six species of coral (elkhorn, staghorn, lobed star, mountainous star, boulder star, and rough cactus). Critical habitat designated under the ESA for smalltooth sawfish, Gulf sturgeon, and the Northwest Atlantic Ocean DPS of loggerhead sea turtles occur in the Gulf, though only loggerhead critical habitat occurs in federal waters.

The most recent biological opinion (opinion) for the FMP was completed on September 30, 2011. The opinion determined the continued authorization of the Gulf reef fish fishery managed under the Reef Fish FMP is not likely to adversely affect ESA-listed marine mammals or coral, and was not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish. Since issuing the opinion, in memoranda dated September 16, 2014, and October 7, 2014, NMFS concluded that the activities associated with the Reef Fish FMP is not likely to adversely affect critical habitat for the Northwest Atlantic Ocean loggerhead sea turtle distinct population segment (DPS) and four species of corals (lobed star, mountainous star, boulder star, and rough cactus). On September 29, 2016, NMFS requested reinitiation of Section 7 consultation on the continued authorization of reef fish fishing managed by the Reef Fish FMP because new species (i.e., Nassau grouper [81 FR 42268] and green sea turtle North Atlantic and South Atlantic DPSs [81 FR 20057]) have been listed under the ESA that may be affected by the proposed action. NMFS documented a determination that allowing the fishery to continue during the reinitiation period is not likely to adversely affect these species.

On January 22, 2018, NMFS published a final rule (83 FR 2916) listing the giant manta ray as threatened under the ESA. On January 30, 2018, NMFS published a final rule (83 FR 4153)

listing the oceanic whitetip shark as threatened under the ESA. In a memorandum dated March 6, 2018, NMFS revised the request for reinitiation of consultation on the Reef Fish FMP to address the listings of the giant manta and oceanic whitetip. In that memorandum, NMFS also determined that allowing fishing under the Reef Fish FMP to continue during the re-initiation period will not jeopardize the continued existence of the giant manta ray or oceanic whitetip shark.

NMFS published a final rule on April 15, 2019, listing the Gulf Bryde's whale as endangered. In a memorandum dated June 20, 2019, NMFS revised the reinitiation request to include the Gulf Bryde's whale and determined that allowing fishing under the Reef Fish FMP to continue during the re-initiation period will not jeopardize the continued existence of any of the newly listed species discussed above.

Northern Gulf of Mexico Hypoxic Zone

Every summer in the northern Gulf, a large hypoxic zone forms. It is the result of materials and runoff from agricultural lands by rivers to the Gulf, increasing nutrient inputs from the Mississippi River, and a seasonal layering of waters in the Gulf. The layering of the water is temperature and salinity dependent and prevents the mixing of higher oxygen content surface water with oxygen-poor bottom water. For 2019, the hypoxic zone is projected to be approximately 7,829 square miles. This prediction is larger than normal primarily because of high spring rainfall and river discharge into the Gulf[8]. The hypoxic conditions in the northern Gulf directly impact less mobile benthic macroinvertebrates (e.g., polychaetes) by influencing density, species richness, and community composition (Baustian and Rabalais 2009). However, more mobile macroinvertebrates and demersal fishes (e.g., red snapper) are able to detect lower dissolved oxygen levels and move away from hypoxic conditions. Therefore, although not directly affected, these organisms are indirectly affected by limited prey availability and constrained available habitat (Baustian and Rabalais 2009; Craig 2012).

Climate change

Climate change projections predict increases in sea-surface temperature and sea level; decreases in sea-ice cover; and changes in salinity, wave climate, and ocean circulation (Intergovernmental Panel on Climate Change [IPCC]).[9] These changes are likely to affect plankton biomass and fish larvae abundance that could adversely impact fish, marine mammals, seabirds, and ocean biodiversity. Kennedy et al. (2002), Link (2015) and Osgood (2008) have suggested global climate change could affect temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; change precipitation patterns and cause a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. The National Oceanic and Atmospheric Association (NOAA) Climate Change Web Portal[10] predicts the average sea surface temperature in the Gulf will increase by

[8] https://www.epa.gov/ms-htf/northern-gulf-mexico-hypoxic-zone
[9] http://www.ipcc.ch/
[10] https://www.esrl.noaa.gov/psd/ipcc/

approximately 2ºC for 2006-2100 compared to the average over the years 1956-2005. For reef fishes, Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. It is unclear if Reef Fish distribution in the Gulf and South Atlantic has been affected. The smooth puffer and common snook are examples of species for which there has been a distributional trend to the north in the Gulf. For other species such as red snapper and the dwarf sand perch, there has been a distributional trend towards deeper waters. For other fish species, such as the dwarf goatfish, there has been a distributional trend both to the north and to deeper waters. These changes in distributions have been hypothesized as a response to environmental factors such as increases in temperature.

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.

Greenhouse gases

The IPCC has indicated greenhouse gas emissions are one of the most important drivers of recent changes in climate. Wilson et al. (2014) inventoried the sources of greenhouse gases in the Gulf from sources associated with oil platforms and those associated with other activities such as fishing. A summary of the results of the inventory are shown in Table 3.3.2.3 with respect to total emissions and from fishing. Commercial fishing and recreational vessels make up a small percentage of the total estimated greenhouse gas emissions from the Gulf (2.04% and 1.67%, respectively).

Table 3.2.2.3. Total Gulf greenhouse gas 2014 emissions estimates (tons per year [tpy]) from oil platform and non-oil platform sources, commercial fishing, and percent greenhouse gas emissions from commercial fishing vessels of the total emissions*.

Emission source	**CO_2**	**Greenhouse CH_4**	**Gas N_2O**	**Total CO_{2e}****
Oil platform	5,940,330	225,667	98	11,611,272
Non-platform	14,017,962	1,999	2,646	14,856,307
Total	**19,958,292**	**227,665**	**2,743**	**26,467,578**
Commercial fishing	531,190	3	25	538,842
Recreational fishing	435,327	3	21	441,559
Percent commercial fishing	2.66%	>0.01%	0.91%	2.04%
Percent recreational fishing	2.18%	>0.01%	0.77%	1.67%

*Compiled from Tables 6-11, 6-12, and 6-13 in Wilson et al. (2014). **The CO_2 equivalent (CO_2e) emission estimates represent the number of tons of CO_2 emissions with the same global warming potential as one ton of another greenhouse gas (e.g., CH_4 and N_2O). Conversion factors to CO_{2e} are 21 for CH_4 and 310 for N_2O.

Deepwater Horizon MC252 Oil Spill

General Impacts on Fishery Resources

The presence of polycyclic aromatic hydrocarbons (PAH), which are highly toxic chemicals that tend to persist in the environment for long periods of time, in marine environments can have detrimental impacts on marine finfish, especially during the more vulnerable larval stage of development (Whitehead et al. 2011). When exposed to realistic, yet toxic levels of PAHs (1–15 μg/L), greater amberjack larvae develop cardiac abnormalities and physiological defects (Incardona et al. 2014). The future reproductive success of long-lived species, including red drum (*Sciaenops ocellatus*) and many reef fish species, may be negatively affected by episodic events resulting in high-mortality years or low recruitment. These episodic events could leave gaps in the age structure of the population, thereby affecting future reproductive output (Mendelssohn et al. 2012). Other studies have described the vulnerabilities of various marine finfish species, with morphological and/or life history characteristics similar to species found in the Gulf, to oil spills and dispersants (Hose et al. 1996; Carls et al. 1999; Heintz et al. 1999; Short 2003).

Increases in histopathological lesions were found in red snapper (*Lutjanus campechanus*) in the area affected by the oil, but Murawski et al. (2014) found that the incidence of lesions had declined between 2011 and 2012. The occurrence of such lesions in marine fish is not uncommon (Sindermann 1979; Haensly et al. 1982; Solangi and Overstreet 1982; Khan and Kiceniuk 1984, 1988; Kiceniuk and Khan 1987; Khan 1990). Red snapper diet was also affected after the spill. A decrease in zooplankton consumed, especially by adults (greater than 400 mm total length) over natural and artificial substrates may have contributed to an increase in the consumption of fish and invertebrate prey – more so at artificial reefs than natural reefs (Tarnecki and Patterson 2015).

In addition to the crude oil, over a million gallons of the dispersant, Corexit 9500A®, was applied to the ocean surface and an additional hundreds of thousands of gallons of dispersant was pumped to the mile-deep well head (National Commission 2010). No large-scale applications of dispersants in deep water had been conducted until the *Deepwater Horizon* MC252 oil spill. Thus, no data exist on the environmental fate of dispersants in deep water. The effect of oil, dispersants, and the combination of oil and dispersants on fishes of the Gulf remains an area of concern. Marine fish species typically concentrate PAHs in the digestive tract, making stomach bile an appropriate testing medium. A study by Synder et al. (2015) assessed bile samples from golden tilefish (*Lopholatilus chamaeleonticeps*), king snake eel (*Ophichthus rex*), and red snapper for PAH accumulation over time, and reported concentrations were highest in golden tilefish during the same time period when compared to king snake eel and red snapper. These results suggest that the more highly associated an organism is with the sediment in an oil spill area, the higher the likelihood of toxic PAH accumulation. Twenty-first century dispersant applications are thought to be less harmful than their predecessors. However, the combination of oil and dispersants has proven to be more toxic to marine fishes than either dispersants or crude oil alone. Marine fish which are more active (e.g., a pelagic species versus a demersal species) appear to be more susceptible to negative effects from interactions with weathered oil/dispersant emulsions. These effects can include mobility impairment and inhibited respiration (Swedmark

et al. 1973). Another study found that while Corexit 9500A® and oil are similar in their toxicity, when Corexit 9500A® and oil were mixed in lab tests, toxicity to microscopic rotifers increased up to 52-fold (Rico-Martínez et al. 2013). These studies suggest that the toxicity of the oil and dispersant combined may be greater than anticipated.

As reported by NOAA's 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 (Figure 3.3.1). 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 PAH, 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.[11]

Outstanding Effects

As a result of the *Deepwater Horizon* MC252 oil spill, a consultation pursuant to ESA Section 7(a)(2) was reinitiated. As discussed above, on September 30, 2011, the Protected Resources Division released an 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 spill 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 2011). More information is available on the *Deepwater Horizon* MC252 oil spill and associated closures is available on the Southeast Regional Office website[12].

[11] http://sero.nmfs.noaa.gov/deepwater_horizon/documents/pdfs/fact_sheets/oil_characteristics.pdf
[12] http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm

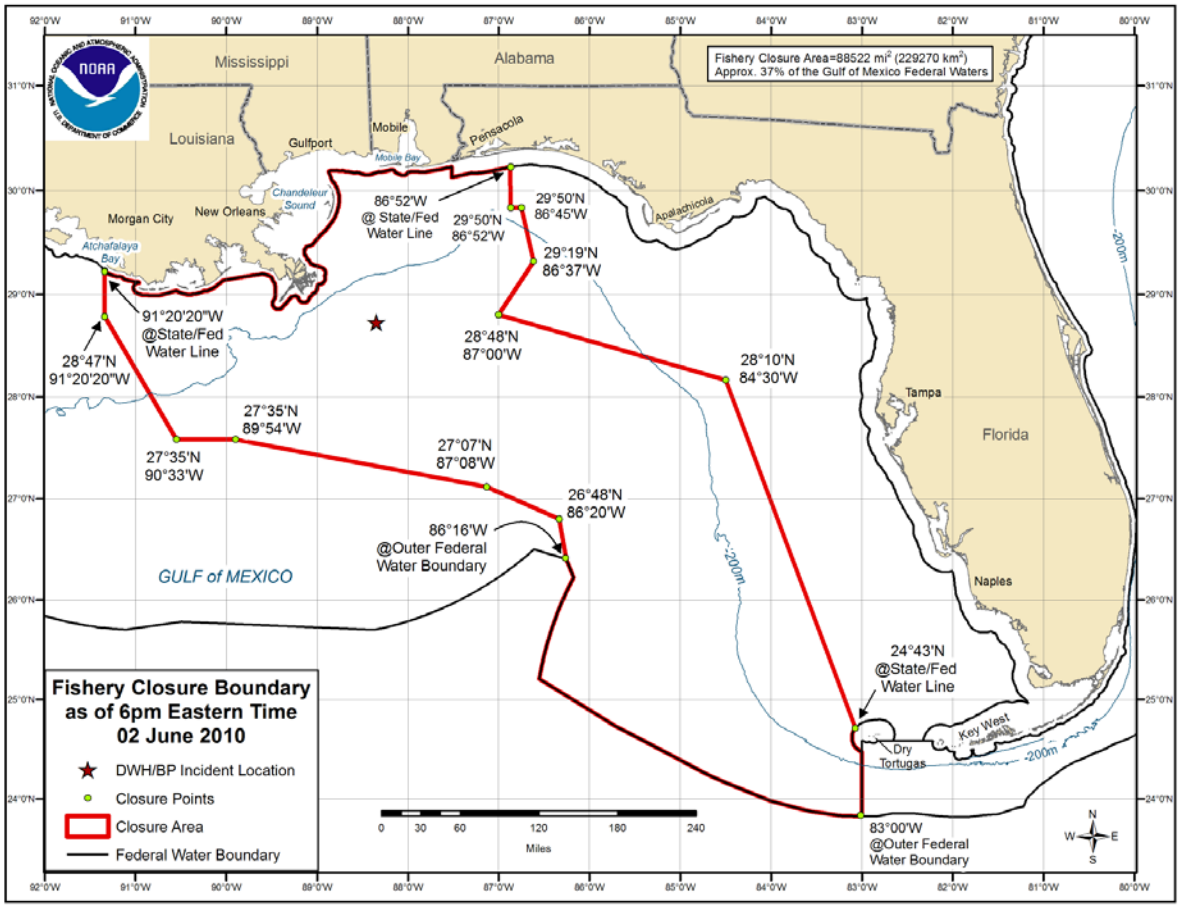

Figure 3.2.2.1. Fishery closure at the height of the *Deepwater Horizon* MC252 oil spill.

