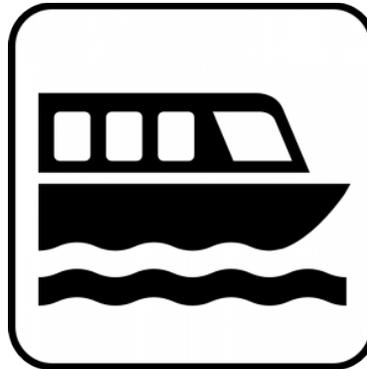


# **Framework Action to Adjust Recreational Charter-for-Hire Red Snapper Management Measures**



## **Draft Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico**

**Including Environmental Assessment,  
Regulatory Impact Review,  
and Regulatory Flexibility Act Analysis**

**January 2015**



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# ENVIRONMENTAL ASSESSMENT COVER SHEET

Framework Action to Adjust the Red Snapper Recreational Bag Limit on For-Hire Vessels in the Gulf of Mexico including Environmental Assessment, Fishery Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

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**Proposed actions:** The Gulf of Mexico Fishery Management Council developed this framework action to address the recreational bag limit for red snapper landed in the Gulf of Mexico aboard charter vessels and headboats. The Council considered lowering the bag limit for this component of the recreational sector from two fish per person to one fish per person or to one fish per two people.

## Responsible Agencies and Contact Persons

Gulf of Mexico Fishery Management Council 2203 North Lois Avenue, Suite 1100 Tampa, Florida 33607 Steven Atran ( <a href="mailto:Steven.Atran@gulfcouncil.org">Steven.Atran@gulfcouncil.org</a> )	813-348-1630 813-348-1711 (fax) <a href="mailto:gulfcouncil@gulfcouncil.org">gulfcouncil@gulfcouncil.org</a> <a href="http://www.gulfcouncil.org">http://www.gulfcouncil.org</a>
National Marine Fisheries Service Southeast Regional Office 263 13 <sup>th</sup> Avenue South St. Petersburg, Florida 33701 Susan Gerhart ( <a href="mailto:Susan.Gerhart@noaa.gov">Susan.Gerhart@noaa.gov</a> )	727-824-5305 727-824-5308 (fax) <a href="http://sero.nmfs.noaa.gov">http://sero.nmfs.noaa.gov</a>

## ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
AMs	Accountability measures
AP	Advisory Panel
APA	Administrative Procedures Act
Council	Gulf of Mexico Fishery Management Council
CPUE	Catch per unit effort
CS	consumer surplus
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential fish habitat
EIS	Environmental impact statement
EJ	Environmental justice
ESA	Endangered Species Act
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
HAPC	Habitat area of particular concern
IFQ	individual fishing quota
IRFA	Initial regulatory flexibility analysis
LOF	List of fisheries
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MRFSS	Marine Recreational Fisheries Survey and Statistics
MRIP	Marine Recreational Information Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
nm	nautical mile
NOR	net operating revenues
OFL	Overfishing level
OMB	Office of Management and Budget
PRA	Paperwork Reduction Act
PS	Producer surplus
RA	Regional Administrator
RFA	Regulatory Flexibility Act of 1980
RIR	Regulatory impact review
Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment and Review

SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SRHS	Southeast Region Headboat Survey
SSC	Scientific and Statistical Committee
WTP	willingness to pay
ww	whole weight

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# CHAPTER 1. INTRODUCTION

## 1.1 Background

Recreational red snapper harvest in the Gulf of Mexico (Gulf) has been managed using bag limits since 1990. The initial bag limit was seven fish. It was reduced to five fish in 1995, four fish in 1998, and two fish in 2007 (Table 1.1.1)

### *Gulf of Mexico Fishery Management Council*

- Responsible for conservation and management of fish stocks
- Consists of 17 voting members, 11 of whom are appointed by the Secretary of Commerce, the National Marine Fisheries Service Regional Administrator, and 1 representative from each of the 5 Gulf states marine resource agencies
- Responsible for developing fishery management plans and amendments, and for recommending actions to National Marine Fisheries Service for implementation

### *National Marine Fisheries Service*

- Responsible for conservation and management of fish stocks
- Responsible for compliance with federal, state, and local laws
- Approves, disapproves, or partially approves Council recommendations
- Implements regulations

The Sustainable Fisheries Act of 1996 added a provision to the Magnuson-Stevens Fishery Conservation and Management Act that specifically addressed catch limits for Gulf of Mexico red snapper. This provision requires separate quotas for recreational fishing (which includes charter fishing) and commercial fishing that, when reached, result in a prohibition on the retention of fish caught during recreational fishing and commercial fishing, respectively, for the remainder of the fishing year. The recreational quota was first implemented in 1997. Initially, the recreational season opened on January 1, and NMFS determined a closing date during the season based on reported landings from the first two or three waves of landings reported in the Marine Recreational Fishery Statistics Survey plus projected landings for the remainder of the fishing year. This resulted in the first red snapper recreational closed season. The recreational season closed on November 27, 1997 resulting in a 330 day season. In subsequent years, the recreational season closed on October 1, 1998 and August 29, 1999.

The practice of announcing season closure dates during the season created disruptions in the recreational fishing industry as charter vessels would have to cancel trips reserved months in advance. Consequently, beginning in 2000, a fixed recreational season was adopted from April 21 through October 31 of each year. This 194 day season was projected to be the number of

days needed to fill the 4.47 million pound (mp) whole weight (WW) recreational quota that was in effect at the time. This season remained in effect from 2000 through 2007, during which there were seven years with harvests over the quota and two years with harvest less than the quota (Table 1.1.1). In 2007, quota reductions were implemented as part of a new red snapper rebuilding plan. With subsequent annual adjustments to the quota, in 2008 NMFS began to project the season length each year prior to the start of the season, with an opening date of June 1 and a closing date determined by the projections. This resulted in progressively shorter seasons, which prompted some state agencies to adopt extended and inconsistent recreational seasons in state waters. Consequently, catches continued to exceed the quota in most years (Table 1.1.1). Since the quota is based on total catch regardless of where the fish are caught, the state actions resulted in even shorter seasons in federal waters, culminating to date in a nine day federal season in 2014.

A management measure adopted in 2009 as part of Amendment 30B required that federally permitted reef fish vessels abide by federal regulations when in state waters if the federal regulations were more restrictive than state regulations. Because of this measure, federally permitted charter vessels and headboats are unable to participate in the extended state seasons. In October 2014, the Council approved a sector separation plan through Amendment 40, which has been submitted to NMFS and is currently under review. Amendment 40 would establish separate quotas for the federally permitted charter vessels and headboats, and the private anglers. Amendment 40 is intended to stabilize the federal for-hire component's participation in the sector, and provide a basis for flexible management that can be tailored to the needs of each component, thereby reducing the likelihood for recreational quota overruns which could negatively impact the rebuilding of the red snapper stock.

Representatives of the charter vessel and headboat industry asked the Council at the October 2014 meeting to consider a reduction in the for-hire bag limit from two red snapper to one red snapper. This change would allow the for-hire industry to have an extended red snapper season while allowing their customers to experience catching a red snapper along with other species. During the meeting of the Council's Ad Hoc Red Snapper Charter-for-Hire Advisory Panel (AP) held December 2-3, 2014, the AP endorsed a one fish bag limit for the for-hire sector. The AP also requested a split season with a only a portion of the for-hire sector allocation (e.g., two thirds of the allocation) released for the June 1 opening, and any remaining allocation to be allowed in a fall opening once the June catches were reported. This would help to assure that the charter-for-hire sector does not exceed their allocation in June, and would possibly allow a supplemental for-hire season in the fall. Both the bag limit reduction and the split season would apply only to the for-hire component. However, under section 407(d) of the Magnuson-Stevens Act, the red snapper recreational quota includes both private and for-hire fishing. When the total recreational landing from private and for-hire fishing combine reach, or are projected to reach, the quota, both components of the recreational sector will be closed to red snapper fishing for the remainder of the fishing year, even if one of the components still has unused allocation remaining.

**Table 1.1.1.** Gulf red snapper recreational landings vs. allocation/quota and days open, bag limit, and minimum size limits 1986-2014. Landings are in mp ww. Minimum size limits are in inches total length. Recreational allocations began in 1991, and became quotas in 1997. Values highlighted in red are those where landings exceeded the quotas.

Year	Allocation/ Quota	Actual landings	Difference	% over or under	Days open	Bag limit	Minimum size limit
1986	na	3.491	na		365	none	13
1987	na	2.090	na		365	none	13
1988	na	3.139	na		365	none	13
1989	na	2.940	na		365	none	13
1990	na	1.625	na		365	7	13
1991	1.96	2.917	+0.957	+49%	365	7	13
1992	1.96	4.618	+2.658	+136%	365	7	13
1993	2.94	7.161	+4.221	+144%	365	7	13
1994	2.94	6.076	+3.136	+107%	365	7	14
1995	2.94	5.464	+2.524	+86%	365	5	15
1996	4.47	5.339	+0.869	+19%	365	5	15
1997	4.47	6.804	+2.334	+52%	330	5	15
1998	4.47	4.854	+0.384	+9%	272	4	15
1999	4.47	4.972	+0.502	+11%	240	4	15
2000	4.47	4.750	+0.280	+6%	194	4	16
2001	4.47	5.252	+0.782	+17%	194	4	16
2002	4.47	6.535	+2.065	+46%	194	4	16
2003	4.47	6.105	+1.635	+37%	194	4	16
2004	4.47	6.460	+1.990	+45%	194	4	16
2005	4.47	4.676	+0.206	+5%	194	4	16
2006	4.47	4.131	-0.339	-8%	194	4	16
2007	3.185	5.809	+2.624	+82%	194	2	16
2008	2.45	4.056	+1.606	+66%	65	2	16
2009	2.45	5.597	+3.147	+128%	75	2	16
2010	3.403	2.651	-0.752	-22%	53 + 24 = 77	2	16
2011	3.866	6.734	+2.868	+74%	48	2	16
2012	3.959	7.524	+3.565	+90%	46	2	16
2013	5.390	9.639	+4.249	+79%	42	2	16
2014	5.390 4.312 ACT	tba			9	2	16

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

## 1.2 Purpose and Need

The purpose of this action is to extend the Gulf of Mexico red snapper recreational fishing season for federally permitted charter vessels and headboats by adjusting the red snapper for-hire recreational bag limit. The need for this action is to provide more recreational fishing opportunities to anglers as well as flexibility to for-hire fishing businesses in their operations, while continuing to prevent overfishing and achieve optimum yield in the reef fish fishery.

## 1.3 History of Management

This history of management only covers events pertinent to red snapper fishing in the Gulf. A summary of red snapper management through 2006 can be found in Amendment 27/14 (GMFMC 2007) and in Hood et al. (2007), and is incorporated herein by reference. This section focuses on management actions since 2007 with a review of changes in red snapper bag limits. Information on management of the reef fish fishery as a whole can be obtained by contacting the Council.

**Amendment 26** (with SEIS, RIR, and IRFA), effective on January 1, 2007, established an individual fishing quota program for the commercial red snapper fishery. Quota shares are freely transferable to other reef fish permit holders during the first five years following implementation and to anyone thereafter.

An interim rule, published on April 2, 2007, reduced the red snapper total allowable catch to 6.5 mp, resulting in a commercial quota of 3.315 mp and a recreational quota of 3.185 mp; reduced the red snapper recreational bag limit from four fish to two fish per person per day; prohibited the captain and crew of for-hire vessels from retaining the recreational bag limit; reduced the commercial minimum size limit from 15-inches to 13-inches total length; and established a target red snapper bycatch mortality reduction goal for the shrimp fishery that equates to 50% of the bycatch mortality that occurred during 2001-2003 and a level of shrimp effort equal to that observed in the fishery in 2005.

**Joint Reef Fish FMP Amendment 27/Shrimp FMP Amendment 14**, (with EIS, RIR, and IRFA) was implemented February 28, 2008, except for reef fish bycatch reduction measures that became effective on June 1, 2008. This amendment addressed overfishing and stock rebuilding for red snapper. The amendment reduced total allowable catch to 5.0 mp (2.55 mp and 2.45 mp commercial recreational quotas respectively). For the recreational sector, the rule implemented a June 1 through September 30 fishing season in conjunction with a 2.45 mp recreational quota, 16-inch minimum size limit, two fish bag limit, and zero bag limit for captain and crew of for-hire vessels. The implementing regulations for this amendment created the June 1 through September 30 season by establishing fixed closed seasons of January 1 through May 31 and October 1 through December 31. The amendment also required the use of non-stainless steel circle hooks when using natural baits to fish for Gulf reef fish effective June 1, 2008, and required the use of venting tools and dehooking devices when participating in the commercial or recreational reef fish fisheries effective June 1, 2008. In addition, the amendment established a 74% reduction in shrimp effort compared to average effort levels of 2001-2003, and possible closed areas should this target not be met. This action replaced the dependence on bycatch reduction devices by the shrimp fishery to reduce red snapper bycatch.

The Sustainable Fisheries Act required that the Regional Administrator close the recreational red snapper season when the quota is projected to be met. When Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007) was submitted to NMFS, the Council requested that the five Gulf states adopt compatible regulations in state waters. Florida adopted a compatible two fish bag limit, but maintained its state red snapper fishing season of April 15 through October 31, 78 days longer than the federal fishing season. Texas also maintained its four fish bag limit and

year-round fishing season in its state waters. Prior to the start of the 2008 season, NMFS recalculated its projections for recreational red snapper catches in light of the state regulations, and projected that there would be a 75% probability that the recreational quota would not be exceeded if the season closed on August 5. As a result, NMFS took action to set the 2008 season to be June 1 to August 5.

**Amendment 30B** (with EIS, RIR, and IRFA) was implemented May 2009. While this amendment was primarily directed toward management of gag and red grouper, it included a management action which required that all vessels with federal commercial or charter reef fish permits must comply with the more restrictive of state or federal reef fish regulations when fishing in state waters

A February 2010 regulatory amendment (GMFMC 2010a) increased the red snapper total allowable catch from 5.0 mp to 6.945 mp, which increased the recreational quota from 2.45 mp to 3.403 mp. However, NMFS estimated that in 2009, the recreational sector overharvested its quota by approximately 75%. In recalculating the number of days needed to fill the recreational quota, even with the quota increase, NMFS projected that the 2010 season would need to be shortened to June 1 through July 24, and published notice of those dates prior to the start of the recreational fishing season.

In April 2010, the Deepwater Horizon MC252 deep-sea drilling rig exploded and sank off the coast of Louisiana. Because of the resulting oil spill, approximately one-third of the Gulf was closed to fishing for much of the summer months. The direct loss of fishing opportunities due to the closure, plus the reduction in tourism throughout the coastal Gulf, resulted in a much lower catch than had been projected. After the recreational season closed on July 24, NMFS estimated that 2.3 mp of the 3.4 mp recreational quota remained unharvested (NMFS 2010a). However, due to the fixed October 1 to December 31 closed season, NMFS could not reopen the recreational season without an emergency rule to suspend the closure. Consequently, the Council requested an emergency rule to provide the Regional Administrator with the authority to reopen the recreational red snapper season. After considering various reopening scenarios, the Council requested that the season be reopened for eight consecutive weekends (Friday, Saturday and Sunday) from October 1 through November 21 (24 fishing days).

In January 2011, the Council submitted a regulatory amendment (GMFMC 2011a) to NMFS to increase the red snapper total allowable catch to 7.185 mp, with a 3.521 mp recreational quota and a 3.664 mp commercial quota. The final rule implemented the increase and established a 48-day recreational red snapper season that was June 1 through July 18.

On August 12, 2011, NMFS published an emergency rule that, in part, increased the recreational red snapper quota by 345,000 pounds for the 2011 fishing year and provided the agency with the authority to reopen the recreational red snapper season later in the year, if the recreational quota had not been filled by the July 19 closing date. However, in August of that year, based on headboat data plus charterboat and private recreational landings through June, NMFS calculated that 80% of the recreational quota had been caught. With the addition of July landings data plus Texas survey data, NMFS estimated that 4.4 to 4.8 mp were caught, well above the 3.865 mp quota. Thus, no unused quota was available to reopen the recreational fishing season.