3.3 Description of the Economic Environment

3.3.1 Commercial Sector

A description of the red snapper individual fishing quota program can be found on NMFS' Limited Access Privilege Programs (LAPP) webpage.[13] That description is incorporated herein by reference. Additional economic information on the commercial harvest of red snapper in the Gulf is contained in Amendment 28 (GMFMC 2015a). This proposed amendment does not concern the commercial harvest of red snapper or any other reef fish. Therefore, no additional information on the commercial sector is provided.

3.3.2 Recreational Sector

The following section focuses on the economic contribution of the recreational effort and harvest of red snapper by the federal for-hire component. Recreational fishing for red snapper or any

[13] http://sero.nmfs.noaa.gov/sustainable_fisheries/lapp_dm/index.html

Gulf reef fish means fishing or fishing activities which result in the harvest of fish, none of which (or parts thereof) is sold, traded, or bartered (50 CFR 622.2).

In 2014, Amendment 40 divided the recreational sector of harvesting red snapper from federal waters into two parts based on the mode of transportation that anglers use to fish for red snapper in those waters: federal for-hire and private angling components (GMFMC 2014a). The for-hire component applies to businesses that operate vessels that have been issued a federal Gulf charter vessel/headboat permit for reef fish during any time of the fishing year. These permits are valid for one year or renewable/transferable; however, the vessel must have a valid permit for any person onboard to fish for or possess Gulf red snapper in federal waters (50 CFR 622.20(b)).

The private angling component applies to vessels that have not been issued a federal charter/headboat permit for Gulf reef fish any time during the year. Amendment 40 defined the private angling component as including operators of private vessels and state-permitted for-hire vessels. Although vessels used by these operators may have multiple purposes (commercial, for-hire, and personal), trips involving and landings of red snapper by this component of the recreational sector occur only when the vessels are not operating as a business in federal waters. Additional information about the recreational sector of the reef fish fishery can be found in Amendment 45 (GMFMC 2016).

Federal For-Hire Component

An annual average of 1,329 Gulf vessels had a valid or renewable federal charter/headboat permit from 2012 through 2016 (Table 3.3.2.1). As of July 16, 2019, there were 1,306 vessels with the permit. The distribution of vessels with the permit by hailing port state changed little from 2012 through 2016 (Table 3.3.2.2).

Table 3.3.2.1. Number and percentage of charter/headboat permits for reef fish by state of hailing port of vessel, 2012-2016.

Year	For-Hire Reef Fish Permits by Hailing Port of Vessel						
	2012	**2013**	**2014**	**2015**	**2016**	***Average***	**Percent Change 2012-2016**
AL	157	159	153	143	134	*149*	-14.7%
FL	812	803	787	778	776	*791*	-4.4%
LA	123	120	117	121	119	*120*	-3.3%
MS	48	47	42	38	35	*42*	-27.1%
TX	221	219	230	232	232	*227*	5.00%
Gulf States	*1,361*	*1,348*	*1,329*	*1,312*	*1,296*	*1,329*	*-4.8%*
Other	17	15	16	16	18	*16*	5.9%
Total	**1,378**	**1,363**	**1,345**	**1,328**	**1,314**	***1,346***	**-4.6%**

Source: NMFS Southeast Regional Office (SERO).

Table 3.3.2.2. Percentage of for-hire reef fish permits by state of hailing port of vessel.

Year	Percentage of Charter/Headboat Reef Fish Permits						
	2012	**2013**	**2014**	**2015**	**2016**	***Average***	**Change 2012-2016**
AL	11.4%	11.7%	11.4%	10.8%	10.2%	*11.1%*	-1.2%
FL	58.9%	58.9%	58.5%	58.6%	59.1%	*58.8%*	0.1%
LA	8.9%	8.8%	8.7%	9.1%	9.1%	*8.9%*	0.1%
MS	3.5%	3.5%	3.1%	2.9%	2.7%	*3.1%*	-0.8%
TX	16.0%	16.1%	17.1%	17.5%	17.7%	*16.9%*	1.6%
Gulf States	*98.8%*	*98.9%*	*98.8%*	*98.8%*	*98.6%*	*98.8%*	*-0.1%*
Other	1.2%	1.1%	1.2%	1.2%	1.4%	*1.2%*	0.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	

Source: NMFS SERO.

As of October 24, 2017, there were 1,313 for-hire fishing vessels with the permit, and approximately 84% of those vessels have a passenger capacity of six (Table 3.3.2.3). Among the vessels with a homeport in one of the Gulf states, Alabama has the largest average federally permitted for-hire vessel by passenger capacity, while Louisiana has the smallest (Table 3.3.2.4). Although the average Florida vessel is not the largest, Florida's combined permitted vessels represent approximately 61% of the total passenger capacity (Table 3.3.2.4). Approximately 98% of Louisiana's permitted vessels carry up to six passengers (Table 3.3.2.5).

Table 3.3.2.3. Number and percentage of permitted for-hire fishing vessels by passenger capacity as of October 24, 2017.

Passenger Capacity	Vessels	
	Number	Percentage
6	1,107	84.38%
7 - 10	6	0.46%
11 - 14	14	1.07%
15 - 20	53	4.04%
21 - 25	25	1.91%
26 - 30	11	0.84%
31 - 40	16	1.22%
41 - 50	34	2.59%
51 - 80	22	1.68%
› 80	24	1.83%
Total	**1,312**	**100.00%**

Source: NMFS SERO LAPP.

Table 3.3.2.4. Range, average, median, total and percent of total passenger capacity by homeport state of vessels as of October 24, 2017.

Homeport State	Passenger Capacity				
	Range	Average	Median	Total	Percentage of Total
AL	6 - 75	13	6	1,736	11.6%
FL	6 - 150	12	6	9,052	60.6%
LA	6 - 41	6	6	768	5.1%
MS	6 - 44	10	6	354	2.4%
TX	6 - 132	11	6	2,659	17.8%
Other	6 - 149	22	6	376	2.5%
All	**6 - 150**	**11**	**6**	**14,945**	**100.0%**

Source: NMFS SERO LAPP.

Table 3.3.2.5. Number of permitted vessels by passenger capacity and homeport state as of October 24, 2017.

Homeport State	Number of Vessels by Passenger Capacity				Percentage of Vessels*	
	6	7 - 14	15 +	Total	6	15 and greater
AL	100	0	36	136	73.5%	26.5%
FL	642	20	112	774	82.9%	14.5%
LA	117	0	2	119	98.3%	1.7%
MS	26	0	8	34	76.5%	23.5%
TX	209	0	23	232	90.1%	9.9%
Other	13	0	4	17	76.5%	23.5%
All	**1,107**	**20**	**185**	**1,312**	**84.4%**	**14.1%**

*: Does not include percentage of vessels with passenger capacity of 7 to 14.
Source: NMFS SERO LAPP.

Permit data as of October 25, 2017, were used to estimate both the number of businesses with a charter/headboat permit and the sizes of their individual fleets of permitted for-hire vessels. As of that date, there were 1,308 permitted for-hire fishing vessels[14], and an estimated 1,099 businesses own these 1,308 vessels. Approximately 88% (972) of the businesses have only one permitted for-hire vessel (Table 3.3.2.6). Collectively, the other 12% of businesses own 26% (336) of the permitted for-hire vessels. Seven businesses collectively own approximately 4.2% of the permitted vessels.

Table 3.3.2.6. Numbers and percentages of businesses and total permitted for-hire vessels by number of permitted for-hire fishing vessels per business, October 25, 2017.

Permitted Vessels per Business	Number of Business	Total Number of Permitted Vessels	Percentage of Businesses	Percentage of Total Permitted Vessels
1	972	972	88.1%	74.3%
2	87	174	7.9%	13.3%
3	25	75	2.3%	5.7%
4	8	32	0.7%	2.5%
5	4	20	0.4%	1.5%
6 or more	3	35	0.3%	2.7%
All	**1,099**	**1,308**	**100.0%**	**100.0%**

Source: NMFS SERO, October 26, 2017.

When operating under the for-hire permit, these businesses participate in the charter fishing and party fishing boats industry (North American Industry Classification System [NAICS] code 4872102). The U.S. Census Bureau conducts the Economic Census of the United States every 5 years, which surveys businesses with employees. Over the past four economic censuses, there was an average of 323 employee establishments in the charter fishing and party fishing boats industry in the Gulf states (Table 3.3.2.7).

[14] The decline from 1,312 to 1,308 federally permitted for-hire vessels in one day is expected to be due to permits being terminated and/or having status as pending and, as pending, permits are not valid or renewable/transferrable. When an application for renewal of an expired permit is submitted but does not include all required documentation, the status of the permit is pending.

Table 3.3.2.7. Number of employer establishments in NAICS code 4872012 (charter fishing and party fishing boats industry).

State	Number of Establishments				
	1997	2002	2007	2012	Average
Alabama	21	18	22	22	21
Florida	249	237	259	259	251
Louisiana	13	11	12	9	11
Mississippi	9	12	7	11	10
Texas	36	32	27	24	30
Total	**328**	**310**	**327**	**325**	**323**

Source: 1997, 2002, 2007, 2012 Economic Census of the United States.

The Economic Census can be used to estimate the average annual receipts for employer establishments in an industry, and the average establishment in the charter fishing and party fishing boats industry in any of the Gulf states had annual receipts less than $600,000 in 2012 (Table 3.3.2.8). Each establishment does not necessarily represent a unique business; a business may have multiple establishments.

Table 3.3.2.8. Number of establishments, total receipts and average receipts establishments in NAICS code 4872012 in 2012.

State	2012 Establishments	2012 Receipts	
		Total	Average
Alabama	22	$5,163,000	$234,682
Florida	259	$74,785,000	$288,745
Louisiana	9	$4,819,000	$535,444
Mississippi	11	Undisclosed	$192,143*
Texas	24	$13,293,000	$553,875

*Estimate from total receipts for all establishments in NAICS code 487210.

Source: 2012 Economic Census of the United States.

The employee establishments in the charter fishing and party fishing boats industry represent part of the broader scenic and sightseeing water transportation industry (NAICS code 487210), and tend to represent the majority of employer establishments in the broader industry, except in Louisiana where there are more establishments in the excursion and sightseeing boats industry (NAICS code 4872011) (Table 3.3.2.9). Average receipts for establishments in the excursion and sightseeing boats industry tend to be higher than those for establishments in the charter fishing and party fishing boats industry. In Texas, for example, the average receipts for an establishment in the excursion and sightseeing boats industry in 2012 was approximately 59% larger than for an establishment in the charter fishing and party fishing boats industry. It is expected that there are vessels in the for-hire component that are also used for excursions and sightseeing.

Table 3.3.2.9. Percentage of employer establishments in NAICS code 487210 that are in the charter fishing and party boat industry.

State	Percentage of Establishments in Charter and Party Fishing Boat Industry				
	1997	2002	2007	2012	Average
Alabama	77.8%	72.0%	75.9%	73.3%	74.7%
Florida	69.2%	66.0%	64.1%	58.6%	64.5%
Louisiana	33.3%	36.7%	48.0%	32.1%	37.5%
Mississippi	100.0%	80.0%	87.5%	84.6%	88.0%
Texas	70.6%	58.2%	47.4%	48.0%	56.0%
Total	**67.5%**	**64.0%**	**62.5%**	**57.7%**	**62.9%**

Source: 1997, 2002, 2007, 2012 Economic Census of the United States.

The U.S. Census surveys non-employer businesses as well; however, non-employer statistics are not publically available at the relevant 6- or 7-digit NAICS code level. In 2015, there were 1,528 non-employer establishments in the scenic and sightseeing (water and land) transportation industry (NAICS code 487) in the Gulf states, and most (approximately 81%) were individual (or sole) proprietorships (Table 3.3.2.10). Self-employed individuals are included in the individual proprietorship category.

Table 3.3.2.10. Number of establishments by legal form in the scenic and sightseeing transportation industry (NAICS code 487), 2015.

State	C-corporations	S-corporations	Individual proprietorships	Partnerships	Total
Alabama	-	7	62	-	71
Florida	20	130	728	69	947
Louisiana	-	10	151	8	169
Mississippi	-	5	44	5	54
Texas	6	17	248	16	287
Total	**26**	**169**	**1,233**	**98**	**1,528**

Source: Census, 2015 Non-employer Statistics by Legal Form.

For the purpose of this and related documents, charter vessels and headboats are differentiated by passenger capacity and the method passengers pay. Specifically, a headboat is defined as a federally permitted for-hire vessel that participates in the Southeast Region Headboat Survey (SRHS), and a vessel in the SRHS meets all or a combination of the following criteria: 1) is licensed to carry 15 or more passengers, 2) fishes in federal waters or state and adjoining waters for federally managed species, and 3) charges primarily per angler (by the head). A charter vessel is defined as a federally permitted for-hire fishing vessel that does not participate in the SRHS.

There were annual averages of 68 headboats and 1,277 charter vessels from 2012 through 2016 (Table 3.3.2.11). Headboats tend to represent approximately 5% of those federally permitted

vessels. See Section 3.4.1 and Figures 3.4.1.2 and 3.4.1.3 for the distribution of charter vessels and headboats by state.

Table 3.3.2.11. Number of headboats and charter vessels, 2012 - 2016.

Year	Federally Permitted Charter/Headboats			Percent Headboat
	Headboats	Charter	Total	
2012	68	1,310	1,378	4.9%
2013	68	1,295	1,363	5.0%
2014	68	1,277	1,345	5.1%
2015	68	1,260	1,328	5.1%
2016	69	1,245	1,314	5.3%
Average	**68**	**1,277**	**1,346**	**5.1%**

Source: SRHS, SERO LAPP/Data Management database.

Data from Marine Recreational Information Program (MRIP) and the Louisiana and Texas creel surveys are used to generate estimates of effort of the charter vessel component. From 2012 through 2016, charter vessels took an average of 201,348 directed angler trips annually (Table 3.3.2.12). These are trips when red snapper was the primary or secondary target species or was caught by anglers. Approximately 60% of the annual directed angler trips by charter vessels are out of west Florida.

Table 3.3.2.12. Estimates of numbers of directed angler trips by for-hire component by state and percentage of total by Alabama and west Florida, 2012 - 2016.

Year	Estimates of Number of Directed Angler Trips					
	AL	West FL	LA	MS	TX	Total
2012	34,459	115,928	11,353	652	29,323	191,715
2013	42,438	110,782	9,077	552	25,652	188,501
2014	29,277	90,991	3,111	292	20,055	143,726
2015	52,417	140,881	8,849	908	32,885	235,940
2016	57,108	146,847	10,317	2,001	30,585	246,858
Average	**43,140**	**121,086**	**8,541**	**881**	**27,700**	**201,348**

Source: NMFS SERO LAPP, August 28, 2017.

Directed angler trips by charter vessels generate jobs and other economic impacts. For example, the average annual 121,086 directed trips by west Florida charter vessels generate 631 jobs, approximately $28 million in income, $77.9 million in sales, and $43 million in value-added impacts in Florida (Table 3.3.2.13).

Table 3.3.2.13. Estimates of economic impacts of directed angler trips by charter boats and their economic impacts to the state, by state.

State	Directed Trips	Jobs	Thousands of Dollars (2015 $)		
			Income	Sales	Value-added
AL	43,140	221	$9,208	$25,828	$13,486
West FL	121,086	631	$28,043	$77,865	$42,960
LA	8,541	31	$1,764	$4,543	$2,621
MS	881	3	$136	$394	$196

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS, see http://sero.nmfs.noaa.gov/sustainable_fisheries/lapp_dm/index.html.

There is insufficient information to estimate the economic impacts of the directed trips made by Texas charter vessels to the state of Texas. However, the impacts of the trips by Texas charter vessels are evaluated at the Gulf region level (Table 3.3.2.14).

Table 3.3.2.14. Estimates of economic impacts of directed angler trips by Texas charter vessels to the Gulf region.

State	Directed Trips	Jobs	Thousands of Dollars (2015 $)		
			Income	Sales	Value-added
Texas	27,700	172	$8,585	$24,838	$13,308

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS.

Similar analysis of recreational effort is not possible for headboats because headboat trip data are not collected at the individual angler level, but instead at the vessel level, and target intent is not included, only species caught and landed. The length of a headboat trip varies considerably, from three to five and a half hours (half a day) to 10 hours or more; however, the majority of trips are no more than six hours and no more than approximately 3% are 10 hours or more (Tables 3.3.2.15 and 3.3.2.16). The United States Coast Guard (USCG) requires a vessel that makes a trip over 12 hours long to have two captains and two deckhands, which increases the cost of a trip. Also, if overnight, a headboat will have fewer paying passengers on board because passengers need space to sleep or at least lay down.

Table 3.3.2.15. Number of annual headboat trips by length (hours) of trip, 2012 – 2016.

Year	Number of Vessels	3 – 5.5 Hours	6 Hours	8 to 9.5 Hours	10 or more Hours	Total
2012	68	3,200	4,032	1,219	234	8,685
2013	68	2,902	2,363	3,316	243	8,824
2014	68	3,281	2,260	3,343	275	9,159
2015	68	3,649	2,265	3,499	313	9,726
2016	69	3,757	2,483	3,544	298	10,082
Average	**68**	**3,358**	**2,681**	**2,984**	**273**	**9,295**

Source: NMFS SEFSC.

Table 3.3.2.16. Percentage of annual headboat trips by length of trip, 2012 – 2016.

Year	Percentage of Headboat Trips				
	Half Day	Three-quarter Day	Full Day	More than Full Day	Total
2012	36.8%	46.4%	14.0%	2.7%	100.0%
2013	32.9%	26.8%	37.6%	2.8%	100.0%
2014	35.8%	24.7%	36.5%	3.0%	100.0%
2015	37.5%	23.3%	36.0%	3.2%	100.0%
2016	37.3%	24.6%	35.2%	3.0%	100.0%
Average	**36.1%**	**29.2%**	**31.8%**	**2.9%**	**100.0%**

Source: NMFS SEFSC.

Estimates of effort by headboats are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half, three-quarter, full-day and longer fishing trips by these vessels. For purposes of estimating angler days and landings, the SRHS divides the Gulf into several geographic areas.

The distribution of angler days by geographic area is presented in Table 3.3.2.17. On average, from 2012 through 2016, the area from the Dry Tortugas through the Florida Middle Grounds (FLW) accounted for the largest number of angler days, followed in turn by northwest Florida through Alabama, Texas and Mississippi through Louisiana (Tables 3.3.2.17 and 3.3.2.18).

Table 3.3.2.17. Number of angler days by area, 2012 – 2016.

Year	Number of Angler Days				
	FLW	NWFL-AL[1]	MS-LA[2]	TX	Total
2012	84,205	77,770	3,680	51,776	217,431
2013	94,752	80,048	3,406	55,749	233,955
2014	102,841	88,524	3,257	51,231	245,853
2015	107,910	86,473	3,587	55,135	253,105
2016	109,101	90,877	2,955	54,083	257,016
Average	**99,762**	**84,738**	**3,377**	**53,595**	**241,472**

Source: SERO SRHS.

1. Beginning in 2013, SRHS data was reported separately for NW Florida and Alabama, but has been combined here for consistency with previous years.

2. Combined for confidentiality purposes.

Table 3.3.2.18. Percentages of total angler days by area, 2012 – 2016.

Year	Percentage of Total Angler Days				
	FLW	NWFL-AL[1]	MS-LA[2]	TX	Total
2012	38.7%	35.8%	1.7%	23.8%	100.0%
2013	40.5%	34.2%	1.5%	23.8%	100.0%
2014	41.8%	36.0%	1.3%	20.8%	100.0%
2015	42.6%	34.2%	1.4%	21.8%	100.0%
2016	42.4%	35.4%	1.1%	21.0%	100.0%
Average	**41.2%**	**35.1%**	**1.4%**	**22.3%**	**100.0%**

Source: SERO SRHS.
1. Beginning in 2013, SRHS data was reported separately for NW Florida and Alabama, but has been combined here for consistency with previous years.
2. Combined for confidentiality purposes.

Fifty-eight of the 69 headboats in 2016 had red snapper landings [Southeast Fishery Science Center (SEFSC) SRHS]. The majority of these headboats with red snapper landings are registered in Florida, with smaller numbers of vessels registered in the other Gulf states (Table 3.3.2.19).

Table 3.3.2.19. Number and percentage of headboats with red snapper landings in 2016 by state.

Headboats with Red Snapper Landings				
AL	FL	MS& LA[1]	TX	Total
8	30	5	15	58
13.79%	51.72%	8.62%	25.86%	100.00%

Source: SERO SRHS 2016.
1. Combined for confidentiality purposes.

Because SRHS data do not identify species that are targeted during a trip, the economic impacts of headboat trips that may target red snapper cannot be estimated. For estimates of the average fee per angler charged by headboats, see Carter (2015, 2016); for species targeted by the for-hire component, see Savolainen et al. (2012); and for estimates of producer surplus, see Amendment 45 (GMFMC 2016), all of which are incorporated by reference.

3.4 Description of the Social Environment

This framework action affects the federal for-hire component of recreational management of red snapper in the Gulf. Federally permitted for-hire vessels by state and federal for-hire vessels included in the SRHS with landings of red snapper by state are included to provide information on the geographic distribution of fishing involvement. Descriptions of the top recreational fishing communities based on recreational engagement are included, along with the top ranking communities by the number of federal for-hire permits, and communities with SRHS landings of red snapper. Community level data are presented in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-

Stevens Act), which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. Lastly, social vulnerability data are presented to assess the potential for environmental justice concerns.

3.4.1 Fishing Communities

Recreational Fishing Communities

Landings for the recreational sector are not available by species at the community level, making it difficult to identify communities as dependent on recreational fishing for red snapper. Because limited data are available concerning how recreational fishing communities are engaged and reliant on specific species, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013, Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as "recreational" by homeport and owners address. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted by community.

Figure 3.4.1.1 identifies the top Gulf communities that are engaged and reliant upon recreational fishing in general. Two thresholds of one and one-half standard deviation above the mean were plotted to help determine a threshold for significance. Communities are presented in ranked order by fishing engagement and all 20 included communities demonstrate high levels of recreational engagement, although this is not specific to fishing for red snapper. 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 20 list suggesting a greater importance for recreational fishing in that area.

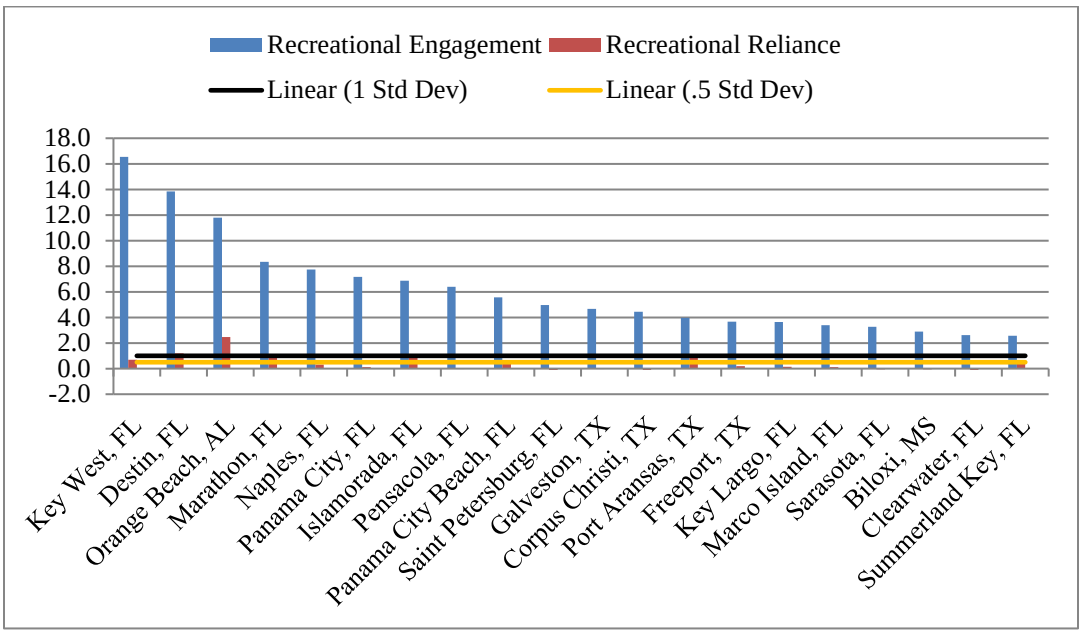

Figure 3.4.1.1. Top 20 recreational fishing communities' engagement and reliance.
Source: SERO, Community Social Vulnerability Indicators Database 2016 (ACS 2010-2014).

Charter Vessels and Headboats by Community

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

The majority of federal for-hire permits for reef fish are held by operators in Florida (60% in 2017), followed by Texas (16%), Alabama (11%), Louisiana (9%), Mississippi (3%), and other states (1%; NMFS SERO permit database). The distribution of permits by state has followed a similar pattern throughout the last five years.