A March 2012 regulatory amendment (GMFMC 2012) set the 2012 quotas for commercial and recreational red snapper harvest at 4.121 mp and 3.959 mp respectively based on a recent population assessment which showed that overfishing has ended. The regulatory amendment also eliminated the fixed recreational red snapper closed season of October 1 - December 31. By eliminating the closure date, NMFS can re-open the recreational harvest for red snapper if any remaining quota is available, without the delay of additional rulemaking. On May 30, 2012, NMFS published a final rule to increase the commercial and recreational quotas and establish the 2012 recreational red snapper fishing as June 1 through July 11. However, the north-central Gulf experienced extended severe weather during the first 26 days of the 2012 recreational red snapper fishing season, including Tropical Storm Debby. Due to the severe tropical weather, the season was extended by six days and closed on July 17.

On March 25, 2013, an emergency rule [78 FR 17882] was published in the Federal Register giving NMFS the authority to set separate closure dates for the recreational red snapper season in federal waters off individual Gulf of Mexico states. The closure dates would depend on whether state regulations were consistent with federal regulations for the recreational red snapper season length or bag limit.

A March 2013 framework action<sup>1</sup> (GMFMC 2013a) modified the 2013 commercial and recreational red snapper quotas to 4.315 mp and 4.145 mp respectively. Based on the emergency rule to allow separate closure dates, NMFS announced that the recreational red snapper season in federal water would open on June 1. Off Mississippi and Alabama, which had consistent state regulations, the season would be 34 days and close on July 5. The other Gulf states had inconsistent state regulations, and the seasons were announced as follows. Off Texas, the season would be 17 days and close on June 18. Off Louisiana, the season would be 24 days and close on June 25. Off Florida, the season would be 26 days and close on June 27.

Texas and Louisiana filed a legal challenge to the separate closure dates, and on May 31, 2013, the U.S. District Court in Brownsville, Texas, set aside the emergency rule. As a result of this Court decision, the federal recreational red snapper season was changed to make it the same in federal waters off all five Gulf states. Considering the catches expected later in the year during the extended state-water seasons off Texas, Louisiana, and Florida, NMFS established a Gulf-wide federal recreational red snapper season at 28 days long, opening on June 1 and closing to recreational red snapper harvest at 12:01 a.m., June 29, 2013.

A July 2013 framework action (GMFMC 2013b) increased the 2013 recreational quota from 4.145 mp to 5.39 mp and the commercial quota from 4.315 mp to 5.61 mp. The increase in commercial quota was distributed to individual fishing quota shareholders on or shortly after October 1. The increase in the recreational quota was implemented by re-opening federal waters to red snapper recreational fishing for 14 days beginning on October 1, 2013, at 12:01 a.m. and closing on October 15, 2013, at 12:01 a.m.

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<sup>1</sup> Prior to 2013, regulatory actions made under the Reef Fish framework procedure for setting total allowable catch, or the generic framework procedure in the Generic Annual Catch Limits/Accountability Measures Amendment, were referred to as either framework actions or regulatory amendments. Beginning in 2013, such actions were referred to only as framework actions.

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 NMFS failed to require adequate accountability measures for the recreational sector, failed to prohibit the retention of fish after the recreational quota had been harvested, and failed to use the best scientific information available when determining whether there should be a 2013 fall fishing season. In response to the Court's decision and to reduce the probability of the recreational sector exceeding its quota, the Council requested, through an emergency rule, that NMFS implement an annual catch target (ACT) that would be used to set the season length that was 20% less than the 2014 recreational quota. The emergency rule, published on May 15, 2014 [79 FR 27768], resulted in a recreational ACT of 4.312 million pounds whole weight and, after taking into consideration inconsistent state regulations, a 9-day federal recreational red snapper season, opening at 12:01 a.m., June 1, and closing at 12:01 a.m., on June 10.

An October 2014 framework action (GMFMC 2014a) proposes to establish a permanent recreational red snapper ACT that is 20% less than the recreational quota. The framework action also proposes to establish a recreational quota overage adjustment where, while red snapper is under a rebuilding program, if the recreational red snapper quota is exceeded, the overage would be deducted from the recreational red snapper quota in the following season unless the best scientific information available determines that a greater, lesser, or no overage adjustment is necessary. The ACT would also be adjusted to maintain the established percent buffer. A proposed rule to implement this framework action was published on November 21, 2014 [79 FR 69418].

## CHAPTER 2. MANAGEMENT ALTERNATIVES

### 2.1 Action 1 – Red Snapper Bag Limit for Charter Vessels and Headboats

**Alternative 1:** No Action. The red snapper bag limit for charter vessels and headboats remains at two fish per person per day.

**Alternative 2:** Set the red snapper bag limit for charter vessels and headboats at one fish per person per day.

**Alternative 3:** Set the red snapper bag limit for charter vessels and headboats at one fish for every two anglers.

Note: Implementation of this action is contingent upon implementation of the sector separation provision in Amendment 40. If sector separation terminates, then the bag limit adopted in this action will also end. The red snapper bag limit for charter-for-hire vessels will be the same as for private vessels, unless modified in a subsequent regulatory action.

#### **Discussion:**

The alternatives in this action consider reducing the red snapper bag limit for anglers fishing from federally permitted for-hire vessels (charter vessels and headboats) as a way to extend the fishing season for that component of the recreational red snapper sector. The red snapper bag limit for the private angler component of the recreational sector is not affected by the action in this amendment and would remain at two fish per person per day. The pending establishment of for-hire vessels (charter vessels and headboats) and private recreational boats as separate components of the recreational red snapper sector allows the flexibility to establish regulations specific to each component that may result in seasons of different lengths.

**Alternative 1** leaves the for-hire red snapper bag limit at two fish, the same bag limit as the private recreational component. Fifty-seven percent of headboat anglers, 65% of west Florida through Mississippi charter anglers, and 95% of Louisiana charter anglers landed the two fish bag limit in 2014. Seventy-four percent of Texas charter anglers landed the two fish bag limit in 2013. The lengths of the recreational red snapper seasons are projected by NMFS in advance of the season based on past fishing patterns and projected changes in the abundance and average size of red snapper caught by recreational anglers. This alternative provides the shortest for-hire

season, but allows anglers on for-hire vessels to catch the same bag limit as fishermen on private recreational vessels.

**Alternative 2** reduces the red snapper bag limit on for-hire vessels to one fish. Eighty percent of headboat anglers, 83% of west Florida through Mississippi charter anglers, and 100% of Louisiana charter anglers landed the two fish bag limit in 2014. One hundred percent of Texas charter anglers landed the two fish bag limit in 2013. For qualified for-hire vessels on trips lasting more than 24 hours, a double bag limit, or two fish, would be allowed. With a reduced bag limit, the catch rate would be reduced, and the number of days needed to catch the for-hire quota would be greater than under **Alternative 1**. This alternative is projected to increase the season length for the for-hire component of the recreational sector by as much as 63% assuming no high-grading occurs (Table 2.1a) or by 42% if the average weight of a retained red snapper increases by an average of one pound due to high-grading (Table 2.1b). Anglers on for-hire vessels typically catch a variety of species in addition to red snapper, including other snapper species, groupers, and triggerfish. Thus vessel operators can still provide a multi-species fishing trip that includes red snapper. However, with only a one fish red snapper limit, there could be an increased incentive to high-grade (discard a smaller fish in order to retain a larger fish).

**Alternative 3** would limit red snapper harvest on a for-hire vessel to 1 fish for every two passengers. This alternative is projected to increase the season length for the for-hire component of the recreational sector by 160% assuming no high-grading occurs (Table 2.1a) or by 127% if the average weight of a retained red snapper increases by an average of one pound due to high-grading (Table 2.1b). This fractional bag limit approach was considered but rejected for greater amberjack in Amendment 30A (GMFMC 2008). At that time, public hearing and Reef Fish AP comments indicated fractional bag limits were not an acceptable way to manage the recreational fishery, and impossible to enforce. It is included in this action because it is a reasonable alternative to achieve a longer fishing season. This alternative would allow the longest for-hire red snapper season, but would require that some passengers be allowed to retain a red snapper while prohibiting others from retaining any bag limit, which would be particularly problematic for anglers fishing on headboats.

**Table 2.1a.** Percent change in for-hire red snapper landings (excluding HB Collaborative vessels) and the corresponding percent change in season length. Assumes no high-grading occurs.

Bag Limit	Percent Change in non-HB Collab landings	% Change in Charter + Non-HBC Collab Season Length
2	0%	0%
1.5	-18%	22%
1	-39%	63%
0.5	-61%	160%

Source: NMFS Southeast Regional Office, December 15, 2014. Analytical methods are described in SERO-LAPP-2012-11. Data inputs included preliminary 2014 Headboat, MRIP, and LA Creel data, and 2013 TPWD catch-effort data.

**Table 2.1b.** Percent change in for-hire red snapper landings (excluding HB Collaborative vessels) and the corresponding percent change in season length. Assumes average weight of red snapper would be 1 lb greater than the 2014 average weight of 6.90 lbs due to high-grading.

Bag Limit	Percent Change in non-HB Collab landings	% Change in Charter + Non-HBC Collab Season Length
2	0%	0%
1.5	-6%	6%
1	-30%	42%
0.5	-56%	127%

Source: NMFS Southeast Regional Office, December 15, 2014. Analytical methods are described in SERO-LAPP-2012-11. Data inputs included preliminary 2014 Headboat, MRIP, and LA Creel data, and 2013 TPWD catch-effort data

Because an individual cannot land half of a fish, at least 2 anglers would be required on a vessel to land 1 red snapper (Table 2.2).

**Table 2.2.** Number of landed red snapper allowed if **Alternative 3** is selected, based on the number of anglers aboard a vessel.

Number of anglers	Number of red snapper allowed
1	0
2-3	1
4-5	2
6-7	3

## CHAPTER 3. AFFECTED ENVIRONMENT

The affected environment as it pertains to the red snapper component of the Gulf of Mexico (Gulf) reef fish fishery has been described in detail in the following documents: Generic Essential Fish Habitat Amendment (GMFMC 2004a), February 2010 Regulatory Amendment (GMFMC 2010a), January 2011 Regulatory Amendment (GMFMC 2011a), Generic Annual Catch Limit/Accountability Measures Amendment (GMFMC 2011b), and March 2013 Framework Action (GMFMC 2013a). This information is incorporated by reference and is summarized below.

### 3.1 Description of the Physical Environment

The Gulf of Mexico (Gulf) has a total area of approximately 600,000 square miles (1.5 million km<sup>2</sup>), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1). 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 54° F to 84° F (12° C to 29° C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73 ° F through 83° F (23-28° C) including bays and bayous (Figure 3.1.1) 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.

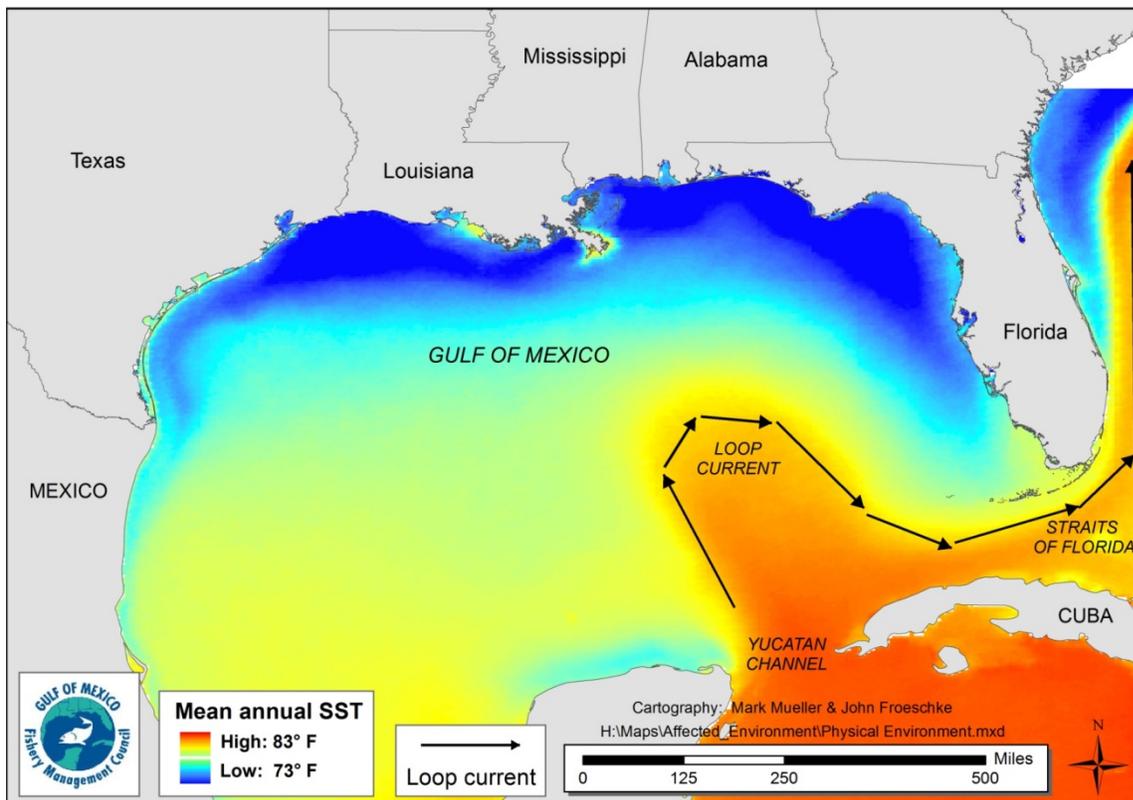
There are several marine reserves, habitat areas of particular concern, and restricted fishing gear areas in the Gulf. These are detailed in GMFMC (2005). The Bureau of Ocean Energy Management lists historic shipwrecks that occur in the Gulf. Most of these sites are in state or deep (>1,000 feet or 328 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.

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

There are environmental sites of special interest that are discussed in the Generic EFH Amendment (GMFMC 2004a) that are relevant to red snapper management. These include the longline/buoy area closure, the Edges Marine Reserve, Tortugas North and South Marine

Reserves, individual reef areas and bank habitat areas of particular concern (HAPCs) of the northwestern Gulf the Florida Middle Grounds HAPC, the Pulley Ridge HAPC, and Alabama Special Management Zone. These areas are managed with gear restrictions to protect habitat and specific reef fish species. These restrictions are detailed in the Generic EFH Amendment (GMFMC 2004a).

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 onto shore 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 2011a) 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](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 red snapper addressed in this amendment, is described in detail in the final environmental impact statement (EIS) for the Generic EFH Amendment (GMFMC 2004a), the Generic Annual Catch Limit/Accountability Measure (ACL/AM) Amendment (GMFMC 2011b), and Amendment 40 (GMFMC 2014b), and are incorporated herein by reference.

### *Definition of Overfishing*

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

### 3.2.1 Red Snapper and Reef Fish

#### **Red Snapper Life History and Biology**

Red snapper demonstrate the typical reef fish life history pattern (GMFMC 2004a). Eggs and larvae are pelagic while juveniles are demersal. Juvenile red snapper are common on mud bottoms in the northern Gulf, particularly off Texas through Alabama. Spawning occurs over firm sand bottom with little relief 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, but most caught by directed harvest are 2 to 4 years old (Wilson and Nieland 2001). A more complete description of red snapper life history can be found in the Generic EFH Amendment (GMFMC 2004a), Amendment 40 (GMFMC 2014b), and in the supporting documentation for SEDAR 31.

#### **Status of the Red Snapper Stock**

*Southeast Data Assessment and Review (SEDAR) 31 Benchmark Stock Assessment* Commercial harvest of red snapper from the Gulf began in the mid-1800s (Shipp 2001). In the 1930s, party boats built exclusively for recreational fishing began to appear (Chester 2001). The first stock assessment conducted by National Marine Fisheries Service (NMFS) in 1986 suggested that the stock was in decline (Parrack and McLellan 1986) and as early as 1988 (Goodyear 1988) the stock biomass has been found to be below threshold levels.

The most recent red snapper stock assessment was completed in 2013 (SEDAR 31 2013). The primary assessment model selected for the Gulf red snapper stock evaluation assessment was Stock Synthesis (Methot 2010). Stock Synthesis is an integrated statistical catch-at-age model which is widely used for stock assessments in the United States and throughout the world. The results of the SEDAR 31 assessment, including an assessment addendum that was prepared after a review of the SEDAR Assessment Panel Report by the SEDAR Review Panel, was presented

to the Scientific and Statistical Committee (SSC) in May 2013 (GMFMC 2013c). Under the base model, it was estimated that the red snapper stock has been overfished since the 1960s.