Federal for-hire permits are held by those with mailing addresses in a total of 364 communities, located in 23 states (NMFS SERO permit office, July 22, 2018). The communities with the most for-hire permits for reef fish are provided in Table 3.4.1.1.

Table 3.4.1.1. Top ranking communities based on the number of federal for-hire permits for Gulf reef fish, including historical captain permits, in descending order.

State	Community	Permits
FL	Destin	67
AL	Orange Beach	51
FL	Panama City	51
FL	Naples	46
FL	Key West	42
FL	Pensacola	26
TX	Galveston	23
FL	St. Petersburg	22
FL	Sarasota	20
FL	Cape Coral	17
FL	Clearwater	17
FL	Fort Myers	17
LA	Metairie	17
TX	Houston	17
FL	Panama City Beach	15
MS	Biloxi	15
TX	Port Aransas	15
FL	Marco Island	14
TX	Freeport	14

Source: NMFS SERO permit office, July 22, 2018.

When Gulf reef fish for-hire vessels are separated into charter vessels or headboats, the majority are charter vessels (95% of for-hire vessels as of September 20, 2016) and a smaller proportion are headboats (approximately 5%, NMFS SERO permit office).

Charter vessels and headboats target red snapper throughout the Gulf. At this time it is not possible to determine which species are targeted by specific charter vessels and associate those vessels with their homeport communities. However, harvest data are available for headboats by species and can be linked to specific communities through the homeport identified for each vessel. These data are available for headboats registered in the SRHS.

In 2016, 69 federal for-hire vessels in the Gulf were registered in the SRHS (SRHS, SERO LAPP/Data Management database). Of these, 57 vessels landed red snapper in 2016 (SEFSC SRHS). The majority of these headboats with red snapper landings are registered in Florida (approximately 49%), with smaller numbers of vessels registered in Texas (26%), Alabama (16%), and Louisiana and Mississippi (9%, SEFSC SRHS 2016).

Figure 3.4.1.2 includes all Gulf communities with SRHS landings of red snapper based on a 'regional quotient' (RQ) of recreational headboat landings for red snapper. The RQ is the proportion of landings out of the total SRHS landings for that region, and is a relative measure. The top four homeports represent about 73% of the red snapper landings by vessels participating in the SRHS. Homeports with the greatest landings of red snapper include Galveston, Texas (27.2% of red snapper landed by SRHS vessels in 2016); Port Aransas, Texas (23.5%); Panama City Beach, Florida (11.4%); and Orange Beach, Alabama (10.5%; SEFSC SRHS 2016). It is likely that communities with substantial headboat landings of red snapper would also have strong participation by charter vessels and private anglers.

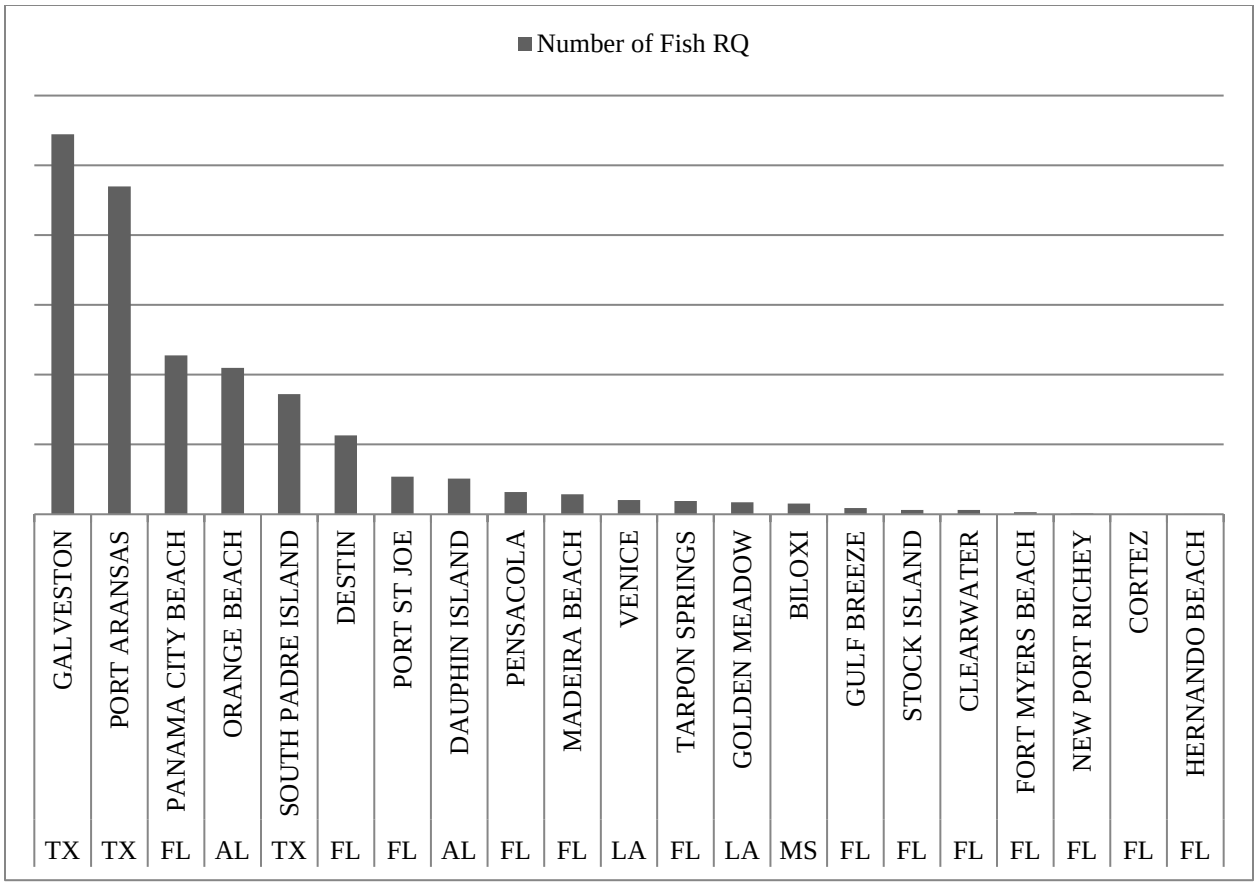

Figure 3.4.1.2. All Gulf communities ranked by number of fish landed by headboats included in the SRHS RQ for red snapper. The actual RQ values (y-axis) are omitted from the figure to maintain confidentiality.
Source: SEFSC SRHS (2016).

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).

The federal for-hire component and associated industries could be impacted by the proposed actions. However, information on the race and income status for groups at the different participation levels is not available. Although information is available concerning communities overall status with regard to minorities and poverty (e.g., census data), such information is not available specific to fishermen and those involved in the industries and activities, themselves.

To help assess whether any EJ concerns arise from the actions in this amendment, a suite of indices were created to examine the social vulnerability of coastal communities. 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. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figures 3.4.2.1 and 3.4.2.2 provide the social vulnerability of the top recreational communities. One community exceeds the threshold of one standard deviation above the mean for all three indices, Freeport, Texas. Several communities exceed the threshold of one-half standard deviation above the mean for more than one index (Fort Myers Beach, Florida; New Port Richey, Florida; Panama City, Florida; Sarasota, Florida; Stock Island, Florida; Freeport, Texas; Galveston, Texas; and Houston, Texas). These communities would be the most likely to exhibit vulnerabilities to social or economic disruption due to regulatory change.

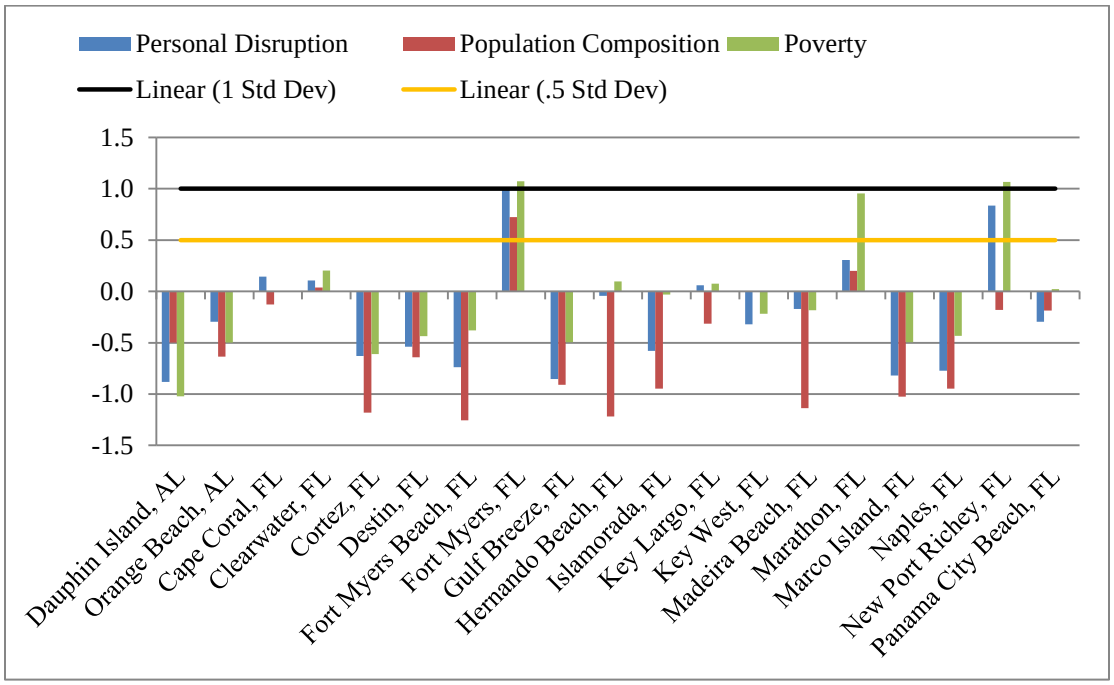

Figure 3.4.2.1. Social vulnerability indices for top recreational fishing communities.
Source: SERO, Community Social Vulnerability Indicators Database 2014 (American Community Survey 2010-2014).

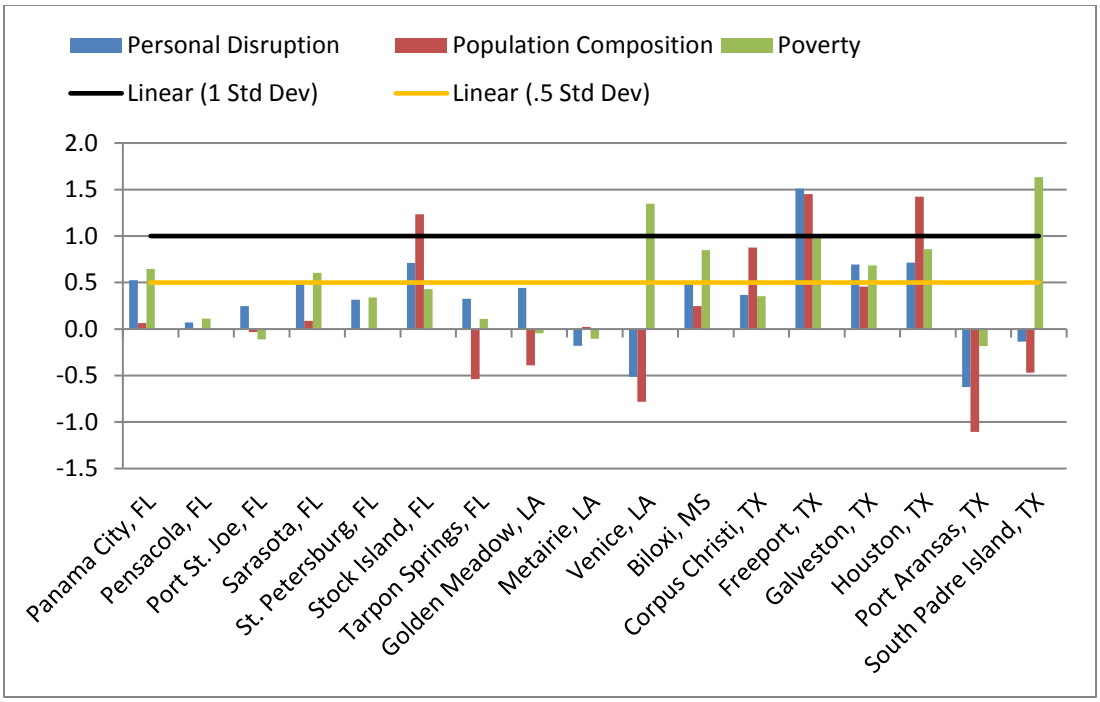

Figure 3.4.2.2. Social vulnerability indices for top recreational fishing communities continued. Source: SERO, Community Social Vulnerability Indicators Database 2014 (American Community Survey 2010-2014).

People in these communities may be affected by fishing regulations in two ways: participation and employment. Although these communities may have the greatest potential for EJ concerns, no data are available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on red snapper specifically (participation). However, the implementation of the proposed action of this framework action would not discriminate against any group based on their race, ethnicity, or income status because the action would be applied to all participants in the fishery. Further, there is no known subsistence fishing or consumption of red snapper. Thus, the actions of this amendment are not expected to result in adverse or disproportionate environmental or public health impacts to EJ populations. In addition, the effects from modifying the recreational ACT for red snapper are expected to affect federal for-hire operators and their passengers only and to be positive. Although no EJ issues have been identified, the absence of potential EJ concerns cannot be assumed.

3.5 Description of the Administrative Environment

3.5.1 Federal Fishery Management

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

anadromous species and continental shelf resources that occur beyond the exclusive economic zone.

Responsibility for federal fishery management is shared by the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Appendix C. 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 seaward boundaries of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law. 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 USCG, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee, which have developed joint enforcement agreements and cooperative enforcement programs (www.gsmfc.org).

3.5.2 State Fishery Management

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

state's primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004b). Descriptions of individual state management and data collection programs can be found at the Web Pages shown in Table 3.5.2.1.

Table 3.5.2.1. Gulf state marine resource agencies and web pages.

State Marine Resource Agency	Web Page
Alabama Marine Resources Division	http://www.outdooralabama.com/
Florida Fish and Wildlife Conservation Commission	http://myfwc.com/
Louisiana Department of Wildlife and Fisheries	http://www.wlf.louisiana.gov/
Mississippi Department of Marine Resources	http://www.dmr.ms.gov/
Texas Parks and Wildlife Department	http://tpwd.texas.gov/

3.5.3 Red Snapper Management

The private angling component fishing season for red snapper is currently being set by the states under exempted fishing permits, a permit type issued by NMFS. As described in Chapter 1, the states are responsible for monitoring landings through state data collection programs. State management of red snapper is proposed to be continued through Amendment 50A (GMFMC 2019) that was recently submitted by the Council to the Secretary for review and approval. The commercial sector and the federal for-hire component are managed by NMFS. Commercially caught red snapper are landed through the individual fishing quota program. Red snapper caught by the federal for-hire component can be landed during a projected season beginning June 1 and set by NMFS.

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1 – Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT)

Alternative 1: No Action. The red snapper annual catch target (ACT) for the recreational for-hire component for 2019 is 9% below the component annual catch limit (ACL).[15] For 2020 and subsequent years, the ACT for the for-hire component will be 20% below the component ACL.

Preferred Alternative 2: Apply the Gulf of Mexico (Gulf) Fishery Management Council's (Council) ACL/ACT Control Rule, using federal for-hire landings data from 2014 – 2017, to set the component ACT buffer for the federal for-hire component. This results in a federal for-hire component ACT set **9%** below the federal for-hire component ACL.

Alternative 3: Apply the Council's ACL/ACT Control Rule, using federal for-hire landings from 2015 – 2018, to set the component ACT buffer for the federal for-hire component. This results in a federal for-hire component ACT set **5%** below the federal for-hire component ACL.

4.1.1 Direct and Indirect Effects on the Physical Environment

Sections 3.1, 3.2, and GMFMC (2014a, 2016) describe the physical environment and habitat used by red snapper. In summary, adult red snapper targeted by the reef fish fishery are found around hard bottom habitat. 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. Recreational red snapper fishing almost exclusively uses vertical-line gear, most frequently rod-and-reel. The following describes the effects of handline fishing gear on the physical environment. Because the actions of this amendment apply only to the recreational sector and longlines are used exclusively by the commercial sector, the effects of longline gear will not be discussed here. A summary of effects from longline gear on the physical environment can be found in GMFMC (2011b).

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

[15] The buffer of 9% for the federal for-hire component was implemented for the 2019 season only.

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

Effects from fishing on the physical environment are generally tied to fishing effort. The greater the fishing effort, the more gear interacts with the bottom. The red snapper ACTs determine the season length. As the duration of the fishing season increases, then so too should the exposure of the physical environment to fishing pressure. In general, an alternative which allows greater levels of fishing effort (more gear being used) would have a greater negative effect than an alternative which allows for less fishing effort. However, these effects are expected to be minimal because a significant change in overall fishing effort is not expected. The reef fish fishery is a multispecies fishery. If anglers are not able to retain one species, they often shift their effort to other species, maintaining over all reef fish fishing effort.

Alternative 1 (No Action) would not modify the buffer between the federal for-hire component ACT and ACL, presently set at 9% for the 2019 fishing season and 20% thereafter. Since it is the current status quo, **Alternative 1** would result in no change in the direct or indirect effects on the physical environment.

Preferred Alternative 2 would modify the buffer between the federal for-hire component ACT and ACL to 9%. Because the predominant method of harvest for the federal for-hire component is hook-and-line gear, and because the reef fish fishery in the Gulf is a multi-species fishery, little change in overall fishing effort is expected. Therefore, the potential effects of **Preferred Alternative 2** on the physical environment are expected to be similar to **Alternative 1**.

The reduction resulting from the application of the ACL/ACT Control Rule (Appendix A) differs between **Preferred Alternative 2** and **Alternative 3** because for **Preferred Alternative 2**, the landings were still monitored as a combined sector in 2014; whereas, under **Alternative 3**, the recreational components were monitored independent of one another, with separate in-season accountability measures. Because the predominant method of harvest for the federal for-hire component is hook-and-line gear, and because the reef fish fishery in the Gulf is a multi-species fishery, little change in overall fishing effort is expected. Therefore, the potential effects of **Alternative 3** on the physical environment are expected to be similar to **Alternative 1**. The difference between the ACTs for **Preferred Alternative 2** and **Alternative 3** is 156,000 lbs. Given a predicted daily catch rate by the for-hire component of 46,077 pounds of red snapper/day during the open season, for-hire fishing effort under **Alternative 3** would last approximately 3 days longer than under **Preferred Alternative 2** (NMFS 2019 Season Length Projections; NMFS-LAPP-2019-01).

4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment

Direct and indirect effects from fishery management actions on the biological and ecological environment have been detailed in GMFMC (2014a; 2016) and are incorporated herein by

reference. Management actions that affect the biological and ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from the population through fishing reduces the overall population size. Fishing gears have different selectivity patterns which refer to a fishing method's ability to target and capture organisms by size and species. This would include the number of discards, mostly sublegal fish or fish caught during seasonal closures, and the mortality associated with releasing these fish.

The red snapper ACTs determine the season length. As the duration of the fishing season increases, then so too should the exposure of the red snapper stock to fishing pressure, thereby allowing for more harvest of red snapper and a potential increase in interactions with other species. For the 2019 federal for-hire red snapper fishing season, **Preferred Alternative 2** would provide combined recreational catch limits equal to **Alternative 1**, since the federal for-hire red snapper ACT would still be set 9% below the federal for-hire red snapper ACL. However, for 2020 and subsequent years, the federal for-hire red snapper ACT would remain at 9% below its ACL under **Preferred Alternative 2**, as opposed to reverting back to 20% under **Alternative 1**. Therefore, fixing the buffer for the federal for-hire component at 9% in perpetuity (until again changed by the Council) would allow for greater harvest of red snapper, which would have a negative effect on the red snapper stock by way of increased removals. However, so long as the overfishing limit is not exceeded, and overfishing does not occur, no long-term negative effects are expected, nor is the pace of the rebuilding plan expected to be delayed.

Alternative 3 would decrease the buffer between the federal for-hire component's ACT and its ACL from 9% in 2019 and 20% in 2020 and subsequent years to 5%. Although **Alternative 3** would allow for a longer fishing season and a higher amount of removals of red snapper from the stock than **Alternative 1** or **Preferred Alternative 2**, so long as overfishing does not occur, the rebuilding progress for the red snapper stock is not expected to be negatively affected.

Both **Preferred Alternative 2** and **Alternative 3** would reduce the federal for-hire buffer between the ACT and the ACL. By doing to, the buffer between the total recreational (federal for-hire and private angling components combined) ACT and ACL will be summarily reduced, thereby increasing the probability of the recreational sector as a whole exceeding its ACL. If such an overage occurs, it would negatively affect the red snapper stock in the near-term by way of increased removals. However, so long as the overfishing limit is not exceeded, and overfishing does not occur, no long-term negative effects are expected. Under Amendment 50A to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico, any overage of a state's ACL results in a pound-for-pound payback of that overage in the following fishing year. This payback provision has been demonstrated to be effective at mitigating the effects of a quota overage[16].

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 52 2018) indicated that the red snapper stock is not overfished and not experiencing overfishing. It is possible that forage species and

[16] http://gulfcouncil.org/wp-content/uploads/2019_05-SSC-Stg-RF-Mack-Socio.zip

competitor species could increase or decrease in abundance in response to a decrease or increase in red snapper abundance. This action, regardless of the alternative, should not negatively affect red snapper abundance, thus any effects on forage species and competitor species would not likely be different from no action. 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. Changes in the prosecution of the reef fish fishery are not expected from this action, so no additional effects to protected resources (see Section 3.3) are anticipated.

The reef fish fishery in the Gulf is multispecies in nature, such that if fishing for one species is no longer allowed (seasonal closure, bag limit caught, or other reason), anglers will usually target a different species. The alternatives in this action should result in minimal differences in impacts in terms of bycatch compared to **Alternative 1**. Long-term, **Preferred Alternative 2**, and more so **Alternative 3**, would be expected to result in a marginally greater amount of bycatch of other non-target species compared to **Alternative 1**, since fishing effort on the stock would be higher. However, fishing effort for reef fish generally is not expected to substantially change.

4.1.3 Direct and Indirect Effects on the Economic Environment

For the federal for-hire component of the recreational sector, **Alternative 1** (No Action) would maintain the current 20 percent buffer between the federal for-hire red snapper ACL and ACT. Because **Alternative 1** is not expected to alter fishing opportunities or red snapper harvests, **Alternative 1** would not be expected to result in direct economic effects. However, **Alternative 1** may be associated with adverse indirect economic effects if it is assumed that **Alternative 1** unnecessarily forgoes additional fishing opportunities.

Preferred Alternative 2 would decrease the federal for-hire red snapper buffer to 9 percent below the ACL. **Alternative 3** would set a 5 percent buffer between the federal for-hire red snapper ACL and ACT. For recreational anglers, changes in economic value expected to result from the proposed changes in the buffer between the federal for-hire red snapper ACL and ACT can be evaluated based on consumer surplus (CS) changes. The CS per additional fish kept during a trip is defined as the amount of money an angler would be willing to pay for a fish in excess of the cost to harvest the fish. The CS value per fish for a second red snapper kept is estimated at $83.91 (Liese and Carter 2012, updated to 2018 dollars). Economic value for for-hire vessels can be measured by producer surplus (PS) per passenger trip. PS is defined as the amount of money a vessel owner earns in excess of the cost of providing the trip. When PS estimates are not available, they can be approximated by the net operating revenue (NOR), which is the return used to pay all labor wages, returns to capital, and owner profits. In the absence of estimates for changes in charter and headboat angler trips expected to result from proposed decreases to the buffer between the federal for-hire red snapper ACL and ACT, i.e., increases to the federal for-hire red snapper ACT, the management alternatives are evaluated based on CS changes. For the proposed alternatives, ACLs, ACTs, and ACT changes (measured in pounds, number of fish, and economic value) relative to **Alternative 1** are provided in Table 4.1.3.1. ACT changes (in pounds) are obtained by subtracting the baseline ACT (**Alternative 1** ACT) from the proposed alternative ACTs. ACT changes measured in pounds are converted into numbers of fish based on an average weight of 6.46 lbs per red snapper (SERO Recreational

ACL file). Changes in economic value are obtained by multiplying the number of fish by the CS value per fish ($83.91). **Preferred Alternative 2** is expected to increase the ACT by 53,251 fish and increase recreational anglers' CS by $4.5 million, approximately. **Alternative 3** is expected to increase the ACT by 72,755 fish and increase economic value by $6.1 million.

Table 4.1.3.1. Federal for-hire red snapper ACLs, ACTs, and ACT changes (pounds, number of fish, and value) relative to **Alternative 1**.

	ACL (pounds)	**ACT** (pounds)	**ACT Change**		
			Pounds	Number of Fish	Value ($2018)
Alternative 1	3,130,000	2,504,000			
Preferred Alternative 2	3,130,000	2,848,000	344,000	53,251	4,468,272
Alternative 3	3,130,000	2,974,000	470,000	72,755	6,104,907

4.1.4 Direct and Indirect Effects on the Social Environment

The ACT is used to project the season length. In general, a smaller buffer would allow for a longer season to be estimated, while increasing the chance of exceeding the ACL; a larger buffer would result in a shorter projected season and a decreased chance of exceeding the ACL. Positive effects would be expected from increasing the season length, as additional fishing opportunities are provided, and negative effects would be expected from a shorter fishing season, as fishing opportunities are reduced. Changing the for-hire component's buffer from 20% to 9% in 2019, plus a 282,000-lb quota increase, extended the component's fishing season by 11 days. Because there is currently no overage adjustment for the for-hire component if the ACL is exceeded, negative effects would not be expected in the event the component ACL is exceeded, or if the total recreational ACL is exceeded, because red snapper is not currently classified as overfished or undergoing overfishing. Nevertheless, if ACL overages result in delaying the rebuilding of the stock, it is possible that long-term negative effects could result if the rebuilding plan is extended. Further, ACL overages indicate that more restrictive measures may be necessary to prevent future overages.