The red snapper stock continues to recover, but spawning stock biomass was estimated to remain below both the minimum stock size threshold and the spawning stock size associated with maximum sustainable yield proxy of a biomass level corresponding to a spawning stock biomass of 26% spawning potential ratio. Therefore, the SSC concluded that the stock remains overfished. With respect to overfishing, the definition in the Generic ACL/AM Amendment (GMFMC 2011b) specifies that overfishing is determined as exceeding the overfishing limit (OFL) in years when there is no stock assessment, and by the current fishing mortality rate estimated by the assessment exceeding the maximum fishing mortality threshold (MFMT) in years when there is an assessment. In 2012, 9.182 million pounds of red snapper were landed (GMFMC 2014a). This amount was below the OFL, indicating overfishing was not occurring. In 2013, landings increased to 14.326 mp (GMFMC 2014a), above the OFL of 13.7 mp. However, since an assessment was conducted in 2013 (SEDAR 31 2013), the overfishing determination was based on the current fishing mortality rate estimated in the assessment. The 2013 stock assessment concluded that the current fishing mortality rate was below the MFMT. Therefore, the stock remains classified as not undergoing overfishing, although it remains overfished (GMFMC 2013c). The 2014 Status of Stocks Report to Congress currently lists the red snapper stock as overfished, but not undergoing overfishing. A red snapper update assessment scheduled for 2014 is expected to re-evaluate the acceptable biological catch (ABC) for 2015 and beyond.

### **General Information on Reef Fish Species**

The following is summarized from the January 2011 Regulatory Amendment (GMFMC 2011a). The National Ocean Service of NOAA (NOS) collaborated with the NMFS and the Gulf of Mexico Fishery Management Council (Council) to develop distributions of reef fish (and other species) in the Gulf of Mexico (SEA 1998). The NOS obtained fishery-independent data sets for the Gulf of Mexico, including the Southeast Area Monitoring and Assessment Program (SEAMAP), and state trawl surveys. Data from the Estuarine Living Marine Resources (ELMR) Program contain information on the relative abundance of specific species for a series of estuaries, by five life stages and month for five seasonal salinity zones. The NOS staff analyzed the data to determine relative abundance of the mapped species by estuary, salinity zone, and month. For some species not in the ELMR database, distribution was classified as only observed or not observed for adult, juvenile, and spawning stages.

Habitat types and life history stages can be found in more detail in GMFMC (2004). In general, reef fish are widely distributed in the Gulf of Mexico, occupying both pelagic and benthic habitats during their life cycle. In general, both eggs and larval stages are planktonic. Larvae feed on zooplankton and phytoplankton. Exceptions to these generalizations include the gray triggerfish that lay their eggs in depressions in the sandy bottom, and gray snapper whose larvae are found around submerged aquatic vegetation. Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf (<100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are

found over sand and soft-bottom substrates. Some juvenile snappers (e.g. mutton, gray, red, dog, lane, and yellowtail snappers) and groupers (e.g. goliath, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981). More detail on hard bottom substrate and coral can be found in the Fishery Management Plan (FMP) for Corals and Coral Reefs (GMFMC and SAFMC 1982).

### **Status of Reef Fish Stocks**

The FMP for the Reef Fish Resources for the Gulf of Mexico currently encompasses 31 species (Table 3.2.1). Eleven other species were removed from the FMP in 2012 by the Council in their Generic ACL/AM Amendment (GMFMC 2011b). Stock assessments and stock assessment reviews can be found on the Council ([www.gulfcouncil.org](http://www.gulfcouncil.org)) and SEDAR ([www.sefsc.noaa.gov/sedar](http://www.sefsc.noaa.gov/sedar)) websites and have been conducted for 13 species:

- red snapper (SEDAR 7 2005; SEDAR 7 Update 2009; SEDAR 31 2013)
- vermilion snapper (Porch and Cass-Calay 2001; SEDAR 9 2006a; SEDAR 9 Update 2011a)
- yellowtail snapper (Muller et al. 2003; SEDAR 3 2003; O’Hop et al. 2012)
- mutton snapper (SEDAR 15A 2008)
- gray triggerfish (Valle et al. 2001; SEDAR 9 2006b; SEDAR 9 Update 2011b)
- greater amberjack (Turner et al. 2000; SEDAR 9 2006c; SEDAR 9 Update 2010; SEDAR 33 2014a)
- hogfish (Ault et al. 2003; SEDAR 6 2004b)
- red grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009)
- gag grouper (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009; SEDAR 33 2014b)
- black grouper (SEDAR 19 2010)
- yellowedge grouper (Cass-Calay and Bahnick 2002; SEDAR 22 2011b)
- tilefish (golden) (SEDAR 22 2011a)
- goliath grouper (Porch et al. 2003; SEDAR 6 2004a; SEDAR 23 2011)

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress on a quarterly basis utilizing the most current stock assessment information. The most recent update can be found at: (<http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>). The status of both assessed and unassessed stocks is shown in Table 3.2.1.

**Table 3.2.1.** Species of the reef fish FMP grouped by family.

Common Name	Scientific Name	Stock Status
<b>Family Balistidae – Triggerfishes</b>		
gray triggerfish	<i>Balistes capriscus</i>	Overfished, overfishing
<b>Family Carangidae – Jacks</b>		
greater amberjack	<i>Seriola dumerili</i>	Overfished, overfishing
lesser amberjack	<i>Seriola fasciata</i>	Unknown
almaco jack	<i>Seriola rivoliana</i>	Unknown
banded rudderfish	<i>Seriola zonata</i>	Unknown
<b>Family Labridae - Wrasses</b>		
hogfish	<i>Lachnolaimus maximus</i>	Overfished status unknown, overfishing
<b>Family Malacanthidae - Tilefishes</b>		
tilefish (golden)	<i>Lopholatilus chamaeleonticeps</i>	Not overfished, no overfishing
blueline tilefish	<i>Caulolatilus microps</i>	Unknown
goldface tilefish	<i>Caulolatilus chrysops</i>	Unknown
<b>Family Serranidae - Groupers</b>		
gag	<i>Mycteroperca microlepis</i>	Rebuilt, no overfishing
red grouper	<i>Epinephelus morio</i>	Not overfished, no overfishing
scamp	<i>Mycteroperca phenax</i>	Unknown
black grouper	<i>Mycteroperca bonaci</i>	Not overfished, no overfishing
yellowedge grouper	<i>Hyporthodus flavolimbatus*</i>	Not overfished, no overfishing
snowy grouper	<i>Hyporthodus niveatus*</i>	Unknown
speckled hind	<i>Epinephelus drummondhayi</i>	Unknown
yellowmouth grouper	<i>Mycteroperca interstitialis</i>	Unknown
yellowfin grouper	<i>Mycteroperca venenosa</i>	Unknown
warsaw grouper	<i>Hyporthodus nigritus*</i>	Unknown
**Atlantic goliath grouper	<i>Epinephelus itajara</i>	Unknown
<b>Family Lutjanidae - Snappers</b>		
queen snapper	<i>Etelis oculatus</i>	Unknown
mutton snapper	<i>Lutjanus analis</i>	Not overfished, no overfishing
blackfin snapper	<i>Lutjanus buccanella</i>	Unknown
red snapper	<i>Lutjanus campechanus</i>	Overfished, no overfishing
cubera snapper	<i>Lutjanus cyanopterus</i>	Unknown
gray snapper	<i>Lutjanus griseus</i>	Unknown
lane snapper	<i>Lutjanus synagris</i>	Unknown
silk snapper	<i>Lutjanus vivanus</i>	Unknown
yellowtail snapper	<i>Ocyurus chrysurus</i>	Not overfished, no overfishing
vermillion snapper	<i>Rhomboplites aurorubens</i>	Not overfished, no overfishing
wenchman	<i>Pristipomoides aquilonaris</i>	Unknown

Notes: \* In 2013 the genus for yellowedge grouper, snowy grouper, and warsaw grouper was changed by the American Fisheries Society from *Epinephelus* to *Hyporthodus* (Page et al. 2013).

\*\*Atlantic goliath grouper is a protected grouper and benchmarks do not reflect appropriate stock dynamics. In 2013 the common name was changed from goliath grouper to Atlantic

goliath grouper by the American Fisheries Society to differentiate from the Pacific goliath grouper, a newly named species (Page et al. 2013).

### **Description of the Fishery**

The reef fish fishery of the Gulf is divided into two broad categories, recreational fishing and commercial fishing. Recreational fishing includes fishing from charter vessels and headboats (collectively referred to as for-hire vessels) as well as from private vessels and from shore. No federal permit is needed for private vessels to fish for reef fish in the exclusive economic zone (EEZ), but persons fishing onboard private vessels do need a state recreational saltwater fishing license to land their catch. For-hire vessels fishing for reef fish and other federally managed species are required to have a federal reef fish charter/headboat permit, and as a condition of the permit, must agree to abide by federal fishing regulations whether in federal or state waters. Reef fish caught under recreational bag limits are not allowed to be sold. A commercial reef fish permit is required in order to harvest commercial quantities and sell reef fish. In addition, commercial harvest of red snapper, shallow-water grouper, deep-water grouper, and tilefish is managed under an individual fishing quota (IFQ) system, which requires that vessels have individual allocations of the quotas for those stocks to harvest and sell the catch. Both charter/headboat and commercial reef fish permits are under a moratorium, but the permits are transferable. IFQ shares and allocations are also transferable.

A detailed description of the fishing gears and methods used in the reef fish fishery is provided in Amendment 1 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP) (GMFMC 1989). The gears described included handline and bandit fishing, fish traps, longlines, buoy fishing, and shrimp bycatch of red snapper. Spearfishing is also used as a method of taking grouper by both the commercial and recreational sectors, but to a lesser extent than hook and line methods. In 1999, the NMFS published a list of authorized fisheries and fishing gear used in those fisheries [FR 64 67511]. For the Gulf reef fish fishery, the following gears were listed as authorized:

Commercial: Longline, handline, bandit gear, rod and reel, buoy gear, pot, trap, spear, powerhead, cast net, trawl (reef fish caught in a trawl are limited to recreational bag limits and cannot be sold). In February 2007 the use of fish traps (including pots) was phased out in the Gulf EEZ.

Recreational: Spear, powerhead, bandit gear, handline, rod and reel, cast net.

### **Protected Species**

There are 40 species protected by federal law that may occur in the Gulf. Thirty-nine of these are under the jurisdiction of NMFS, while the West Indian manatee (*Trichechus manatus*) is managed by the U.S. Fish and Wildlife Service. Of the species under NMFS's jurisdiction, 27 are marine mammals that are protected under the Marine Mammal Protection Act (MMPA). The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF) classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they

cause to marine mammals. More information about the LOF and the classification process can be found at: <http://www.nmfs.noaa.gov/pr/interactions/lof/>. Five of these marine mammal species are also listed as endangered under the Endangered Species Act (ESA) (sperm, sei, fin, blue, and humpback). In addition to those five marine mammals, five sea turtle species (Kemp's ridley, loggerhead, green, leatherback, and hawksbill), two fish species (Gulf sturgeon and smalltooth sawfish), and five coral species (elkhorn, staghorn, lobed star, mountainous star, and boulder star) are also protected under the ESA. Designated critical habitat for smalltooth sawfish, Gulf sturgeon, and the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles also occur within nearshore waters of the Gulf, though only loggerhead critical habitat occurs in federal waters.

NMFS has conducted specific analyses (Section 7 consultations) to evaluate potential effects from the Gulf reef fish fishery on species and critical habitats protected under the ESA. On September 30, 2011, the Protected Resources Division released a biological opinion (Opinion), which concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish (NMFS 2011a). The Opinion also concluded that other ESA-listed species are not likely to be adversely affected by the FMP. An incidental take statement was issued specifying the amount and extent of anticipated take, along with reasonable and prudent measures and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes. The Gulf of Mexico Fishery Management Council addressed further measures to reduce take in the reef fish fishery's longline component in Amendment 31 (GMFMC 2009).

Subsequent to the completion of the biological opinion, NMFS published final rules listing 20 new coral species (September 10, 2014), and designating critical habitat for the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles (July 10, 2014). NMFS addressed these changes in a series of consultation memoranda. In a consultation memorandum dated October 7, 2014, NMFS assessed the continued operation of the Gulf reef fish fishery's potential impact on the newly-listed coral species occurring in the Gulf (3 species of *Orbicella* and *Mycetophyllia ferox*) and concluded the fishery is not likely to adversely affect any of the protected coral species. Similarly, in a consultation memorandum dated September 16, 2014, NMFS assessed the continued authorization of South Atlantic and Gulf of Mexico fisheries' potential impacts on loggerhead critical habitat and concluded the Gulf reef fish fishery is not likely to adversely affect the newly designated critical habitat.

## **Marine Mammals**

The gear used by the Gulf reef fish fishery is classified in the Marine Mammal Protection Act's 2015 proposed List of Fisheries as a Category III fishery [79 FR 14418] and is not unchanged from the 2014 list. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Dolphins are the only species documented as interacting with these fisheries. Bottlenose dolphins prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery.

They are also a common predator around reef fish vessels, feeding on the discards. Marine Mammal Stock Assessment Reports and additional information are available on the NMFS Office of Protected Species website: <http://www.nmfs.noaa.gov/pr/sspecies/>.

## **Invasive Species**

Lionfish (*Pterois miles* and *P. volitans*), an invasive species from the Indo-Pacific, have been found in the Gulf (Schofield 2010). These species, first reported off North Carolina in 2002, have been expanding their range from the South Atlantic into the Gulf and Caribbean. Scientists have expressed concern about these species and their effects on hard bottom fish and crustacean communities, either through predation or competition for resources. Albins and Hixon (2008) have found that lionfish can adversely affect recruitment by native fishes to patch reefs in the Bahamas.

The Asian tiger shrimp, *Penaeus monodon*, is an invasive penaeid shrimp species native to the Indo-West Pacific, and is widely aquacultured. The following synopsis is based on Fuller et al. (2014). Tiger shrimp were first reported in 1988 off South Carolina, Georgia, and northeastern Florida following an accidental release from an aquaculture farm in South Carolina. They were not seen again in U.S. waters until September 2006, when a single adult male was captured in Mississippi Sound near Dauphin Island, Alabama. Additional specimens were subsequently caught off Texas, Louisiana, Mississippi and Florida, and along the Atlantic coast from North Carolina to Florida. Initially, only a few isolated catches were reported, but in 2011, catches increased 20-fold. This increase could be due to greater efforts to document their occurrence, but the presence of both adults and juveniles suggests that a spawning population may have established itself in either the South Atlantic, Gulf, or both. Tiger shrimp can grow up to 12 inches in length, and may compete with or prey upon native shrimps, crabs, and bivalves. Tiger shrimp may also be a carrier for diseases such as white spot syndrome virus.

## **3.3 Description of the Economic Environment**

### **3.3.1 Commercial Sector**

A description of the commercial sector of the Gulf red snapper fishery is contained in GMFMC (2013d) and is incorporated herein by reference. Additional information on the commercial sector is not provided because this framework action would only change management measures for the recreational sector.

### **3.3.2 Recreational Sector**

#### **3.3.2.1 Landings**

Recent landings information by state and mode is contained in GMFMC (2014b) and is incorporated herein by reference.

#### **3.3.2.2 Angler Effort**

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

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

Other measures of effort are possible, such as directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures. Estimates of the number of red snapper target trips and catch trips for the shore, charter, and private/rental boat modes in the Gulf for 2011-2014 are provided in Table 3.3.1 and Table 3.3.2. Estimates of red snapper target effort for additional years, and other measures of directed effort, are available at <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

**Table 3.3.1.** Number of red snapper recreational target trips, by mode, 2011-2014\*.

	Alabama	West Florida	Louisiana	Mississippi	Total
<b>Charter Mode</b>					
2011	19,010	29,642	1,424	0	50,076
2012	16,609	24,653	7,204	74	48,539
2013	23,638	32,689	7,191	38	63,556
2014	8,827	7,364	0	0	16,191
Average	17,021	23,587	3,955	28	44,591
<b>Private/Rental Mode</b>					
2011	116,886	113,021	19,900	16,790	266,597
2012	72,030	136,594	43,547	13,515	265,687
2013	222,245	461,349	24,691	21,586	729,871
2014	56,274	162,956	0	7,519	226,749
Average	116,859	218,480	22,035	14,853	372,226
<b>All Modes</b>					
2011	135,896	142,663	21,324	16,790	316,673
2012	88,640	161,247	50,751	13,589	314,227
2013	245,883	494,038	31,882	21,624	793,427
2014	65,101	170,321	0	7,519	242,940
Average	133,880	242,067	25,989	14,881	416,817

\* Texas information unavailable. 2014 estimates are preliminary as of October 15, 2015.