The federal for-hire ACT is currently set at 20% below the federal for-hire ACL, except in 2019, when it is set at 9% below the federal for-hire ACL. If the buffer is allowed to revert to 20% in 2020 (**Alternative 1**), the effects would be similar to management during the years 2015 through 2018 in terms of the season length and likelihood of exceeding the ACL. However, the federal for-hire component has not reached more than 81% of its ACL in any year since the 20% buffer was implemented in 2015 (Table 4.1.4.1), suggesting that the buffer could be reduced, allowing more fish to be caught before the end of the season. Under **Alternative 1**, then, the federal for-hire component would continue to fish under seasons that are too short to allow the harvest of the component's quota.

Table 4.1.4.1. Federal for-hire ACT, ACL, landings (pounds whole weight), and the percent of the ACT and ACL that were met for 2015 through 2018.

Year	ACT	ACL	Landings	% ACT	% ACL
2015	2,371,000	2,964,000	2,153,677	90.8%	72.7%
2016	2,434,000	3,042,000	2,142,815	88.0%	70.4%
2017	2,278,000	2,848,000	2,269,538	99.6%	79.7%
2018	2,278,000	2,848,000	2,307,750	101.3%	81.0%

Compared to **Alternative 1**, the smallest buffer (5%, **Alternative 3**) would allow the longest fishing season to be estimated resulting in the greatest positive effects, followed by the larger buffer (9% under **Preferred Alternative 2**). Conversely, the smaller the reduction to the buffer (to 9% under **Preferred Alternative 2**) the less likely it would be to exceed the for-hire component ACL. Although negative effects would not be expected as there is no overage adjustment if the for-hire ACL is exceeded, recurrent overages could ultimately delay the rebuilding plan, or require the implementation of more restrictive measures, resulting in some negative long-term effects.

4.1.5 Direct and Indirect Effects on the Administrative Environment

Revising the federal for-hire component's ACT buffer would have direct effects on the administrative environment through rulemaking, monitoring quotas, setting fishing seasons, and enforcing fishing regulations. The red snapper ACTs are used to set recreational fishing seasons with the buffer between the ACT and ACL adjusted to minimize the probability of a component exceeding its ACL. Because none of the alternatives from this action would remove ACTs from use in managing the federal for-hire component, the direct effects on this environment between **Alternative 1** (no action), **Preferred Alternative 2**, and **Alternative 3** would be similar.

Indirect effects of adjusting the federal for-hire component's ACT include action required if the recreational sector ACL is exceeded. Although red snapper is not considered overfished at this time and paybacks from exceeding recreational sector ACL do not apply, further action on adjusting seasons or ACTs would likely result if the ACLs were regularly exceeded. Thus, the less likely an ACT will prevent an ACL from being exceeded, the greater the likelihood that further administrative action would need to be taken. It should also be noted that the private angling component of the recreational red snapper sector is currently being managed under an EFP for the 2018 and 2019 fishing years. Amendment 50A to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico (Reef Fish FMP; GMFMC 2019) was approved by the Council in April 2019, and if implemented, would delegate authority to each state to established specific management measures for the private angling component. Therefore, if implemented in 2020, the probability of exceeding the total recreational sector ACL for red snapper depends on the in-season monitoring of the private angling component by the five Gulf states, and on the season projections for the federal for-hire component by the National Marine Fisheries Service (NMFS).

In **Preferred Alternative 2**, the federal for-hire component ACT buffer is reduced to 9% relative to **Alternative 1** (9% in 2019, 20% in 2020 and subsequent years) and thus increases the

likelihood that the federal for-hire component ACL might be exceeded. **Alternative 3** reduces the buffer for the federal for-hire component to 5%, further increasing the likelihood that the federal for-hire component ACL might be exceeded. For the federal for-hire component, the likelihood of exceeding the reduced component buffer is low because the component slightly exceeded its ACT only once in the last four years (in 2018). However, there is a greater likelihood under **Alternative 3** that the federal for-hire component and the combined recreational ACL could be exceeded, which may require further action. Thus, **Alternative 3** would have the greatest potential of adding to the administrative burden, followed by **Preferred Alternative 2** and then **Alternative 1**.

4.2 Cumulative Effects

Federal agencies preparing an environmental assessment (EA) must also consider cumulative effects of a proposed action and other actions. Cumulative effects are those effects that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions that take place over a period of time (40 C.F.R. 1508.7). Below is a five-step cumulative effects analysis that identifies criteria that must be considered in an EA.

1. *The area in which the effects of the proposed action will occur* - The affected area of this proposed action encompasses the state and federal waters of the Gulf as well as Gulf communities that are dependent on reef fish fishing. Most relevant to this proposed action is red snapper and those who fish for them, particularly in the federal for-hire component. For more information about the area in which the effects of this proposed action will occur, please see Chapter 3, Affected Environment which describes these important resources and other relevant features of the human environment.

2. *The impacts that are expected in that area from the proposed action* - The proposed action would modify the federal for-hire red snapper ACT. The environmental consequences of the proposed action are analyzed in detail in Section 4.1. This action is not expected to have significant beneficial or adverse cumulative effects on the physical and biological/ecological environments because the action is not expected to alter the manner in which the red snapper portion of the reef fish fishery is prosecuted (Sections 4.1.1 and 4.1.2). These actions would likely have minor direct and indirect effects on the social and economic environments in the near future (Sections 4.1.3 and 4.1.4). The reef fish fishery is a multispecies fishery where fishermen can target other species on a trip. Thus, changing fishing practices for one stock does not generally change overall fishing effort or fishing practices. The action is also not expected to adversely or beneficially substantially affect the administrative environment (Section 4.1.5).

3. *Other past, present and reasonably foreseeable future actions (RFFAs) that have or are expected to have impacts in the area* - There are numerous actions taken in the Gulf annually. Many of these activities are expected to have impacts associated with them. Below is a discussion those actions that have the potential to combine with the proposed action to result in cumulative effects.

Other fishery related actions - The cumulative effects of establishing ACTs were analyzed in the environmental impact statements (EISs) for Amendments 28 and 40 (GMFMC 2015a and 2014). In addition, cumulative effects relative to changes in red snapper management have been analyzed in the EISs for Amendments 22 (GMFMC 2004b), 26 (GMFMC 2006), and 27/14 (GMFMC 2007), and relative to the reef fish fishery in Amendment 29 (GMFMC 2008a), Amendment 30A (GMFMC 2008b), Amendment 30B (GMFMC 2008c), Amendment 31 (GMFMC 2009), and Amendment 32 (GMFMC 2001). These cumulative effects analyses are incorporated here by reference. Other pertinent actions are summarized in the history of management (Section 1.3). The Council has submitted Amendment 50A, which would establish state recreational management programs for red snapper, to the Secretary of Commerce for

review and approval. Currently, there are several present and RFFAs that are being considered by the Council for the Reef Fish FMP or implemented by NMFS, which could affect reef fish stocks. These include: Amendment 36B, which would further revise the red snapper and grouper-tilefish commercial individual fishing quota (IFQ) programs; Amendment 48, which would establish status determination criteria for many reef fish stocks; Amendment 51, which would establish or modify stock status determination criteria for gray snapper and reduce the ACL based on the recent stock assessment; and some actions to address red snapper allocation, the carryover of unharvested quota, the acceptable biological catch control rule, the commercial harvest of greater amberjack, and the recreational harvest of greater amberjack. Descriptions of these actions can be found on the Council's webpage at http://gulfcouncil.org/.

Non-fishery related actions - Forces affecting the reef fish fishery have been described in previous cumulative effect analyses (e.g., Amendment 40). Three important examples include impacts of the *Deepwater Horizon* MC252 oil spill, the Northern Gulf Hypoxic Zone, and climate change (See Sections 3.1 and 3.2). Reef fish species are mobile and are able to avoid hypoxic conditions, so any effects from the Northern Gulf Hypoxic Zone on reef fish species are likely minimal regardless of this action. Impacts from the *Deepwater Horizon* MC252 oil spill are still being examined; however, as indicated in Section 3.2, the oil spill had some adverse effects on fish species.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. The Intergovernmental Panel on Climate Change has numerous reports addressing their assessments of climate change.[17] Global climate changes could affect the Gulf fisheries as discussed in Section 3.2. However, the extent of these effects cannot be quantified at this time. The proposed action is not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing as these actions should not change how the fishery is prosecuted. As described in Section 3.2, the contribution to greenhouse gas emissions from fishing is minor compared to other emission sources (e.g., oil platforms).

4. The impacts or expected impacts from these other actions - The cumulative effects from managing the reef fish fishery have been analyzed in other actions as listed in part three of this section. They include detailed analysis of the reef fish fishery, cumulative effects on non-target species, protected species, and habitats in the Gulf. In general, the effects of these actions are positive as they ultimately act to restore/maintain the stocks at a level that will allow the maximum benefits in yield and recreational fishing opportunities to be achieved.

5. *The overall impact that can be expected if the individual impacts are allowed to accumulate:* This action, combined with other past actions, present actions, and RFFAs, is not expected to have significant beneficial or adverse effects on the physical and biological/ecological environments because this action would only minimally affect current fishing practices (Sections 4.1.1 and 4.1.2). For the social and economic environments, effects should be positive as more fish and fishing opportunities are available to the federal for-hire component of the recreational sector and the fishing communities that support this component (Sections 4.1.3 and 4.1.4).

[17] http://www.ipcc.ch/publications_and_data/publications_and_data.shtml

These effects are likely minimal as the proposed action, along with other past actions, present actions, and RFFAs, are not expected to alter the manner in which the fishery is prosecuted. Because it is unlikely there would be any changes in how the fishery is prosecuted, this action, combined with past actions, present actions, and RFFAs, is not expected to have significant adverse effects on public health or safety.

6. Summary: The proposed action is not expected to have individual significant effects to the biological, physical, or socio-economic environment. Any effects of the proposed action, when combined with other past actions, present actions, and RFFAs are not expected to be significant. The effects of the proposed action are, and will continue to be, monitored through collection of landings data by NMFS, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. Landings data for the recreational sector in the Gulf are collected through Marine Recreational Information Program (MRIP), the Southeast Region Headboat Survey (SRHS), the Texas Marine Recreational Fishing Survey, and the Louisiana Department of Wildlife and Fisheries Creel Survey. In addition, the Alabama Department of Conservation and Natural Resources, Mississippi Department of Marine Resources, and Florida Fish and Wildlife Conservation Commission have instituted programs to collect information on reef fish, and in particular, red snapper recreational landings information. Commercial data are collected through trip ticket programs, port samplers, and logbook programs, as well as dealer reporting through the red snapper IFQ program.

CHAPTER 5. REGULATORY IMPACT REVIEW

5.1 Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: 1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; 2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, 3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866. This RIR analyzes the impacts this action would be expected to have on the red snapper component of the Gulf of Mexico (Gulf) reef fish fishery.

5.2 Problems and Objectives

The problems and objectives addressed by this action are discussed in Section 1.2.

5.3 Description of Fisheries

A description of the Gulf reef fish fishery is provided in Section 3.

5.4 Impacts of Management Measures

5.4.1 Action 1: Modify the Red Snapper Recreational For-Hire Component Annual Catch Target (ACT)

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3. The following discussion summarizes the expected economic effects of the preferred alternatives.

Preferred Alternative 2 would set a 9 percent buffer between the federal for-hire red snapper ACL and ACT. **Preferred Alternative 2** is expected to increase the ACT by 344,000 pounds (or 53,251 fish) and increase recreational anglers' economic value by $4.5 million, approximately.

5.5 Public and Private Costs of Regulations

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

Council costs of document preparation, meetings, public hearings, and information dissemination……$45,000

NMFS administrative costs of document
preparation, meetings and review ….....$25,000

TOTAL ….....$70,000

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order (E.O). Based on the information provided above, this action has been determined to not be economically significant for the purposes of E.O. 12866.

CHAPTER 6. REGULATORY FLEXIBILITY ANALYSIS

6.1 Introduction

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

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. The following regulatory flexibility analysis was conducted to determine if the proposed rule would have a significant economic impact on a substantial number of small entities or not.

6.2 Statement of the need for, objective of, and legal basis for the proposed rule

The primary purpose and need, issues, problems, and objectives of the proposed action are presented in Section 1.2 and are incorporated herein by reference.

6.3 Identification of federal rules which may duplicate, overlap or conflict with the proposed rule

No federal rules have been identified that duplicate or conflict with the proposed rule. Although the proposed rule overlaps with the framework action to increase the catch limits for red snapper, it does not result in any additional regulatory burden.

6.4 Description and estimate of the number of small entities to which the proposed action would apply

The rule concerns recreational fishing for red snapper in federal waters of the Gulf of Mexico (Gulf) and would have a direct impact on anglers (recreational fishers). Anglers are not considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from for-hire fishing, private or leased vessels. Therefore, estimates of the number of anglers directly affected by the rule and the impacts on them are not provided here.

The rule would indirectly impact for-hire fishing vessels if **Preferred Alternative 2** of **Action 1** cause changes in angler demand for for-hire fishing services in 2019. Because the effects on for-hire fishing businesses are indirect, they fall outside the scope of the RFA.

6.5 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule

The actions would not impose additional reporting or record-keeping requirements on small businesses. **Preferred Alternative 2** would reduce the annual catch target (ACT) buffer for the for-hire component to 9%. The reduction of the buffer would allow federally permitted for-hire fishing vessels to increase their collective landings of red snapper. Currently, the for-hire component's annual catch limit is 2.848 million lbs ww and its ACT is 2.278 million lbs ww. **Preferred Alternative 3** would allow the for-hire component to land up to 2.592 million lbs, which would be an addition of 0.256 million lbs ww in 2019. Consequently, for-hire fishing businesses could offer more fishing trips directed to catching red snapper; however, the realization of those additional trips and economic benefits that may derive from them are conditional upon the behavior of anglers as paying customers as well as other factors and cannot be quantified. The RFA does not consider such indirect impacts on small entities.

6.6 Significance of economic impacts on a substantial number of small entities

It is concluded from the above that no small businesses are directly impacted from the rule and there would be no significant economic impact on a substantial number of small entities.

CHAPTER 7. AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED

The following have or will be consulted:

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office
- Protected Resources
- Habitat Conservation
- Sustainable Fisheries

NOAA General Counsel
Environmental Protection Agency
United States Coast Guard
Texas Parks and Wildlife Department
Alabama Department of Conservation and Natural Resources/Marine Resources Division
Louisiana Department of Wildlife and Fisheries
Mississippi Department of Marine Resources
Florida Fish and Wildlife Conservation Commission

CHAPTER 8. LIST OF PREPARERS

Preparers:

Name	Expertise	Responsibility
Ryan Rindone, GMFMC	Fishery Biologist	Co-Team Lead – amendment development, introduction, physical, biological, ecological, and administrative effects
Peter Hood, NMFS/SF	Fishery Biologist	Co-Team Lead – amendment development, introduction, physical, biological, ecological, and administrative effects
Assane Diagne, GMFMC	Economist	Economic effects, Regulatory Impact Review
Ava Lasseter, GMFMC	Anthropologist	Social effects
Denise Johnson, NMFS/SF	Economist	Economic environment, Regulatory Flexibility Act analysis
Christina Package-Ward, NMFS/SF	Anthropologist	Social environment, Environmental Justice
Jeff Pulver, NMFS/SF	Fishery Biologist, Data Analyst	Data analysis

Reviewers:

Name	Discipline/Expertise	Role in EA Preparation
Mara Levy, NOAA GC	Attorney	Legal review
Noah Silverman, NMFS	Natural Resource Management Specialist	NEPA review
David Dale, NMFS/HC	EFH Specialist	Habitat review
Jennifer Lee, NMFS/PR	Protected Resources Specialist	Protected resources review
Scott Sandorf, NMFS/SF	Regulatory Writer	Regulatory preparation and review
Matt Smith, NMFS SEFSC	Research Fishery Biologist	Physical, biological, and ecological review
Dan Goethel, NMFS SEFSC	Research Statistician	Physical, biological, and ecological review
Carrie Simmons, GMFMC	Fishery Biologist	Physical, biological, and ecological review
Sue Gerhart, NMFS/SF	Fishery Biologist	Physical, biological, and ecological review

GMFMC = Gulf of Mexico Fishery Management Council, SAFMC = South Atlantic Fishery Management Council, NMFS = National Marine Fisheries Service, SF = Sustainable Fisheries Division, PR = Protected Resources Division, HC = Habitat Conservation Division, GC = General Counsel

CHAPTER 9. REFERENCES

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.

Baustian, M. M. and N. N. Rabalais. 2009. Seasonal composition of benthic macroinfauna exposed to hypoxia in the northern Gulf of Mexico. Estuaries and Coasts. 32:975–983.

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

Burton, M. 2008. Southeast U.S. continental shelf, Gulf of Mexico, and U.S. Caribbean. Pages 31-43 *in* Osgood, K. E., editor. 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.

Carls, M. G., S. D. Rice, and J. E. Hose. 1999. Sensitivity of fish embryos to weathered crude oil: Part I. Low-level exposure during incubation causes malformations, genetic damage, and mortality in larval Pacific herring (*Clupea pallasi*). Environmental Toxicology and Chemistry 18(3): 481–493.

Carter, D.W. 2015. The prices for for-hire marine fishing trips in the southeastern U.S. collected from websites: 2011- 2013. NOAA Technical Memorandum NMFS-SEFSC-682.

Carter, David W. 2016. The Prices for For-Hire Marine Fishing Trips in the Southeastern U.S. Collected from Websites: 2014 and 2015. NOAA Technical Memorandum NMFS-SEFSC-694. 25 p.

Craig, J. K. 2012. Aggregation on the edge: effects of hypoxia avoidance on the spatial distribution of brown shrimp and demersal fishes in the Northern Gulf of Mexico. Marine Ecology Progress Series 445: 75–95.

GMFMC. 1981. Original fishery management plan for the reef fish fishery of the Gulf of Mexico and environmental impact statement. Gulf of Mexico Fishery Management Council. Tampa, Florida. 328 pp.
http://archive.gulfcouncil.org/Beta//GMFMCWeb/downloads/RF%20FMP%20and%20EIS%201981-08.pdf

GMFMC. 1989. Amendment 1 to the reef fish fishery management plan. Gulf of Mexico Fishery Management Council, Tampa, Florida. 356 pp.
http://archive.gulfcouncil.org/Beta//GMFMCWeb/downloads/RF%20Amend-01%20Final%201989-08-rescan.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 14 to the fishery management plan for the reef fish fishery of the Gulf of Mexico, includes regulatory impact review, initial regulatory flexibility analysis, and environmental assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida. 89 pp. http://gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20Amend-14%20Final%201996-08.pdf

GMFMC. 2001. Final Generic Amendment Addressing the Establishment of Tortugas Marine Reserves in the following Fishery Management Plans of the Gulf of Mexico: Coastal migratory pelagics of the Gulf of Mexico and South Atlantic, Coral and Coral Reefs, Red Drum, Reef Fish, Shrimp, Spiny Lobster, Stone Crab. Gulf of Mexico Fishery Management Council Plan including Regulatory Impact Review, Regulatory Flexibility Analysis, and Environmental Impact Statement. Gulf of Mexico Fishery Management Council. Tampa, Florida. 194 pp. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/TORTAMENwp.pdf

GMFMC. 2003. Corrected amendment for a charter/vessel headboat permit moratorium amending the fishery management plans for: reef fish (Amendment 20) and coastal migratory pelagics (Amendment 14) including environmental assessment, regulatory impact review, and initial regulatory flexibility act. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/CBAmendmentFINAL-corrected.pdf

GMFMC. 2004a. Final environmental impact statement for the generic essential fish habitat Amendment 2 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. 118 pp. http://gulfcouncil.org/wp-content/uploads/Generic-Tortugas-Amend.pdf

GMFMC. 2004b. Final 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. 291 pp. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amend%2022%20Final%2070204.pdf

GMFMC. 2005. Generic Amendment 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 fishery of the Gulf of Mexico and South Atlantic, coral and coral reefs of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida. 106 pp.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf

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

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

GMFMC. 2008c. 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. 427 pp.
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 to the Reef Fish Fishery Management Plan to Set Total Allowable Catch for Red Snapper. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. 78 pp with appendices.

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

GMFMC. 2011b. 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.

GMFMC. 2011c. 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. 378 pp. http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_AmendmentSeptember%209%202011%20v.pdf

GMFMC. 2014a. Final Amendment 40 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – recreational red snapper sector separation. Gulf of Mexico Fishery Management Council, Tampa, Florida. 274 p. http://www.gulfcouncil.org/docs/amendments/RF%2040%20-%20Final%2012-17-2014.pdf

GMFMC. 2014b. Framework action: Recreational accountability measures for red snapper. Gulf of Mexico Fishery Management Council, Tampa, Florida. 106 p. http://www.gulfcouncil.org/docs/amendments/Final%20Recreational%20AMs%20for%20Red%20Snapper%2010-6-2014.pdf

GMFMC. 2015a. Final Amendment 28 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – red snapper allocation. Gulf of Mexico Fishery Management Council, Tampa, Florida. 302 p. http://gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Allocation%20-RF%20Amendment%2028.pdf

GMFMC. 2015b. Framework action: Red snapper quotas for 2015-2017+. Gulf of Mexico Fishery Management Council, Tampa, Florida. 66 p. http://gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Framework%20Action%20Set%202015-2017%20Quotas.pdf

GMFMC. 2016. Final Amendment 45 to the fishery management plan for the reef fish resources of the Gulf of Mexico: Revision of the red snapper recreational sector separation sunset State Management Program for 109 Chapter 7. References Recreational Red Snapper provision, including environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council, Tampa, Florida. 161 p. http://gulfcouncil.org/docs/amendments/RF%2045%20Final.pdf

GMFMC. 2017. Minimum Stock Size Threshold (MSST) Revision for Reef Fish Stocks with Existing Status Determination Criteria. Gulf of Mexico Fishery Management Council, Tampa, Florida. 124 p. http://gulfcouncil.org/wp-content/uploads/Final-Amendment-44-revised-MSST-GOM-Reef-Fish-update-2.pdf

GMFMC. 2018a. Framework action: Modification to the Recreational Red Snapper Annual Catch Target Buffers. Gulf of Mexico Fishery Management Council, Tampa, Florida. 93p. http://gulfcouncil.org/wp-content/uploads/Final-Draft-Red-Snapper-Recreational-ACT-Modification-110218-revised.pdf

GMFMC. 2018b. Final Amendment 9 to the Fishery Management Plan for the Coral and Coral Reefs of the Gulf of Mexico, U.S. Waters. Coral Habitat Areas Considered for Habitat Area of Particular Concern Designation in the Gulf of Mexico. Gulf of Mexico Fishery Management Council, Tampa, Florida. 266 p. http://gulfcouncil.org/wp-content/uploads/N-4b-Final-Coral-9-DEIS-06062018.pdf

GMFMC. 2019. Final Amendment 50A to the fishery management plan for the reef fish resources of the Gulf of Mexico:

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

Haensly, W. E., J. M. Neff, J. R. Sharp, A. C. Morris, M. F. Bedgood, and P. D. Beom 1982. Histopathology of *Pleuronectes platessa* from Aber Wrac'h and Aber Benoit, Brittany, France: long-term effects of the Amoco Cadiz crude oil spill. Journal of Fish Disease 5:365-391.

Hayes SA, Josephson E, Maze-Foley K, Rosel, PE, editors. 2016. US Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2016. NOAA Tech Memo NMFS NE 241; 274 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at /publications/ doi:10.7289/V5/TM-NEFSC-241

Heintz, R. A., J. W. Short, and S. D. Rice. 1999. Sensitivity of fish embryos to weathered crude oil: Part II. Increased mortality of pink salmon (*Oncorhynchus gorbuscha*) embryos incubating downstream from weathered Exxon *Valdez* crude oil. Environmental Toxicology and Chemistry 18(3):494–503.

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.

Hose, J.E., M.D. McGurk, G.D. Marty, D.E. Hinton, E.D Brown, and T.T. Baker. 1996. Sublethal effects of the (Exxon Valdez) oil spill on herring embryos and larvae: morphological, cytogenetic, and histopathological assessments, 1989–1991. Canadian Journal of Fisheries and Aquatic Sciences 53: 2355-2365.

Incardona, John P., L.D. Gardner, T.L. Linbo, T.L. Brown, A.J. Esbaugh, E.M. Mager, J.D. Stieglitz, B.L. French, J.S. Labenia, C.A. Laetz, M. Tagal, C.A. Sloan, A. Elizur, D.D. Benetti, M. Grosell, B.A. Block, and N.L. Scholz. 2014. Deepwater Horizon crude oil impacts the developing hearts of large predatory pelagic fish. Proceedings of the National Academy of Sciences Apr 2014, 111 (15) E1510-E1518.

Jacob, Steve, P. Weeks, B. Blount, and M. Jepson. 2013. Development and evaluation of social indicators of vulnerability and resiliency for fishing communities in the Gulf of Mexico. Marine Policy 37:86-95.

Jepson, Michael and Lisa 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.

Kennedy, V., Twilley, R. Klypas, J. Cowan, J. and Hare, S. 2002. Coastal and marine ecosystems & global climate change: Potential effects on U.S. resources. Prepared for the Pew Center on Global Climate Change

Khan, R. A. and J. W. Kiceniuk. 1984. Histopathological effects of crude oil on Atlantic cod following chronic exposure. Canadian Journal of Zoology 62:2038-2043.

Khan R.A. and J.W. Kiceniuk. 1988. Effect of petroleum aromatic hydrocarbons on monogeneids parasitizing Atlantic cod, *Gadus morhua*. Bulletin of Environmental Contamination and Toxicology 41: 94-100.