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

Note: These effort estimates have not been re-calibrated. Re-calibrated effort data are currently unavailable.

Note: There were no target trips recorded from the shore mode.

**Table 3.3.2.** Number of red snapper recreational catch trips, by mode, 2011-2014\*.

	Alabama	West Florida	Louisiana	Mississippi	Total
<b>Charter Mode</b>					
2011	43,550	101,500	3,066	221	148,336
2012	25,252	105,385	10,501	74	141,211
2013	52,331	107,466	12,321	38	172,157
2014	32,173	60,270	0	0	92,443
Average	38,327	93,655	6,472	83	138,537
<b>Private/Rental Mode</b>					
2011	130,500	203,567	31,957	6,169	372,193
2012	83,783	282,332	51,377	13,515	431,007

2013	227,889	537,469	55,679	29,250	850,287
2014	104,862	190,994	0	10,163	306,018
Average	136,759	303,591	34,753	14,774	489,876
<b>All Modes</b>					
2011	174,050	305,067	35,023	6,390	520,530
2012	109,035	387,717	61,878	13,589	572,219
2013	280,221	644,935	68,000	29,288	1,022,444
2014	137,035	251,263	0	10,163	398,461
Average	175,085	397,246	41,225	14,858	628,414

\* Texas information unavailable. 2014 estimates are preliminary as of October 15, 2015.

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

Note: These effort estimates have not been re-calibrated. Re-calibrated effort data are currently unavailable.

Note: There were no catch trips recorded from the shore mode.

Similar analysis of recreational effort is not possible for the headboat mode because headboat data are not collected at the angler level. Estimates of effort by the headboat mode are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. The stationary “fishing for demersal (bottom-dwelling) species” nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or reef fish trips by intent.

The distribution of headboat effort (angler days) by geographic area is presented in Table 3.3.3. For purposes of data collection, the headboat data collection program divides the Gulf into several areas. On average (2011 through 2013), the area from the Dry Tortugas through the Florida Middle Grounds accounted for 39.2% of total headboat angler days in the Gulf, followed by northwest Florida through Alabama (35.7%), Texas (23.5%), Mississippi (<1%) and Louisiana (<1%). Western Florida, Northwest Florida through Alabama, and Texas all experienced steady increases to three-year highs in 2013. In Louisiana, the number of headboat angler days decreased slightly in 2012 and then dropped further in 2013 to a three-year low. In Mississippi, the number of angler days increased in 2012 and then decreased slightly in 2013.

**Table 3.3.3.** Headboat angler days and percent distribution, by state, 2011 – 2013 (2014 unavailable). FLW = Florida from the Dry Tortugas through the Florida Middle Grounds, FL-AL = northwest Florida and Alabama, MS = Mississippi, LA = Louisiana, TX = Texas from Sabine Pass-Freepport south to Port Isabel.

	Angler Days					Percent Distribution				
	FLW	FL-AL*	LA	TX	MS	FLW	FL-AL	LA	TX	MS
<b>2011</b>	79,722	77,303	1,886	47,284	1,771	38.3%	37.2%	0.9%	22.7%	0.9%
<b>2012</b>	84,205	77,770	1,839	51,776	1,841	38.7%	35.8%	0.8%	23.8%	0.8%
<b>2013</b>	94,752	80,048	1,579	55,749	1,827	40.5%	34.2%	0.7%	23.8%	0.8%
<b>Average</b>	86,226	78,374	1,768	51,603	1,813	39.2%	35.7%	0.8%	23.5%	0.8%

Source: NMFS Southeast Region Headboat Survey (SRHS).

\*For 2013, SRHS data was reported separately for NW Florida and Alabama, but has been combined here for consistency with previous years.

Headboat effort in terms of angler days for the entire Gulf was concentrated most heavily during the summer months of June through August on average (2011 through 2013) (Table 3.3.4). The monthly trend in angler days was very similar across years, building gradually from January through May, rising sharply to a peak in June and July, dropping rapidly through September, increasing slightly in October, then tapering through December.

**Table 3.3.4.** Headboat angler days and percent distribution, by month, 2011 – 2013 (2014 unavailable).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Headboat Angler Days</b>												
<b>2011</b>	5,242	9,174	16,378	17,626	16,148	39,775	42,089	22,513	10,766	12,609	8,514	7,132
<b>2012</b>	7,924	9,364	18,326	16,404	17,708	39,662	46,468	21,440	12,629	13,281	7,135	7,090
<b>2013</b>	8,630	9,576	16,759	16,426	17,150	47,791	38,304	27,610	12,697	21,256	8,654	9,102
<b>Avg</b>	7,265	9,371	17,154	16,819	17,002	42,409	42,287	23,854	12,031	15,715	8,101	7,775
<b>Percent Distribution</b>												
<b>2011</b>	2.5%	4.4%	7.9%	8.5%	7.8%	19.1%	20.2%	10.8%	5.2%	6.1%	4.1%	3.4%
<b>2012</b>	3.6%	4.3%	8.4%	7.5%	8.1%	18.2%	21.4%	9.9%	5.8%	6.1%	3.3%	3.3%
<b>2013</b>	3.7%	4.1%	7.2%	7.0%	7.3%	20.4%	16.4%	11.8%	5.4%	9.1%	3.7%	3.9%
<b>Avg</b>	3.3%	4.3%	7.8%	7.7%	7.7%	19.3%	19.3%	10.8%	5.5%	7.1%	3.7%	3.5%

Source: NMFS Southeast Region Headboat Survey (SRHS).

### 3.3.2.3 Permits

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

A federal for-hire vessel permit has been required for both types of vessels for reef fish since 1996 and is a limited access permit. On December 2, 2014, there were 1,172 valid (non-expired) or renewable Gulf Charter/Headboat Reef Fish permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the for-hire permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the NMFS Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the Southeast Fishery Science Center (SEFSC) that the vessel primarily operates as a headboat. As of December 2,

2014, 69 Gulf headboats were registered in the SRHS (K. Fitzpatrick, NMFS SEFSC, pers. comm.). The majority of these headboats were located in Florida (37), followed by Texas (16), Alabama (9), and Mississippi/Louisiana (7).

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

There are no specific federal permitting requirements for recreational anglers to fish for or harvest reef fish. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. For the for-hire sector, customers are authorized to fish under the charter or headboat vessel license and are not required to hold their own fishing licenses. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed action.

#### **3.3.2.4 Economic Value**

Economic value can be measured in the form of consumer surplus (CS) per additional red snapper kept on a trip for anglers (the amount of money that an angler would be willing to pay for a fish in excess of the cost to harvest the fish). The estimated value of the CS per fish for a second red snapper kept on a trip is approximately \$79.72 (Carter and Liese 2012; values updated to 2013 dollars<sup>2</sup>).

With regards to for-hire businesses, economic value can be measured by producer surplus (PS) per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of the PS per for-hire passenger trip are not available. Instead, net operating revenue (NOR), which is the return used to pay all labor wages, returns to capital, and owner profits, is used as a proxy for PS. The estimated NOR value is \$151 (2013 dollars) per charter angler trip (Liese and Carter 2011). The estimated NOR value per headboat angler trip is \$52.12 (2013 dollars) (C. Liese, NMFS SEFSC, pers. comm.). Estimates of NOR per red snapper target trip are not available.

#### **3.3.2.5 Business Activity**

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

Estimates of the business activity (economic impacts) associated with recreational angling for red snapper were derived using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the Marine Recreational Fisheries Statistics Survey

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<sup>2</sup> Converted to 2013 dollars using the 2013 annual Consumer Price Index (CPI) for all US urban consumers provided by the Bureau of Labor and Statistics (BLS).

(MRFSS) to collect economic expenditure information, as described and utilized in NMFS (2011b). Estimates of the average expenditures by recreational anglers are also provided in NMFS (2011b) and are incorporated herein by reference.

Recreational fishing generates business activity (economic impacts). Business activity for the recreational sector is characterized in the form of full-time equivalent jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Estimates of the average red snapper target effort (2011-2014) and associated business activity (2013 dollars) are provided in Table 3.3.5. West Florida experienced the highest level of business activity associated with recreational red snapper fishing for all the Gulf states<sup>3</sup>, followed by Alabama.

The estimates provided in Table 3.3.5 only apply at the state-level. These numbers are not additive across the region. Addition of the state-level estimates to produce a regional (or national total) could either under- or over-estimate the actual amount of total business activity because of the complex relationship between different jurisdictions and the expenditure/impact multipliers. Neither regional nor national estimates are available at this time.

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

**Table 3.3.5.** Summary of red snapper target trips (2011-2014 average) and associated business activity (2013 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas
<b>Private/Rental Mode</b>					
Target Trips	116,859	218,480	22,035	14,853	*
Output Impact	\$6,315,390	\$11,814,604	\$1,665,404	\$522,744	*
Value Added Impact	\$3,417,684	\$6,690,075	\$800,292	\$265,885	*
Jobs	68	102	13	5	*
<b>Charter Mode</b>					
Target Trips	17,021	23,587	3,955	28	*
Output Impact	\$10,877,226	\$17,296,998	\$1,912,720	\$11,340	*
Value Added Impact	\$7,443,794	\$11,563,972	\$1,315,226	\$7,988	*
Jobs	106	152	15	0	*
<b>All Modes</b>					
Target Trips	133,880	242,067	25,989	14,881	*
Output Impact	\$17,192,616	\$29,111,602	\$3,578,124	\$534,084	*
Value Added Impact	\$10,861,478	\$18,254,047	\$2,115,518	\$273,873	*
Jobs	174	255	28	5	*

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

<sup>3</sup> Excludes Texas for which target effort data is unavailable.

Note: There were no target trips recorded from the shore mode.

Source: effort data from the MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Note: 2014 estimates are preliminary as of October 15, 2015.

## 3.4 Description of the Social Environment

The historical background and current description of the recreational red snapper sector, which includes anglers fishing from private and for-hire vessels, is provided in Amendment 40 (GMFMC 2014b). The description is included here by reference with updated information on the for-hire component's fishing communities not included in previous amendments. This section focuses on the recreational sector, as the action does not affect the commercial harvest of red snapper.

### Context of recreational red snapper management in the Gulf

As described in Amendment 40 (GMFMC 2014b), there is a moratorium on the issuance of new federal for-hire permits, so entry is limited. Harvest constraints have been enacted primarily through reductions to the bag limit and shortening of the fishing season. The bag limit has been reduced from seven red snapper per angler per day in 1990, to five fish in 1995, four fish in 1998, and two fish in 2007 (GMFMC 2014b). The recreational season was shortened for the first time in 1997 from year round to an ever shorter season, with the recreational season in federal waters averaging 62 days in length from 2008 through 2012 (GMFMC 2014b). In 2014, the recreational season in federal waters was just nine days long.

Anglers fishing from private vessels and for-hire vessels currently have the same bag limit and fishing season. However, additional restrictions are placed on the for-hire fleet for which private vessels are not subject. Since 2007, captain and crew of for-hire vessels have been prohibited from retaining a bag limit, and there are mandatory reporting requirements for headboats to report all landings and discards. Also, federally permitted for-hire vessels are prohibited from landing red snapper under state regulations in state waters that are less restrictive than federal regulations. Over time, the proportion of red snapper landed has shifted toward private vessel landings with for-hire vessel landings of red snapper decreasing, from 46.9% to 23.4% (GMFMC 2014b).

#### 3.4.1 Recreational Fishing Communities

Red snapper is harvested recreationally in all Gulf States. However, as the red snapper stock has continued to rebuild, the proportion of landings made up by the eastern Gulf States (Alabama and western Florida) has increased compared to the western Gulf States (Texas and Louisiana). The majority of the recreational catch is landed in Florida and Alabama (GMFMC 2014b, Table 3.4.1.1). Fishermen in other Gulf States are also involved in recreational red snapper fishing, but these states represent a smaller percentage of the total recreational landings.

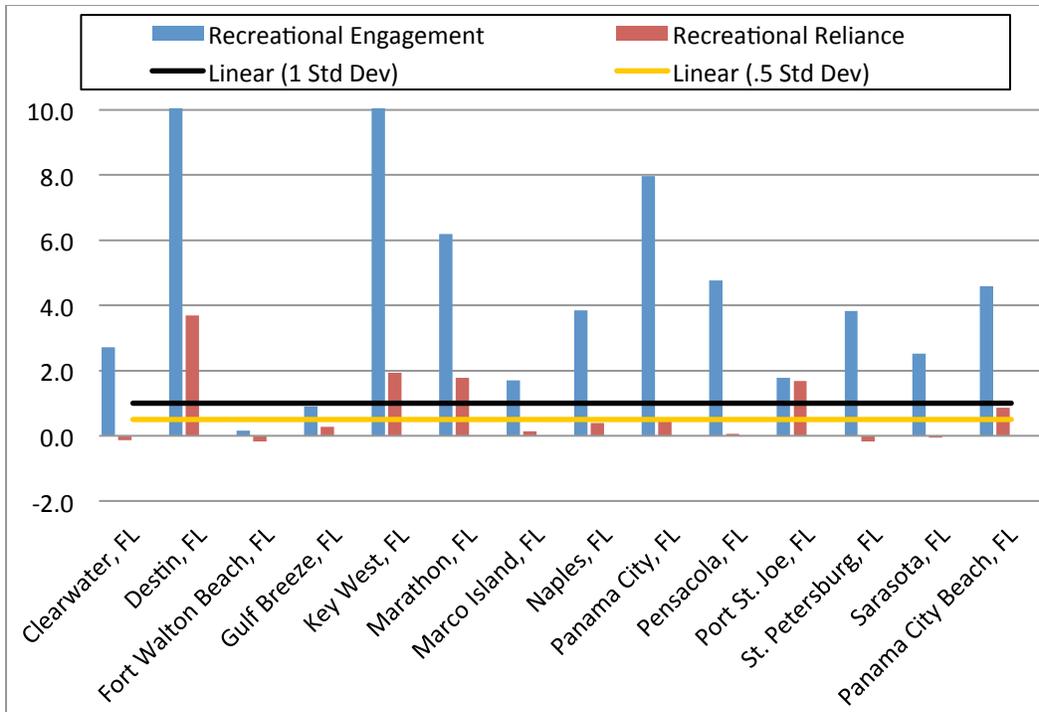
Red snapper landings for the recreational sector are not available at the community level, making it difficult to identify communities as dependent on recreational fishing for red snapper.

Although commercial landings are available at the community level, it cannot be assumed that the proportion of commercial red snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because of sector differences in fishing practices and preferences.

While there are no landings data at the community level for the recreational sector, a select group of communities were included in Amendment 40 (Table 3.4.1.2 in GMFMC 2014b) based upon the number of federal reef fish for-hire permits, those for-hire permits divided by population, and a cursory analysis to identify for-hire vessels that fish for red snapper through their for-hire business websites. This same set of communities is used here for further analysis using a suite of social indicators to examine the overall importance of recreational fishing at the community level.

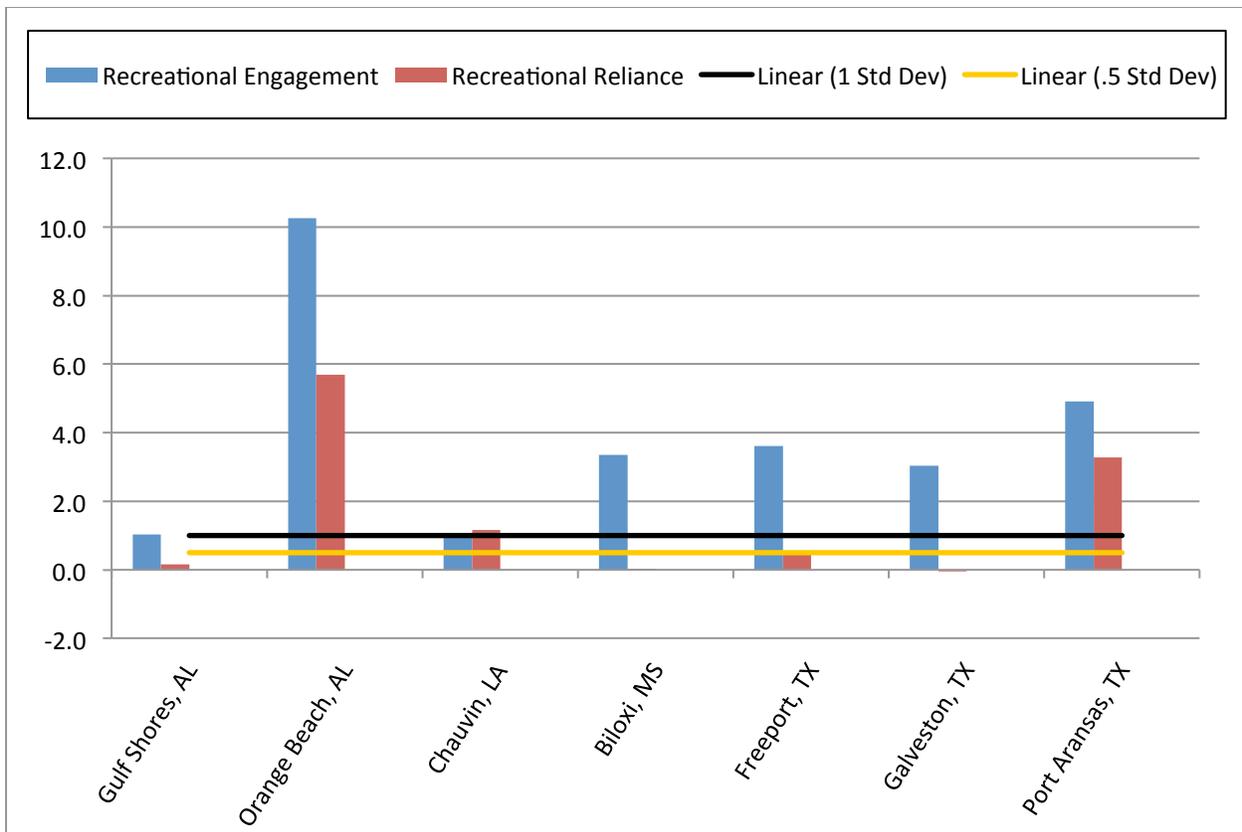
To better capture how Gulf fishing communities are engaged and reliant on fishing overall (not specific to red snapper), indices were created using secondary data from permit and infrastructure information for the recreational sector (Jepson and Colburn, 2013; Jacob et al., 2012). Fishing engagement is primarily the absolute numbers of permits and recreational infrastructure within a community. Fishing reliance has many of the same variables as engagement divided by population to give an indication of the per capita impact of this activity within a given community.

Using a principal component and single solution factor analysis each community receives a factor score for each index to compare to other communities. Using the communities identified in Amendment 40 (GMFMC 2014b; Table 3.4.1.2), factor scores of both engagement and reliance were plotted onto a bar graph. Two thresholds of 1 and  $\frac{1}{2}$  standard deviation above the mean are plotted onto the graphs to help determine a threshold for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation. A score above  $\frac{1}{2}$  standard deviation is considered moderately engaged or reliant, while over 1 standard deviation is considered very engaged or reliant. It is likely that those communities that score above the thresholds in terms of fishing engagement and reliance have a dynamic recreational fishery and would be expected to have an active recreational red snapper fishery.



**Figure 3.4.1.1.** Recreational fishing engagement and reliance for selected Florida communities.  
 Source: SERO Social Indicators Database.

Of the Florida communities included in Figure 3.4.1.1, all exceed one of the thresholds for either engagement or reliance, except Fort Walton Beach. The communities of Destin, Key West, Marathon, Panama City, Port St. Joe, and Panama City Beach all exceed at least one threshold for both engagement and reliance and would be considered somewhat dependent upon recreational fishing. All of these communities are considered to be primarily involved in fishing based upon their community profiles (Impact Assessment, Inc. 2005).



**Figure 3.4.1.2.** Recreational fishing engagement and reliance for selected communities outside of Florida. Source: SERO Social Indicators Database.

For other Gulf communities outside of Florida included in Amendment 40 (GMFMC 2014b; Table 3.4.1.2), all exceed at least one threshold for either engagement or reliance (Figure 3.4.1.2). Orange Beach, AL; Chauvin, LA; and Freeport and Port Aransas, TX all exceed at least one threshold for both engagement and reliance and would be considered somewhat dependent upon recreational fishing.

### **Charter Boats and Headboats by Community**

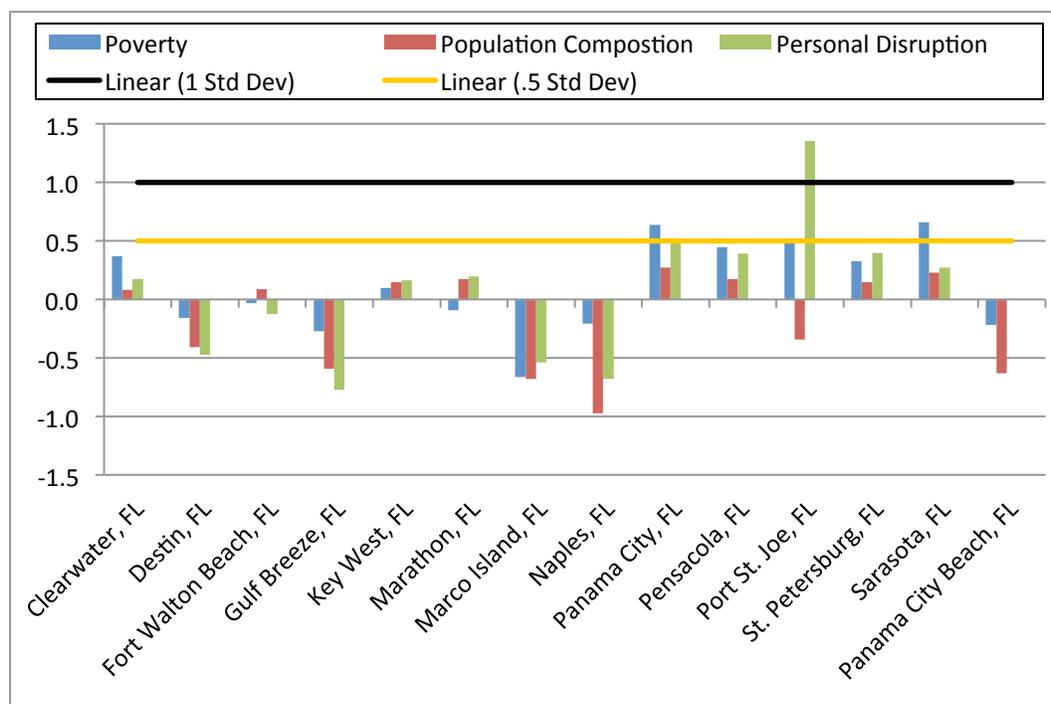
Charter boats and headboats target red snapper throughout the Gulf. At this time it is not possible to determine which species are targeted by specific charter boats and associate those vessels with their homeport communities (other than to glean information from various for-hire websites as was done for the descriptions above for specific communities). However, landings data are available for headboats by species and can be linked to specific communities through the homeport identified for each vessel (GMFMC 2014b).

In 2013, the majority of headboats participating in the Southeast Headboat Survey landed red snapper, and most of these are registered in Florida. Headboats with red snapper landings are based in 14 homeports with the top four representing approximately 79% of the red snapper landings (GMFMC 2014b). Homeports with the greatest headboat landings of recreational red snapper include South Padre Island, Texas; Panama City Beach, Florida; and Destin, Florida.

Other homeports represent a small portion of landings and include fewer than three vessels (GMFMC 2014b). The majority of federal for-hire permits for reef fish are held by operators in Florida, followed by Texas, Alabama, Louisiana, Mississippi, and other states respectively (GMFMC 2014b).

### 3.4.2 Environmental Justice

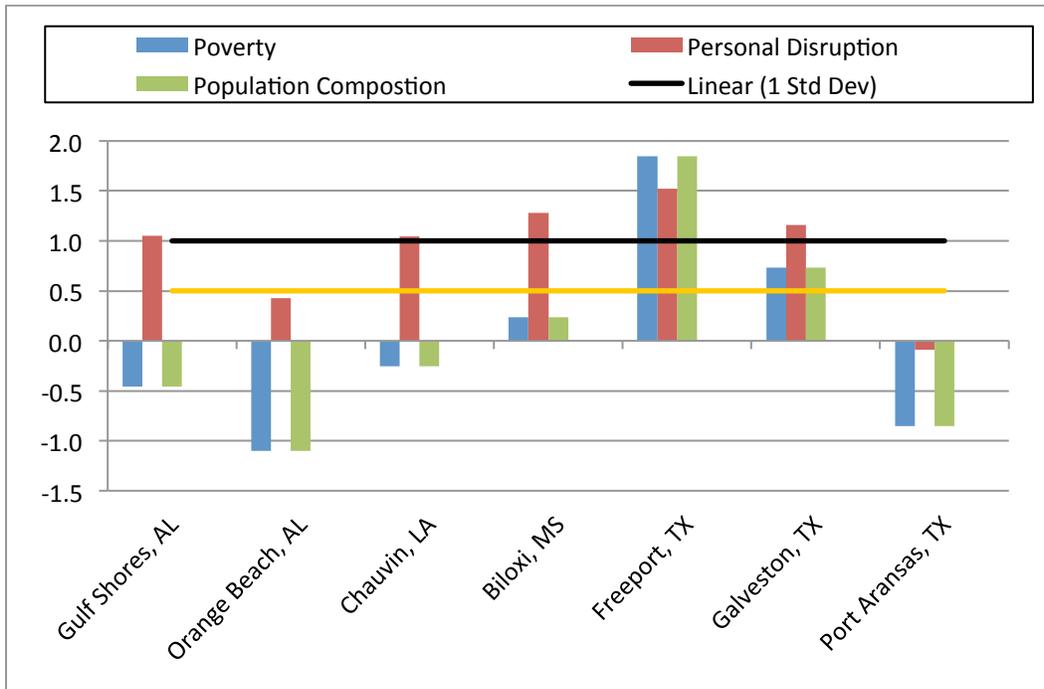
To evaluate environmental justice concerns for the proposed action, a suite of indices was created to examine the social vulnerability of coastal communities and is depicted in Figures 3.4.2.1 and 3.4.2.2. The three indices are poverty, population composition, and social disruptions. The variables included 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 5 are included, along with personal disruptions such as higher marital separation rates, higher crime rates, and unemployment, all of which may indicate populations experiencing vulnerabilities. These vulnerabilities signify that it may be difficult for someone living in these communities to recover from significant social disruption that might stem from a change in their ability to work or maintain a certain income level.



**Figure 3.4.2.1.** Social vulnerability indices for selected Florida communities. Source: SERO Social Indicators Database.

Of the Florida communities identified as engaged or reliant on recreational fishing in Figure 3.4.1.1 three communities exceed at least one threshold for social vulnerability. Panama City and Port St. Joe, Florida, both exceed the ½ standard deviation for poverty and personal disruption and are likely experiencing some social vulnerability. Sarasota is the only other

community that exceeds any of the thresholds (poverty), while Pensacola approaches the thresholds for both poverty and personal disruption. These communities may also be experiencing some social vulnerability. However, the other communities included in Figure 3.4.2.1 do not seem to exhibit social vulnerabilities and therefore may be better able to cope if exposed to negative social changes.



**Figure 3.4.2.2.** Social vulnerability indices for selected communities outside of Florida. Source: SERO Social Indicators Database.

For those communities outside of Florida (Figure 3.4.1.2), several exceed both thresholds for personal disruption. Freeport, Texas, which exceeds both thresholds for all indicators seems to be the community most exposed to social vulnerability and may have difficulty absorbing any negative social impacts that might result from regulatory change.

## 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 A. In most cases, the Secretary has delegated this authority to NMFS.

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

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

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

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

### **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).

## CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

### 4.1 Action 1: Red Snapper Bag Limit for Charter Vessels and Headboats

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

Direct and indirect effects on the physical environment resulting from the harvest of red snapper in the Gulf of Mexico by the recreational sector of reef fish fishery have been discussed in detail in Reef Fish Amendment 40 (GMFMC 2014b), and are incorporated here by reference. The alternatives to change the bag limit would not directly affect the physical environment. However, if changes to the bag limit result in changes in fishing effort, the physical environment could be impacted indirectly. Possible impacts on the physical environment include entanglement of fishing line on coral or other bottom structure and anchor damage.

With a two-fish red snapper bag limit (**Alternative 1**), the recreational red snapper fishing season was nine days in 2014. Amendment 40 establishes separate recreational quotas for private anglers and for-hire vessels and is expected to be effective beginning in the 2015 fishing season. This separate quota might increase the length of the recreational season for for-hire vessels. Therefore, with **Alternative 1**, the recreational red snapper season would be expected to result in more fishing effort and have more adverse indirect effects to the physical environment than from fishing activities than in 2014. However, if Amendment 40 is not implemented, the fishing season would be expected to be the same or only slightly longer (if catch rates were lower than estimated for 2014).

With **Alternatives 2** and **3**, effort may increase relative to **Alternative 1**. Effort is a function of the number of trips and the duration of fishing time per trip. As the number of trips increases, the duration of each trip may also change. If fishermen make trips solely to target red snapper, and return to port after catching their bag limit, a decrease in the bag limit should result in a decrease in trip duration. However, most fishing trips are not only about catching the bag limit, but also the experience of a fishing trip. Fishermen may continue to fish after catching the bag limit of red snapper by targeting other species, or practicing catch and release of red snapper. Some fishermen may also continue fishing for red snapper to try to catch a larger fish (high-grading). Therefore, it is reasonable to assume that trip duration would not decrease even if the red snapper bag limit is decreased.

Assuming a separate for-hire quota, **Alternative 2** would reduce landings of the for-hire component by 39% relative to 2014 landings and **Alternative 3** would reduce landings by 61% relative to 2014 landings, if the season length remained the same (Appendix C). Relative to **Alternative 1**, with **Alternative 2** the season could be 63% longer and with **Alternative 3** the season could be 160% longer. Increasing the length of the season would be expected to increase the number of trips, and thus effort, although some of those trips would have been taken even if red snapper was not available. Consequently, **Alternative 2** could result in greater adverse indirect impacts to the physical environment than **Alternative 1**, and **Alternative 3** could result in greater adverse indirect impacts to the physical environment than **Alternative 1** and

**Alternative 2.** However, any increase in adverse impacts is expected to be minor relative to the current impacts of the fishery on the physical environment.

Without a separate for-hire ACT (Amendment 40 not implemented), one fishing season would be set for the whole recreational sector (for-hire and private), as in the past. That recreational season might be slightly longer if the for-hire component had a one-fish bag limit; however the for-hire component makes up a small percentage of the recreational landings so the increase in season length would be minimal and any increase in physical impacts would also be minimal.

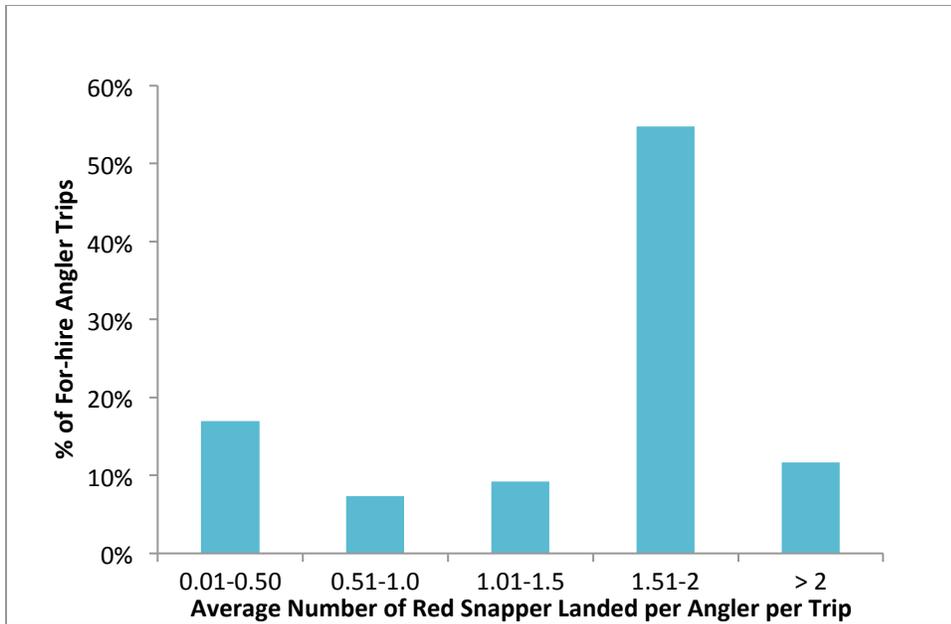
#### **4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment**

Direct and indirect effects on the biological environment from the harvest of red snapper have been discussed in detail in Reef Fish Amendment 40 (GMFMC 2014b) and are incorporated here by reference.