Khan, R. A. 1990. Parasitism in marine fish after chronic exposure to petroleum hydrocarbons in the laboratory and to the Exxon *Valdez* Oil Spill. Bulletin of Environmental Contamination and Toxicology 44:759-763.

Kiceniuk J. W. and R. A. Khan. 1987. Effect of petroleum hydrocarbons on Atlantic cod, *Gadus morhua*, following chronic exposure. Canadian Journal of Zoology 65:490-494.

Liese, C. and D. W. Carter. 2011. Collecting economic data from the for-hire fishing sector: lessons from a cost and earnings survey of the Southeast U.S. charter boat industry. *In*: Beard Jr., T. D., A. J. Loftus, and R. Arlinghaus (editors). The Angler and the Environment. American Fisheries Society, Bethesda, MD. 14 pp.

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

Mendelssohn, Irving A., G.L. Andersen, D.M. Baltz, R.H. Caffey, K.R. Carman, J.W. Fleeger, S.B. Joye, Q. Lin, E. Maltby, E.B. Overton, L.P. Rozas; Oil Impacts on Coastal Wetlands: Implications for the Mississippi River Delta Ecosystem after the Deepwater Horizon Oil Spill, BioScience, Volume 62, Issue 6, 1 June 2012, Pages 562–574.

Murawski, S. A., W. T. Hogarth, E. B. Peebles, and L. Barbieri. 2014. Prevalence of external skin lesions and polycyclic aromatic hydrocarbon concentrations in Gulf of Mexico fishes, post-Deepwater Horizon. Transactions of the American Fisheries Society 143(4):1084-1097.

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

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

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.

NMFS. 2017. 2017 Gulf of Mexico Red Snapper Recreational Season Length Estimates. NOAA Fisheries, Southeast Regional Office, St. Petersburg FL. NOAA Technical Memorandum SERO-LAPP/DM-2017-01. 42 pp. http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/documents/pdfs/gulf_red_snapper_rec_season_2017.pdf

NODC. 2012. AVHRR Pathfinder version 5 4km global sea surface temperature (SST) seasonal and annual day-night climatologies for 1982-2009 for the Gulf of Mexico (NODC Accession 0072888). Version 3.3. National Oceanographic Data Center, NOAA. Dataset. Accessed 9 August 2018.

Osgood, K. E. (ed.) 2008. Climate impacts on U. S. living marine resources: National Marine Fisheries Services concerns, activities and needs. Silver Spring, Maryland, National Oceanic and Atmospheric Administration, 118pp. (NOAA Technical Memorandum NMFS-F/SPO, 89).

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

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 pp. Available at: http://www.laseagrant.org/wp-content/uploads/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, Silver Spring, Maryland; NMFS, Galveston, Texan; and GMFMC, Tampa, Florida (available at http//biogeo.nos.noaa.gov/projects/efh/gom-efh/)

SEDAR 31. 2013. Stock assessment report for Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://sedarweb.org.

SEDAR 31 Update. 2014. Update stock assessment report for Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://sedarweb.org.

SEDAR 52. 2018. Stock assessment report for Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://sedarweb.org.

Short, J. 2003. Long-term effects of crude oil on developing fish: Lessons from the Exxon *Valdez* oil spill. Energy Sources 25(6):509-517.

Sindermann, C.J. 1979. Pollution-associated diseases and abnormalities of fish and shellfish: a review. Fisheries Bulletin 76: 717-749.

Simmons, C. M., and S. T. Szedlmayer. 2012. Territoriality, reproductive behavior, and parental care in gray triggerfish, *Balistes capriscus*, from the northern Gulf of Mexico. Bulletin of Marine Science 88:197-209.

Solangi, M.A. and R.M. Overstreet. 1982. Histopathological changes in two estuarine fishes, *Menidia beryllina* (Cope) and *Trinectes maculatus* (Bloch and Schneider), exposed to crude oil and its water-soluble fractions. Journal of Fish Disease 5: 13-35.

Swedmark, M., A. Granmo, and S. Kollberg. 1973. Effects of oil dispersants and oil emulsions on marine animals. Water Research 7(11):1649-1672.

Tarnecki, J.H. and W.F. Patterson III. 2015. Changes in Red Snapper Diet and Trophic Ecology. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 7: 135–147.
Whitehead, A., B. Dubansky, C. Bodinier, T. Garcia, S. Miles, C. Pilley, V. Raghunathan, J. L. Roach, N. Walker, R.B. Walter, C. D. Rice, F. Galvez. 2012. Genomic and physiological footprint of the Deepwater Horizon oil spill on resident marsh fishes. Proceedings of the National Academy of Sciences Dec 2012, 109 (50) 20298-20302

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

Wilson, D., R. Billings, R. Chang, H. Perez, and J. Sellers. 2014. Year 2011 Gulfwide emissions inventory study. US Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2014-666.

APPENDIX A: ACL/ACT CONTROL RULE WORKSHEETS

A.1 ACT/ACT Control Rule for the Private Angling and For-hire Components of the Recreational Sector for Gulf of Mexico Red Snapper

ACL/ACT Buffer Spreadsheet			version 4.1 - April 2011	**Red Snapper**	
sum of points	6.5		**Private Angler**	**Recreational - 2018/w 201**	
max points	8.5		Buffer between ACLand ACT (or ABC and ACL)	Unweighted	15
Min. Buffer	**0**	**min. buffer**	User adjustable	Weighted	**18**
Max Unw.Buff	19	max unwt. Buff			
Max Wtd Buff	**25**	**max wtd. buffer**	User adjustable		
	Component	Element score	Element	Selection	Element result
	Stock assemblage	0	This ACL/ACT is for a single stock.	x	0
		1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
	Ability to	0	Catch limit has been exceeded 0 or 1 times in last 4 years		4.5
	Constrain Catch	1	Catch limit has been exceeded 2 or more times in last 4 years	x	
			For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL	3.5	
			Not applicable (there is no catch limit)		
			Apply this component to recreational fisheries, not commercial or IFQ fisheries		
		0	Method of absolute counting		1
	Precision of	1	MRIP proportional standard error (PSE) <= 20	x	
	Landings Data	2	MRIP proportional standard error (PSE) > 20		
	Recreational		Not applicable (will not be included in buffer calculation)		
			Apply this component to commercial fisheries or any fishery under an IFQ program		
	Precision of	0	Landings from IFQ program		not applicable
		1	Landings based on dealer reporting		
	Landings Data	2	Landings based on other		
	Commercial		Not applicable (will not be included in buffer calculation)	x	
	Timeliness	0	In-season accountability measures used or fishery is under an IFQ		1
		1	In-season accountability measures not used	x	
				Sum	6.5
	Weighting factor				
		Element weight	Element	Selection	Weighting
	Overfished status	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.2
		0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).		
		0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).	x	
		0.3	4. Stock is overfished, below MSST.		
		0.3	5. Status criterion is unknown.		
Year	Catch	ACL	Over/Under %		
2014	2,207,334	3,110,030	-29%	Assume AM40 allocations	
2015	3,894,409	4,043,000	-4%	Private angler component	
2016	5,187,901	4,150,000	25%	Private angler component	
2017	6,518,789	3,755,094	74%	Private angler component	
			Maximum overage in years with sector separation = 74% = 3.5 points		
			ACL exceeded 2 times in last 2 years		
			Data Source ACL Data set SERO 9 May 2018		

Figure A.1.1: ACL/ACT Control Rule for the private angling component of the recreational sector for Gulf of Mexico red snapper. 2017 landings are preliminary at the time of this analysis: 9 May 2018.

ACL/ACT Buffer Spreadsheet			version 4.1 - April 2011	**Red Snapper**	
sum of points	2		**For-Hire**	**Recreational - 2018/w 201**	
max points	5.0		Buffer between ACLand ACT (or ABC and ACL)	Unweighted	8
Min. Buffer	**0**	**min. buffer**	User adjustable	Weighted	**9**
Max Unw.Buff	19	max unwt. Buff			
Max Wtd Buff	**25**	**max wtd. buffer**	User adjustable		
	Component	Element score	Element	Selection	Element result
	Stock assemblage	0	This ACL/ACT is for a single stock.	x	0
		1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
	Ability to	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	0
	Constrain Catch	1	Catch limit has been exceeded 2 or more times in last 4 years		
			For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL	0.0	
			Not applicable (there is no catch limit)		
			Apply this component to recreational fisheries, not commercial or IFQ fisheries		
		0	Method of absolute counting		1
	Precision of	1	MRIP proportional standard error (PSE) <= 20	x	
	Landings Data	2	MRIP proportional standard error (PSE) > 20		
	Recreational		Not applicable (will not be included in buffer calculation)		
			Apply this component to commercial fisheries or any fishery under an IFQ program		
	Precision of	0	Landings from IFQ program		not applicable
		1	Landings based on dealer reporting		
	Landings Data	2	Landings based on other		
	Commercial		Not applicable (will not be included in buffer calculation)	x	
	Timeliness	0	In-season accountability measures used or fishery is under an IFQ		1
		1	In-season accountability measures not used	x	
				Sum	2
	Weighting factor				
		Element weight	Element	Selection	Weighting
	Overfished status	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.2
		0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).		
		0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).	x	
		0.3	4. Stock is overfished, below MSST.		
		0.3	5. Status criterion is unknown.		
Year	Catch	ACL	Over/Under %		
2014	1,618,202	2,279,970	-29%	Assume AM40 allocations	
2015	2,071,733	2,964,000	-30%	Charter For-hire componen	
2016	2,134,005	2,434,000	-12%	Charter For-hire componen	
2017	2,161,704	2,848,000	-24%	Charter For-hire componen	
			No ACL overage in years with sector separation - 0 points		
			ACL exceeded 0 times in last 3 years		
			Data Source: ACL Data set SERO 9 May 2018		

Figure A.1.2: ACL/ACT Control Rule for the federal for-hire component of the recreational sector for Gulf of Mexico red snapper. 2017 landings are preliminary at the time of this analysis: 9 May 2018.

APPENDIX B: PUBLIC COMMENTS

APPENDIX C. 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 management of stocks included in fishery management plans in federal waters of the exclusive economic zone. However, 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 include the Endangered Species Act and Marine Mammals Protection Act (Section 3.3), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Section 3.5.2). Other applicable laws are summarized below.

Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the Act, 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 Act also establishes a 30-day waiting period from the time a final rule is published until it takes effect.

Coastal Zone Management Act

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

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

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

Specifically, the Act directs the Office of Management and Budget 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.

A summary of NMFS findings is provided in Section 3.2 of this document.

Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-667e) provides the basic authority for the USFWS's involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It also requires federal agencies that construct, license or permit water resource development projects to first consult with the Service (and NMFS in some instances) and State fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts.

The fishery management actions in the Gulf of Mexico are not likely to affect wildlife resources pertaining to water resource development as the economic exclusive zone is from the state water boundary extending to 200 nm from shore.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, (Public Law 89-665; 16 U.S.C. 470 *et seq.*) is intended to preserve historical and archaeological sites in the United States of America. Section 106 of the NHPA requires federal agencies to evaluate the impact of all federally funded or permitted projects for sites listed on, or eligible for listing on, the National Register of Historic Places and aims to minimize damage to such places.

Typically, fishery management actions in the Gulf of Mexico are not likely to affect historic places with exception of the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places. Mutton snapper and gag do not typically occur off Texas; therefore, the proposed actions are not likely to increase fishing activity above previous years. Thus, no additional impacts to the *U.S.S. Hatteras* would be expected.

Executive Orders (E.O.)

E.O. 12630: Takings

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

E.O. 12962: Recreational Fisheries

This E.O. 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 (NRFCC) 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 NRFCC 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 E.O. requires NMFS and the USFWS to develop a joint agency policy for administering the ESA.

E.O. 13089: Coral Reef Protection

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

Regulations are already in place to limit or reduce habitat impacts within the Flower Garden Banks National Marine Sanctuary. Additionally, NMFS approved and implemented Generic Amendment 3 for Essential Fish Habitat (GMFMC 2005), which established additional habitat areas of particular concern (HAPCs) and gear restrictions to protect corals throughout the Gulf of Mexico. There are no implications to coral reefs by the actions proposed in this amendment.

E.O. 13132: Federalism

The E.O. on Federalism requires agencies in formulating and implementing policies, to be guided by the fundamental Federalism principles. The E.O. 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 E.O. is relevant to FMPs and amendments given the overlapping authorities of NMFS, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes and local entities (international too).

No Federalism issues were identified relative to the action to modify the management of mutton snapper and gag. Therefore, consultation with state officials under Executive Order 12612 was not necessary. Consequently, consultation with state officials under Executive Order 12612 remains unnecessary.

E.O. 13158: Marine Protected Areas

This E.O. 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, HAPCs, and gear-restricted areas in the eastern and northwestern Gulf of Mexico. The existing areas are entirely within federal waters of the Gulf of Mexico. They do not affect any areas reserved by federal, state, territorial, tribal or local jurisdictions.