The impacts of changing the bag limit are expected to be minimal because modifying the bag limit should not affect the total amount of harvest because harvest is limited by the quota. Although the rate of harvest for the for-hire component would be reduced from the rate estimated for 2014 with **Alternatives 2** and **3** by 39% and 61%, respectively, these reductions are calculated based on the nine-day 2014 season (Appendix C). To set the 2015 season length, NMFS will calculate the number of days fishing can be allowed to harvest the for-hire component ACT, if implemented through Amendment 40. Therefore, any estimated decrease in landings per day would result in a corresponding increase in the number of days open with **Alternatives 2** and **3** relative to **Alternative 1**. If Amendment 40 is not implemented and a separate for-hire ACT is not established, the recreational season would only be slightly longer than with a one-fish for-hire bag limit versus a two-fish bag limit. Again, the impacts should be minimal because the total level of harvest should not change.

A decrease in the bag limit would be expected to increase discards of red snapper. The data workshop for SEDAR 31 found that release mortality was related to a combination of factors including, but not limited to, depth, thermal stress, venting, and handling time. Venting was assumed to occur for 2008 and later, resulting in an overall discard mortality rate of about 10% (SEDAR 31 2013).

Eighty-eight percent of anglers on for-hire vessels averaged landing more than one red snapper per person per trip (Figure 4.1). If one red snapper per angler (**Alternative 2**) is implemented and anglers continue to fish after catching their first red snapper, they may catch another, either intentionally or while targeting other species. In that case, anglers may release the second fish, or if it is larger, they may release the first fish caught (high-grading), which would likely be dead. Mortality would be expected to be greater if high-grading occurs, because this involves discarding a fish that has possibly been put on ice, as opposed to releasing a fish caught incidentally. With **Alternative 3**, even more discards would be expected, particularly on headboats with multiple passengers. The extent to which high-grading would occur is unknown and dependent on angler behavior; however, high-grading may occur under a two-fish bag limit as well, so any impacts from changing the bag limit are expected to be minor.



**Figure 4.1.** Average number of red snapper per angler per trip (expressed as a percentage) landed from the Gulf of Mexico (n = 15,984 angler trips).  
Source: SERO LAPP Branch, see Appendix C.

In determining the expected catch rate and season length, NMFS must convert from numbers of fish to pounds of fish using an average weight (6.90 lbs for 2014). If high-grading occurs, the average weight of red snapper could increase in 2015, which would increase the catch rate in pounds. Assuming a one-pound increase in average weight, landings would only be reduced by 30% with **Alternative 2** and 56% with **Alternative 3** (Appendix C). NMFS does not normally assume an increase in average weight, so if high-grading occurs landings (in pounds) could be greater than projected.

If anglers on for-hire vessels can only keep one red snapper, effort may shift to other species. For-hire trips are usually for a certain length of time, and anglers expect to fish throughout that time. Therefore, they may land more of other species that are available during the trip. This could result in greater fishing mortality on those species, although the increase would be expected to be small.

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

#### 4.1.3.1 Effects on the Commercial Sector

The proposed management alternatives considered in this action are only applicable to the for-hire component of the recreational fishing sector and are, therefore, not expected to have any direct effects on the commercial sector. If the action results in a net increase in recreational effort, it could have a slight impact on the cost of commercial fishing due to elevated congestion on the water, but this is most likely negligible. Both **Alternative 2** and **Alternative 3** also have the potential to increase discard rates of red snapper, which could result in higher fish mortality and a smaller stock than would be expected to occur under **Alternative 1**. This could lead to

lower catch per unit effort (CPUE), and as a result, lower economic benefits to commercial fishermen. Discard rates are expected to be higher under **Alternative 3** than **Alternative 2**, since the bag limit would be reached sooner. Red snapper discards and associated indirect economic effects could increase even further if high-grading occurs. The magnitude of these impacts cannot be quantified with available data; however, they are expected to be minor, as discussed in Section 4.1.2.

#### **4.1.3.2 Effects on the Recreational Sector**

**Alternative 1** would maintain the for-hire (charter and headboat) red snapper daily possession limit at two fish per angler. Catch rates would be expected to remain consistent with previous years and changes in season length would be dependent on the total allowable catch for red snapper, the portion of it allocated to recreational fishermen (recreational quota), and whether or not Amendment 40 (separate for-hire and private angler quotas) is implemented. Until the new stock assessment is completed, the current recreational red snapper quota of 5.39 mp ww will remain in effect. **Alternative 2** and **Alternative 3** consider modifications to the two-fish red snapper bag limit for those vessels that have a federal for-hire permit. **Alternative 2** would establish a recreational for-hire red snapper bag limit of one fish per angler per day. **Alternative 3** would implement a for-hire fractional bag limit and set a limit of one fish per two anglers per day. In light of the fact that Amendment 40 has not been finalized and approved, and since it is feasible that a for-hire bag limit could be implemented in the absence of sector separation, two baselines will be presented here. Baseline I discusses the economic effects of the alternatives considered in this action, assuming no separate quotas for for-hire and private vessels, and Baseline II discusses the economic effects of these alternatives assuming the preferred alternatives in Amendment 40 have been implemented. Some of the language and concepts from Baseline I are repeated under Baseline II so that each baseline analysis can be read independently of the other.

##### **Baseline I (one recreational quota)**

For a given recreational red snapper quota, the bag limit reduction proposed under **Alternative 2** would be expected to affect recreational anglers through changes in the quality of the fishing experience on individual for-hire angler trips, as well as the quantity of angler trips (private and for-hire) that are allowed to harvest red snapper relative to **Alternative 1**. For-hire businesses could experience changes in profitability as well if recreational angler demand for for-hire trips increases or decreases as a result of the bag limit reduction. These economic effects will be measured by changes in consumer surplus (CS) and net operating revenue (NOR) in the following discussion (see Section 3.3.2.4).

The one-fish bag limit for the for-hire component under **Alternative 2** would be expected to result in an increase in the number of individual angler trips (private and for-hire) that harvest red snapper, because more effort would be required to compensate for the for-hire trips that would no longer be able to harvest two fish. This assumes that all of the fish expected to be harvested under the no action alternative would still be harvested, which is a reasonable assumption, given the historical demand for red snapper. The trips that would be expected to

only harvest one fish regardless of the bag limit are assumed to be unaffected. Using an average red snapper weight of 6.9 lb whole weight (ww), a recreational quota of 5.39 mp ww, and applying the historical average percent of the quota landed by the for-hire component from 2011 through 2013 (29.2%), results in an estimated catch of 228,099 fish for the for-hire anglers (SERO LAPP/DM Branch, pers. comm. 2014)<sup>4</sup>. Assuming that 67%<sup>5</sup> of for-hire trips achieve the two-fish bag limit on average, the number of estimated two-fish for-hire trips under **Alternative 1** would be 91,513 trips<sup>6</sup> (SERO LAPP/DM Branch, pers. comm. 2014). It follows that 45,073 for-hire angler trips, harvesting only one fish per trip, would be needed to harvest the remainder of the expected harvest under **Alternative 1** (91,513 trips \* two fish per trip = 183,026 fish; 228,099 – 183,026 = 45,073).

Under **Alternative 2**, all of the two-fish for-hire trips would be reduced to one fish and, therefore, 91,513 red snapper would need to be caught on other trips (new or existing) to still achieve the expected harvest. In the absence of sector separation and component allocations, it is highly likely that the majority of these fish would be caught on private angler trips because of the large number of private anglers and the higher bag limit that the private anglers would be allowed to continue to retain. For this reason, a reduction in the for-hire bag limit could be considered a transfer of economic value from the for-hire component to the private angler component under Baseline I. If this occurs, private anglers would experience an increase in CS from the additional red snapper fish and/or trips, whereas for-hire anglers would experience a decrease in CS from the reduction in the bag limit on existing trips. Using the willingness to pay (WTP) per second red snapper discussed in Section 3.3.2.4 and assuming that all estimated trips still occur, an upper bound estimate of the reduction in CS to for-hire anglers would be \$7.3 million (\$79.72 per fish per trip times 91,513 trips; 2013 dollars).

Conversely, an increase in economic value is expected to result from the harvest of those fish made available by the reduction in the bag limit for for-hire anglers. At least some of these “freed up” fish would be harvested by for-hire anglers, which in turn, would partially offset the maximum potential loss in for-hire CS described above. The majority of the newly available fish, however, would be harvested by the private sector. There is not a current estimate for the value of harvesting a first red snapper (going from zero to one fish), so the increase in for-hire and private angler CS associated with red snapper trips that go from zero red snapper to one red snapper cannot be quantified. Given the law of diminishing marginal utility, it is likely that the WTP for the first red snapper on a trip is higher than the second and so on and so forth. Therefore, assuming all 91,513 fish are caught as first red snappers would result in a maximum

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<sup>4</sup> NMFS determines the length of the recreational red snapper season using an annual catch target (ACT), set at 20% of the quota, to account for management uncertainty. So if the harvest projections are accurate, the actual recreational harvest would be 4.31 mp ww instead of 5.39 mp ww. However, the recreational sector is allowed to harvest the full quota, so that is what will be used here. This decision is not expected to influence the conclusions of the analysis.

<sup>5</sup> Although bag limit reductions would apply to the Gulf Headboat Collaborative (HC), HC vessels have been excluded from this percentage because they operate under a pilot program to examine the effects of an alternative management structure and are not constrained by a fixed season. Anecdotal evidence suggests that some HC vessels have already instituted a one-fish bag limit in efforts to maximize profits, so this could have confounding effects on the average number of for-hire angler trips currently harvesting the bag limit.

<sup>6</sup> Algebraically solved for  $x$  in the following 2 equations:  $2x + y = 228,099$  and  $x/(x + y) = .67$ , where  $x = \#$  of 2-fish trips and  $y = \#$  of 1-fish trips.

increase in CS. Since private anglers will still be allowed to keep up to two red snapper, however, some of the fish made available by the for-hire bag limit reduction would be harvested as second red snappers. Overall, this action could result in a net gain in CS, but may be construed as non-equitable by the for-hire industry and its customers if **Alternative 2** results in decreased harvest by for-hire anglers.

For-hire businesses may or may not be impacted by the proposed bag-limit change, depending on how easily their customers can substitute other species for red snapper. It is possible, though unlikely, that some charter or headboat businesses could experience negative price effects (a reduction in the price they can charge for-hire anglers), lower booking rates, or cancellations as a result of the reduced bag limit under **Alternative 2**<sup>7</sup>. If most of the newly available fish are harvested by private anglers, there would be little opportunity to recover those lost revenues through new red snapper trip bookings. Estimates of NOR for charter and headboat angler trips are included in Section 3.3.2.4; however, it is not possible to estimate the net change in the number of for-hire trips with available data, so it is not possible to estimate the net change in for-hire NOR.

The same analytic framework would apply to **Alternative 3** to estimate the number of recreational red snapper angler trips that would exceed the fractional bag limit. The number of fish made available by the reduction in the for-hire bag limit, however, could not be estimated, because impacted trips would not correspond to a one-for-one increase in available fish<sup>8</sup>. Therefore, it is not possible to quantify the impacts to CS or even provide a maximum potential reduction in CS. Even if the compensating red snapper harvest could be estimated, WTP estimates for a fractional fish kept do not exist. While anglers fishing in groups may derive some benefit from the fish caught by others in their group, for-hire anglers on a trip that are not part of the same party would be forced to share the bag limit with strangers and there would be winners and losers. To further complicate matters, it is not clear how anglers fishing alone would be affected, though the incidence of single anglers may be rare.

With regards to for-hire businesses, the same challenges, as faced under **Alternative 2**, in estimating the effects of the bag limit on prices, cancellations, and booking rates exist under **Alternative 3**, but with even more uncertainty. Since the expectation of catching and keeping red snapper on for-hire trips would be reduced even further than it was under **Alternative 2**<sup>9</sup>, there would be a higher likelihood of shifts in angler demand for trips and corresponding negative impacts to for-hire businesses.

In relation to for-hire anglers, it is logical that the maximum reduction in for-hire CS from **Alternative 3** would be greater than or equal to that which was discussed under **Alternative 2**

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<sup>7</sup> For-hire anglers are assumed to derive value from the whole fishing experience, not just the harvest of a single species, and since they will still be allowed to target and keep red snapper among other species, the lower red snapper bag limit is not expected to significantly alter demand for for-hire trips. In rare circumstances, customers may be so unsatisfied with the new bag limit that they decide not to fish at all.

<sup>8</sup> In this case, the compensating harvest would be dependent on the number of anglers and combined total catch estimated for each vessel-level trip.

<sup>9</sup> Now only half of the anglers on a for-hire trip would be able to catch and keep a red snapper, assuming an even number of anglers. On a trip with an odd number of anglers, less than half would be allowed to catch and keep a red snapper, barring the practice of physically splitting a fish in half and returning the other half to the sea.

because all angler trips that were expected to harvest two fish would experience an equal or greater reduction in kept red snapper under **Alternative 3**, as compared to **Alternative 2**. Additionally, many of the angler trips only expected to harvest one fish would now be impacted as well, depending on whether or not the average angler catch per vessel is higher than half a fish. As in the case of **Alternative 2**, additional angler trips (mostly private and some for-hire) that harvest red snapper, and/or additional harvest on trips already harvesting red snapper (private only), would offset some or all of the loss in for-hire CS following a bag limit reduction. The increase in CS from this compensating harvest, however, cannot be quantified. As a result, it is not possible to quantitatively determine whether the overall net change in CS for the recreational sector would be more, less or equally desirable under **Alternative 3**, as compared to **Alternative 2**.

Both **Alternative 2** and **Alternative 3** have the potential to increase discard rates of red snapper, which could result in higher fish mortality and a smaller stock than would be expected to occur under **Alternative 1**. This could lead to lower CPUE, and as a result, lower economic benefits for all sectors that fish for red snapper (commercial and recreational). Discard rates are expected to be higher under **Alternative 3** than **Alternative 2**, since the bag limit would be reached sooner. Red snapper discards and associated indirect economic effects could increase even further if high-grading occurs. The magnitude of these impacts cannot be quantified with available data; however, they are expected to be minor, as discussed in Section 4.1.2.

### **Baseline II (separate for-hire and private angler quotas)**

Assuming Amendment 40 is implemented, the recreational sector will be divided into two separate management units (components) with their own quotas, annual catch targets (ACTs) and closure provisions. If, however, the total recreational quota is met at any time during the year, fishing will close for both private and for-hire vessels regardless of which component triggered the overage, even if one component has yet to harvest its allocation. The preferred alternative in Amendment 40 is to allocate 57.7% of the allowable recreational harvest to the private component and 42.3% to the for-hire component. This will give the for-hire sector an allowable harvest of 2.28 mp ww of red snapper based on the current recreational quota. Because the bag limit alternatives considered in this action would only apply to the for-hire component of the recreational sector, and the measures approved through Amendment 40 may limit the ability of private anglers to reap the benefits of a reduced for-hire bag limit, as discussed above, the following analysis only discusses the expected economic effects of the proposed changes in the bag limit on the for-hire component.

For a given recreational red snapper quota, changes in CS and NOR would determine the economic effects expected to result from **Alternative 2** relative to **Alternative 1**. While red snapper are one of the most sought after target species in the Gulf, this analysis assumes that for-hire operators would not be expected to experience measurable changes in NOR due to a reduction in the red snapper bag limit because their existing customers (customers that continue to book for-hire services when the red snapper season would be expected to close in the absence of a reduction in the bag limit) have the ability to substitute other reef fish for red snapper or

harvest red snapper in addition to their normal expected harvest of other species<sup>10</sup>. In other words, since the for-hire season would likely be extended during the summer months when charter and headboat operations are historically most active, it is assumed most of the newly available red snapper would be harvested on for-hire trips that would have been sold anyways under **Alternative 1**. Therefore, the economic effects that would be expected to result from **Alternative 2** will be measured by the reduction in CS that would result from the substitution of angler trips harvesting one red snapper for angler trips harvesting two red snapper and the increase in CS that would result from angler trips that previously would not have been expected to harvest any red snapper but, as a result of the reduction in the bag limit, would be able/expected to harvest one red snapper. It is noted, however, that if any completely new for-hire trips are sold as a result of the extended red snapper season, then increased economic benefits may accrue to for-hire businesses as well.

Assuming an estimated average weight of 6.9 lbs ww per red snapper, the recreational for-hire red snapper allowable harvest of 2.28 mp ww would correspond to 330,430 fish available to be harvested by for-hire anglers (SERO LAPP/DM Branch, pers. comm. 2014)<sup>11</sup>. Using the approach discussed under Baseline I, if 67% of for-hire trips (individual angler trips) harvest the two-fish bag limit on average, the for-hire allocation would result in an estimated 132,568 two-fish trips under **Alternative 1** (SERO LAPP/DM Branch, pers. comm. 2014), which would harvest 265,136 fish. It follows that 65,294 angler trips, harvesting one fish per trip, would be needed to harvest the remainder of the allowable harvest under **Alternative 1**. This assessment assumes all of the red snapper allowable harvest by the for-hire sector afforded by Amendment 40 would be harvested and these 65,294 one-fish harvest trips occur. These one-fish trips are assumed to be unaffected by the proposed reduction in the bag limit under **Alternative 2**<sup>12</sup>. Thus, of the normal trips expected to harvest red snapper, only the two-fish trips would be affected. The expected loss in CS per impacted angler trip (for a trip experiencing a reduction in harvest from two fish to one fish) is \$79.72 (2013 dollars) (see Section 3.3.2.4)<sup>13</sup>. Therefore, the implementation of **Alternative 2** would be expected to result in a maximum potential reduction in CS to trips normally expected to harvest red snapper of approximately \$10.57 million (\$79.72 per trip times 132,568 trips), assuming for-hire anglers still take all the trips they would have

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<sup>10</sup> As discussed under Baseline I, there is of course the potential for for-hire businesses to be negatively or positively impacted if the bag limit shifts angler demand for trips such that price effects or cancellations occur and/or booking rates go up or down during the extended season. A longer red snapper season for instance could increase the number of sold trips, especially if it were to extend into part of the year with few other open fisheries. NOR estimates for a charter and heaboat for-hire trip are included in Section 3.3.2.3, however, with no way of estimating the net change in the number of for-hire trips, it is not possible to estimate the net effect on for-hire NOR.

<sup>11</sup> NMFS determines the length of the recreational red snapper season using an annual catch target (ACT), set at 20% of the quota, to account for management uncertainty. So if the harvest projections are accurate, the actual harvest would be 1.824 mp ww. However, the recreational sector is allowed to harvest the full quota, so that is what will be used here. This decision is not expected to influence the conclusions of the analysis.

<sup>12</sup> In reality, it is likely that some anglers value the opportunity to fish for and keep two red snapper regardless of the actual outcome of the trip. Lower harvest expectations could result in a loss in CS on angler trips other than just those which actually hit the bag limit. There is an estimate of the per angler trip value for a target trip with a 2 red snapper bag limit included in GMFMC 2010. However, there is no estimate of the value of a target trip with a 1 red snapper bag limit, so the net loss in CS discussed here is currently unquantifiable.

<sup>13</sup> This assumes that anglers will stop fishing for red snapper after reaching the 1-fish bag limit and will not derive any value from catching and releasing additional red snapper. Carter and Liese (2012) did, however, estimate the WTP for a second red snapper caught on an angler trip and released due to a bag limit at \$8.69 (2013 dollars), so the potential per trip reduction in CS could actually be lower.

taken under the two-fish bag limit (i.e., no effort cancellation in response to the reduced bag limit).

**Alternative 2** would also be expected to result in an increase in the number of for-hire angler trips able to harvest red snapper by 132,568 trips because of the fish “saved” on trips normally expected to harvest two fish. Because red snapper is a popular species, all available fish would be expected to be harvested. Thus, 132,568 available fish would equate to 132,568 one-fish angler trips. This total does not include the estimated 65,294 trips normally expected to harvest only one fish, as discussed above. These new red snapper trips could consist of trips that would not otherwise be expected to be taken or, as is more likely, would be trips that otherwise would be taken targeting other species or which have no target preference but would now be able to keep red snapper.

Because these would be new trips that harvest red snapper, they would be expected to result in an increase in CS. However, the increase in CS that would be expected to result from these additional trips and the net change in CS when combined with the reduction in CS for trips previously harvesting two fish, cannot be quantified because an estimate of the WTP per trip for an increase in red snapper harvest from zero to one fish per angler trip is not available at this time. Additionally, the WTP estimate used earlier (\$79.72) is based on target trips, when in fact red snapper are harvested on both target and non-target trips, as shown in Section 3.3.2.2. Based on marginality conditions, i.e., the unit (not total) value declines as more of a good is obtained, the value of the first fish should be greater than the value of the second, which should be greater than the value of the third fish, etc. As a result, it is expected that, on average, the increase in CS for a trip able to increase red snapper harvest from zero to one fish would be greater than the increase in CS from increasing harvest from one fish to two fish or, as in the current situation, reducing harvest from two fish to one fish. Further, because the number of new trips allowed to keep a red snapper would be expected to be equal to the number of trips newly restricted to one fish, the expected gain in CS from new trips would be expected to exceed the loss in CS from trips reduced to the lower bag limit. However, given the uncertainty about the number of trips that would be target versus non-target under **Alternative 2**, and the absence of appropriate estimates of CS per trip, it cannot be definitively quantitatively determined whether **Alternative 2** would have positive, negative, or no economic effects compared to **Alternative 1**. Only the maximum potential loss (\$10.57 million) to anglers who would be expected to keep fewer fish can be estimated. Although the evaluation presented in this section was based on the status quo recreational red snapper quota, the conclusions would apply regardless of the size of the allowable harvest.

The same analytic framework would apply to **Alternative 3** to estimate the number of recreational red snapper angler trips that would exceed the fractional bag limit. The number of compensating trips required to still achieve the quota under a fractional bag limit, however, could not be estimated because impacted trips would not result in a one-for-one increase in new trips<sup>14</sup>. Therefore, it is not possible to quantify the change in CS or even provide a maximum potential reduction in CS. Even if the number of compensating trips could be estimated, WTP estimates for a fractional fish kept do not exist. While anglers fishing in groups may derive some benefit

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<sup>14</sup> In this case, the number of compensating trips would be dependent on the number of anglers and combined total catch estimated for each vessel-level trip.

from the fish caught by others in their group, for-hire anglers on a trip that are not part of the same party would be forced to share the bag limit with strangers and there would be winners and losers. To further complicate matters, it is not clear how the bag limit would be enforced at the individual level, especially for anglers fishing alone, though the incidence of single anglers may be rare.

With regards to for-hire businesses, the same challenges, as faced under **Alternative 2**, in estimating the effects of the bag limit on prices, cancellations, and booking rates also exist under **Alternative 3**, but with even more uncertainty. Since the expectation of catching and keeping red snapper on for-hire trips would be reduced even further than it was under **Alternative 2**, there would be a higher likelihood of shifts in angler demand for trips and corresponding negative impacts to for-hire businesses.

In relation to for-hire anglers, it is logical that the maximum reduction in for-hire CS from **Alternative 3** would be greater than or equal to that which was discussed under **Alternative 2** because all angler trips that were expected to harvest two fish would experience an equal or greater reduction in kept red snapper under **Alternative 3**, as compared to **Alternative 2**. Additionally, many of the angler trips only expected to harvest one fish would now be impacted as well, depending on whether or not the average angler catch per vessel is higher than half a fish. As in the case of **Alternative 2**, additional for-hire trips that land red snapper would offset some or all of the loss in for-hire CS following a bag limit reduction, but it is not possible to quantify the increase in CS from the trips that go from zero fish to one fish, or in the case of anglers sharing a fish, zero fish to half a fish. As a result, it is not possible to quantitatively determine whether the overall net change in CS for the recreational sector would be more, less or equally desirable under **Alternative 3**, as compared to **Alternative 2**.

Both **Alternative 2** and **Alternative 3** have the potential to increase discard rates of red snapper, which could result in higher fish mortality and a smaller stock than would be expected to occur under **Alternative 1**. This could lead to lower CPUE, and as a result, lower economic benefits for all sectors that fish for red snapper (commercial and recreational). Discard rates are expected to be higher under **Alternative 3** than **Alternative 2**, since the bag limit would be reached sooner. Red snapper discards and associated indirect economic effects could increase even further if high-grading occurs. The magnitude of these impacts cannot be quantified with available data; however, they are expected to be minor, as discussed in Section 4.1.2.

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

Generally, there is a trade-off between the length of the fishing season and the size of the bag limit, such that a longer season is possible under a smaller bag limit. Although direct impacts would be expected from decreasing the bag limit, these impacts would be expected to be mitigated if the bag limit reduction enables a longer fishing season. The season under a two-fish bag limit (**Alternative 1**) is expected to be shorter than the season under a one-fish bag limit (**Alternative 2**). A season where one fish may be landed per two anglers on board (**Alternative 3**) would be expected to result in the longest season.

Recreational anglers are not homogenous in their fishing preferences; some recreational anglers

prefer a larger bag limit while others prefer a longer season. Whether red snapper is the target species of a directed trip, or one of several desirable species on a fishing trip varies among anglers as well. Also, the accessibility of red snapper varies for anglers around the Gulf, with red snapper more easily accessible to recreational anglers in the Florida Panhandle, compared to the west Florida shelf. Thus, the effects of modifying the bag limit would affect anglers differently.

This action would directly affect federal for-hire operators and crew, and anglers fishing on federally permitted for-hire vessels. Although some fishermen have expressed willingness in public testimony to consider a bag limit reduction in exchange for a longer season, reducing the red snapper bag limit is expected to be supported by some anglers and opposed by others. In public testimony, some for-hire operators have expressed support for the bag limit reduction as a way to extend the length of the fishing season in federal waters. For-hire operators would be expected to benefit most from selecting **Alternative 2**, compared with **Alternatives 1** and **3**, if these businesses are able to book more fishing trips due to an extended season. In public testimony, many anglers expressed concern that once the bag limit is reduced, it would never again be increased and that was not worth the potential short-term extension to the length of the fishing season. These comments came primarily from anglers fishing from private vessels. It remains unknown whether anglers who use for-hire services would support a bag limit reduction. Fishery managers would benefit from additional public comment by anglers using for-hire services.

Fractional bag limits such as the one proposed under **Alternative 3** have not been used by the Council and could cause the most confusion for fishing. Although **Alternative 3** would be expected to result in the longest recreational fishing season, it would be more difficult to enforce and could be especially problematic on vessels where the anglers are not fishing as a group, such as on headboats. Because this action would affect only federally permitted for-hire vessels and not private recreational vessels, considering this action for the for-hire fleet is even less desirable than **Alternatives 1** and **2**.

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

The alternatives in this action are expected to have nominal differences in the direct and indirect impacts on the administrative environment. **Alternative 1** would have the least burden on the administrative environment, because it would maintain the daily bag limit of two red snapper per angler per day. **Alternative 2** and **Alternative 3** would reduce the daily red snapper bag limit from **Alternative 1** creating an initial burden on the administrative environment. If the recreational red snapper bag limit is modified (**Alternative 2** or **Alternative 3**) stakeholders and law enforcement officials would need to educate themselves initially about this change in the regulations. **Alternative 2** and **Alternative 3** might also cause some confusion because the bag limit for anglers on for-hire vessels would be different from the bag limit for private anglers, which would remain two fish per person. A fractional bag limit (**Alternative 3**) is also problematic because anglers and enforcement officers may not be clear about how many fish can be retained on a vessel with an odd number of anglers.

## 4.2 Cumulative Effects Analysis

As directed by the National Environmental Policy Act, federal agencies are mandated to assess not only the indirect and direct impacts, but cumulative impacts of actions as well. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impacts of FMP and non-FMP actions are analyzed in detail in Amendment 40 (GMFMC 2014b) and are incorporated here by reference. The affected area of this proposed action encompasses the state and federal waters of the Gulf as well as Gulf communities dependent on reef fish fishing. The following are some specific past, present, and future actions that could impact the environment in the area where red snapper are harvested.

### **Past Actions**

Participation in and the economic performance of the reef fish fishery addressed in this document have been affected by a combination of regulatory, biological, social, and external economic factors. Regulatory measures have obviously affected the quantity and composition of harvests of species addressed in this document, through the various size limits, seasonal restrictions, trip or bag limits, and quotas. Some recent regulatory changes specific to red snapper fishing include:

- In May 2013, NMFS implemented a rule to increase the commercial and recreational quotas. The combined quotas were raised from 8.080 million pounds (mp) whole weight (ww) to 8.460 mp. The recreational fishing season was set differently for waters off different states because of non-compatible regulations by the states. However, a federal court ruled against different seasons, so the season for federal waters was set from June 1 through July 5. Later in 2013, NMFS increased the combined quotas from 8.46 mp to 11 mp. This allowed an additional recreational fishing season from October 1 through October 15.
- NMFS granted an exempted fishing permit to the Gulf of Mexico Headboat Collaborative beginning January 1, 2014. The two-year pilot program is intended to assess the viability of an allocation-based management strategy for achieving conservation and economic goals more effectively than current management. The Headboat Collaborative was allocated a portion of the red snapper and gag recreational quotas based on historical landings, and participating headboats can use the allotted quota to harvest red snapper and gag outside the normal recreational fishing seasons.
- In response to a decision by the U.S. District Court for the District of Columbia (Court) in *Guindon v. Pritzker*, (D.D.C. 2014 WL 1274076 Mar. 26, 2014), NMFS took emergency action in May 2014 to address recent recreational red snapper quota overages. The emergency rule implemented an in-season accountability measure for the recreational harvest of red snapper in the Gulf that set an ACT equal to 80% of the 5.390-mp quota (ACT = 4.312 mp). The result was a nine-day recreational red snapper season for 2014.
- A framework action was submitted by the Council in 2014 to establish a recreational red snapper ACT and overage adjustment as permanent accountability measures for the recreational sector that should be effective in early 2015.

Additionally, changes to regulations affecting other portions of the reef fish fishery could also impact red snapper fishermen. Recent regulatory changes include:

- A framework action, effective in July 2013, adjusted the recreational gag season to July 1

through December 3. The framework action also restricted the geographical extent of the fixed February 1 through March 31 shallow-water grouper closed season to apply only to waters seaward of the 20-fathom boundary. This allows grouper fishing to occur year-round while providing some protection to species that spawn during February and March.

- A framework action, effective in September 2013, set a 10-vermilion snapper bag limit within the 20-fish aggregate reef fish bag limit as a precautionary measure to reduce the chance of overfishing for this species. The action also increased the Gulf yellowtail snapper annual catch limit from 725,000 lbs to 901,125 lbs based on a recent stock assessment. Finally, the action eliminated the requirement to use venting tools when fishing for reef fish as some scientific studies have questioned the usefulness of venting tools in preventing barotrauma in fish and the action would give more flexibility to fishermen on when to vent or to use some other device like fish descenders.
- A framework action, effective in March 2014, required headboats to report their logbooks electronically in the Gulf reef fish and coastal migratory pelagic fisheries.
- Accountability measures were implemented for several species of reef fish. The red grouper recreational bag limit was reduced from four to three fish on May 5, 2014, and the season closed on October 4, 2014. The gray triggerfish recreational season was closed on May 1, 2014. The greater amberjack recreational season was closed on August 25, 2014.

Biological forces that either motivate certain regulations or simply influence the natural variability in fish stocks have likely played a role in determining the changing composition of the fisheries addressed by this document. Additional factors, such as changing career or lifestyle preferences, stagnant to declining prices due to imports, increased operating costs (gas, ice, insurance, dockage fees, etc.), and increased waterfront/coastal value leading to development pressure for other than fishery uses have impacted both the commercial and recreational fishing sectors. In general, the regulatory environment for all fisheries has become progressively more complex and burdensome, increasing the pressure on economic losses, business failure, occupational changes, and associated adverse pressures on associated families, communities, and businesses. Some reverse of this trend is possible and expected through management. However, certain pressures would remain, such as total effort and total harvest considerations, increasing input costs, import induced price pressure, and competition for coastal access.

The cumulative effects from the Deepwater Horizon MC252 (DWH) oil spill and response may not be known for years. The impacts of the 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, oil was also documented as being suspended within the water column. Floating and suspended oil washed onto shore in several areas of the Gulf as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are more persistent in the environment and can be transported hundreds of miles.

For red snapper, there may have been a reduction in spawning success in 2010; however, the effects may not begin to manifest themselves measurably until recruits from the 2010 year class begin to enter the adult spawning population and be caught by anglers. The most recent red snapper stock assessment (SEDAR 31 2013) did detect a slight reduction of recruitment for 2010. Because recruitment occurs at approximately three years of age, any 2010 year-class failure is likely to be detected in the next stock assessment. Should the 2010 year class be

adversely affected, reduced fishing success and reduced spawning potential could result, and would need to be taken into consideration in future assessments and actions. Oil exposure could also create sub-lethal effects on the eggs, larva, and early life stages. In a 2014 study (Incardona et al), embryos of bluefin tuna, yellowfin tuna, and amberjack exposed to environmentally realistic levels of hydrocarbons showed defects in heart function. The oil itself could adversely affect adult red snapper and other reef fish species. Weisberg et al. (2014) suggested the hydrocarbons associated with the DWH oil spill may be associated with the occurrences of reef fish with lesions and other deformities. However, Murawski et al. (2014) reported that the incidence of lesions on bottom-dwelling fish had declined between 2011 and 2012 in the northern Gulf. Other studies of the effects of hydrocarbon are ongoing. The stressors could potentially be additive, and each stressor may increase susceptibility to the harmful effects of the other.

Indirect and inter-related effects on the ecological environment of the reef fish fishery in concert with the DWH oil spill are not well understood. Changes in the population size structure could result from shifting fishing effort to specific geographic segments of populations, combined with any anthropogenically induced natural mortality that may occur from the impacts of the oil spill. The impacts on the food web from phytoplankton, to zooplankton, to mollusks, to top predators may be significant in the future. Impacts to red snapper from the oil spill may similarly impact other species that may be preyed upon by red snapper, or that might benefit from a reduced red snapper stock.

### **Present Actions**

The Council took final action on Amendment 40 (GMFMC 2014b) at their October 2014 meeting and submitted the amendment to NMFS for approval. The purpose of this action is to establish federal for-hire and private angling red snapper components within the recreational sector, allocate the red snapper recreational quota and ACT between the components, and establish separate red snapper season closure provisions for the components with each component's ACT used to determine its respective federal red snapper season length. The Council also approved a three-year sunset provision limiting the duration of these measures unless further action is taken.

The topic of creating federal for-hire and private angling components in the recreational sector for people who fish for red snapper, also known as sector separation, has been controversial since its first inception. Private anglers and some for-hire operators are concerned that this action could result in a for-hire catch share program and greatly reduce opportunities by private anglers to fish because of limited allocation. Therefore, they are against the program. Many federal for-hire operators are for the establishment of a federal for-hire component because they see this as a way to stabilize their business strategies. With the reef fish charter vessel/headboat permit limitation, for-hire operators must follow the more restrictive of state and federal regulations. As a result, many operators are seeing fewer fishing days as more of the recreational quota is being caught in state waters due to non-compatible extended state fishing seasons. Federal for-hire operators also see the establishment of the federal for-hire component as a way to improve the monitoring of landings, provide more accountability, and provide more management flexibility.

### **Reasonably Foreseeable Future Actions**

The following are actions important to red snapper and the reef fish fishery in general<sup>15</sup>:

- Amendment 28 would revise the current 51% commercial:49% recreational red snapper allocation.
- Amendment 36 would revise the red snapper IFQ program based on recommendations from the red snapper advisory panel. These recommendations would be based on a review of the program completed in 2013.
- Amendment 39 would allow regional management of red snapper for the recreational sector. This regional management could be set at the state level or be based on broader regions (e.g., eastern and western Gulf).

The Environmental Protection Agency's climate change webpage (<http://www.epa.gov/climatechange/>) provides basic background information on measured or anticipated effects from global climate change. A compilation of scientific information on climate change can be found in the United Nations Intergovernmental Panel on Climate Change's Fifth Assessment Report (IPCC 2014). Those findings are incorporated here by reference and are summarized. Global climate change can affect marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise, and through increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH from the absorption of anthropogenic carbon dioxide emissions may affect a wide range of organisms and ecosystems, particularly organisms that absorb calcium from surface waters, such as corals and crustaceans. These influences could affect biological factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. These climate changes could have significant effects on southeastern fisheries; however, the extent of these effects is not known at this time (IPCC 2013).

In the southeast, general effects of climate change have been predicted through modeling, with few studies on specific effects to species. Warming sea temperature trends in the southeast have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Higher water temperatures may also allow invasive species to establish communities in areas they may not have been able to survive previously. An area of low oxygen, known as the dead zone, forms in the northern Gulf each summer. Climate change may contribute to this dead zone by increasing rainfall that in turn increases nutrient input from rivers. This increased nutrient load causes algal blooms that, when decomposing, reduce oxygen in the water (Kennedy et al. 2002; Needham et al. 2012). Other potential effects of climate change in the southeast include increases in hurricanes, decreases in salinity, altered circulation patterns, and sea level rise. The combination of warmer water and expansion of salt marshes inland with sea-level rise may increase productivity of estuarine-dependent species in the short term. However, in the long term, this increased productivity may be temporary because of loss of fishery habitats due to wetland loss (Kennedy et al. 2002). Actions from this amendment are not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing.

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

## **Monitoring**

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 the Marine Recreational Information Program, NMFS' Headboat Survey, the Texas Marine Recreational Fishing Survey, and the LA Creel Survey. A Southeast Data Assessment and Review assessment of red snapper that the next red snapper assessment is scheduled to be completed in 2015 followed by a benchmark assessment that will be complete in 2016. In response to the DWH incident, increased frequency of surveys of the recreational sector's catch and effort, along with additional fishery-independent information regarding the status of the stock, were conducted. This will allow future determinations regarding the impacts of the DWH incident on various fishery stocks.

The proposed action relates to the harvest of an indigenous species in the Gulf and Atlantic, and the activity being altered does not itself introduce non-indigenous species, and is not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, it does not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

## **Conclusion**

This action, in combination with any past, present, or reasonably foreseeable future actions is not expected to have significant beneficial or adverse cumulative effects on the physical and biological/ecological environments. The cumulative social and economic effects of past, present, and future amendments may be described as limiting fishing opportunities in the short-term, with some exceptions of actions that alleviate some negative social and economic impacts. The intent of these amendments is to improve prospects for sustained participation in the respective fisheries over time and the proposed actions in this amendment are expected to result in some important long-term benefits to the commercial and for-hire fishing fleets, fishing communities and associated businesses, and private recreational anglers. The proposed changes in management for red snapper will contribute to changes in the fishery within the context of the current economic and regulatory environment at the local and regional level.

This analysis found the effects on the biophysical environment are positive because they would maintain the red snapper stock at a level that allows the maximum benefits in yield while increasing flexibility for recreational for-hire fishing operations. However, short-term negative impacts on the socioeconomic environment associated with red snapper fishing have occurred under the rebuilding plan and are likely to continue due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized by selecting measures that would provide the least disruption to the red snapper component of the reef fish fishery while maintaining quotas consistent with the rebuilding plan. The action considered in this framework action may further minimized the impacts of future recreational management measures by directly addressing issues specific to the federal for-hire component of the recreational sector.

# CHAPTER 5. REGULATORY IMPACT REVIEW

## 5.1 Introduction

## 5.2 Problems and Objectives

## 5.3 Methodology and Framework for Analysis

## 5.4 Description of the Fishery

## 5.5 Effects on Management Measures

## 5.6 Public and Private Costs of Regulations

Council costs of document preparation, meetings, public hearings, and information Dissemination .....	\$x0,000
NOAA Fisheries administrative costs of document preparation, meetings and review .....	\$x0,000
TOTAL .....	\$x0,000

## 5.7 Determination of Significant Regulatory Action

# **CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS**

**6.1 Introduction**

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

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

**6.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records**

**6.5 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed rule**

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

**6.7 Description of the significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities**

## CHAPTER 7. LIST OF PREPARERS AND AGENCIES AND PERSONS CONSULTED

### PREPARERS (Interdisciplinary Planning Team)

Name	Expertise	Responsibility	Agency
Steven Atran	Fishery Biologist	Co-Team Lead – Amendment development, introduction, social analyses	GMFMC
Susan Gerhart	Biologist	Co-Team Lead – Amendment development, effects analysis, and cumulative effects	SERO
Rich Malinowski	Biologist	Co-Team Lead – Amendment development, effects analysis, and cumulative effects	SERO
David Records	Economist	Economic environment and effects analysis, Regulatory Impact Review, and Regulatory Flexibility Act analysis	SERO
Michael Jepson	Anthropologist	Social environment and environmental justice	SERO
Ava Lasseter	Anthropologist	Social analyses and Reviewer	GMFMC
Mara Levy	Attorney	Legal compliance and Reviewer	NOAA GC
Scott Sandorf	Technical Writer Editor	Regulatory writer	SERO
Noah Silverman	Natural Resource Management Specialist	NEPA compliance	SERO
Nick Farmer	Biologist	Data analysis	SERO
Andrew Strelcheck	Biologist	Data analysis	SERO
Stephen Holliman	Economist	Reviewer	SERO
Assane Diagne	Economist	Reviewer	GMFMC
Carrie Simmons	Fishery biologist	Reviewer	GMFMC
Shannon Cass-Calay	Biologist	Reviewer	SEFSC

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  
U.S. Coast Guard

## CHAPTER 8. REFERENCES

Albins and Hixon 2008. Invasive Indo-Pacific lionfish *Pterois volitans* reduce the recruitment of Atlantic coral-reef fishes. Marine Ecology Progress Series. Vol. 367: 233–238, 2008.

Ault, J. S., S. G. Smith, G. A. Diaz, and E. Franklin. 2003. Florida hogfish fishery stock assessment. University of Miami, Rosenstiel School of Marine Science. Contract No. 7701 617573 for Florida Marine Research Institute, St. Petersburg, Florida.  
[http://www.sefsc.noaa.gov/sedar/download/SEDAR6\\_RW4.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/SEDAR6_RW4.pdf?id=DOCUMENT)

Carter, D. W., and Liese, C. 2012. The Economic Value of Catching and Keeping or Releasing Saltwater Sport Fish in the Southeast USA. North American Journal of Fisheries Management, 32:4, 613-625. Available at: <http://dx.doi.org/10.1080/02755947.2012.675943>

Cass-Calay, S. L., and M. Bahnick. 2002. Status of the yellowedge grouper fishery in the Gulf of Mexico. Contribution SFD 02/03 – 172. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.  
[http://www.sefsc.noaa.gov/sedar/download/S22\\_RD02\\_Status%20of%20the%20Yellowedge%20Grouper%20Fishery.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/S22_RD02_Status%20of%20the%20Yellowedge%20Grouper%20Fishery.pdf?id=DOCUMENT)

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

Fuller, P.F., D.M. Knott, P.R. Kingsley-Smith, J.A. Morris, C.A. Buckel, M.E. Hunter, and L.D. Hartman. 2014. Invasion of Asian tiger shrimp, *Penaeus monodon* Fabricius, 1798, in the western north Atlantic and Gulf of Mexico. Aquatic Invasions 9(1): 59–70.  
[http://www.aquaticinvasions.net/2014/AI\\_2014\\_Fuller\\_etal.pdf](http://www.aquaticinvasions.net/2014/AI_2014_Fuller_etal.pdf)

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

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

GMFMC. 2004a. Final environmental impact statement for the generic essential fish habitat amendment to the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, stone crab fishery of the Gulf of Mexico, coral and coral reef fishery of the Gulf of Mexico, spiny lobster fishery of the Gulf of Mexico and South Atlantic, coastal migratory

pelagic resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council. Tampa, Florida.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf>

GMFMC. 2004b. Amendment 22 to the fishery management plan for the reef fish fishery of the Gulf of Mexico, U.S. waters, with supplemental environmental impact statement, regulatory impact review, initial regulatory flexibility analysis, and social impact assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Amend%2022%20Final%2070204.pdf>

GMFMC. 2005. Generic amendment number 3 for addressing essential fish habitat requirements, habitat areas of particular concern, and adverse effects of fishing in the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, United States waters, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic, stone crab fishery of the Gulf of Mexico, spiny lobster 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.

[http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3\\_EFH\\_Amendment.pdf](http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.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. 2008. Final reef fish amendment 30A: greater amberjack – revised rebuilding plan, accountability measures; gray triggerfish – establish rebuilding plan, end overfishing, accountability measures, regional management, management thresholds and benchmarks including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida.

<http://www.gulfcouncil.org/docs/amendments/Amend-30A-Final%202008.pdf>

GMFMC. 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. 2010a. Final regulatory amendment the reef fish fishery management plan to set total allowable catch for red snapper including revised environmental assessment, regulatory impact review, and regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida.

[http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Regulatory%20Amendment%203\\_26\\_10.pdf](http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Regulatory%20Amendment%203_26_10.pdf)

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

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

GMFMC. 2011b. Final generic annual catch limits/accountability measures amendment for the Gulf of Mexico fishery management council's red drum, reef fish, shrimp, coral and coral reefs fishery management plans, including environmental impact statement, regulatory impact review, regulatory flexibility analysis, and fishery impact statement. Gulf of Mexico Fishery Management Council. Tampa, Florida.

[http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL\\_AM\\_Amendment-September%209%202011%20v.pdf](http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf)

GMFMC. 2012. Final regulatory amendment to the fishery management plan for the reef fish resources of the Gulf of Mexico – revise fall recreational fixed closed season and set 2012 and 2013 quotas for red snapper. Gulf of Mexico Fishery Management Council, Tampa, Florida. 62 p.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Red%20Snapper%20Fall%20Season%20and%20Quota%20RegAmend%20-%2003-20-2012.pdf>

GMFMC. 2013a. Framework action to set the 2013 red snapper commercial and recreational quotas and modify the recreational bag limit. Gulf of Mexico Fishery Management Council, Tampa, Florida. 81 p.

<http://www.gulfcouncil.org/docs/amendments/Red%20Snapper%20Framework%20Action%20to%20Set%202013%20Quotas.pdf>

GMFMC. 2013b. Framework action for a red snapper 2013 quota increase and supplemental recreational season. Gulf of Mexico Fishery Management Council, Tampa, Florida. 87 p.

<http://www.gulfcouncil.org/docs/amendments/Final%20Red%20Snapper%20Framework%20Action%20Set%202013%20Quotas%2008-01-13.pdf>

GMFMC. 2013c. Standing and Special Reef Fish SSC Meeting Summary –May 29-31, 2013. Gulf of Mexico Fishery Management Council, Tampa, Florida. 14 p. (available from the Council's FTP file server vi the Council website: <http://www.gulfcouncil.org>)

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

GMFMC. 2014a. 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. 2014b. 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 and SAFMC. 1982. Fishery management plan final environmental impact statement for coral and coral reefs. Gulf of Mexico Fishery Management Council. Tampa, Florida; and South Atlantic Fishery Management Council. Charleston, South Carolina.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Coral%20FMP.pdf>

Goodyear, C. P. 1988. The Gulf of Mexico fishery for reef fish species, a descriptive profile. Unpublished report. National Marine Fisheries Service, Southeast Fisheries Center, Miami Laboratory, CRD 87/88-19.

[https://grunt.sefsc.noaa.gov/P\\_QryLDS/DisplayDocuments.jsp?min\\_series\\_code=CR&min\\_record\\_id=935&direction=next&total\\_rows=2955&description=SEFSC%20Technical%20Memorandum#](https://grunt.sefsc.noaa.gov/P_QryLDS/DisplayDocuments.jsp?min_series_code=CR&min_record_id=935&direction=next&total_rows=2955&description=SEFSC%20Technical%20Memorandum#)

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

Impact Assessment, Inc. 2005. Identifying Communities Associated with the Fishing Industry Along the Florida Gulf Coast. Impact Assessment, Inc. La Jolla, CA. Volumes 1-3 646 pp.

Incardona, J.P., L. D. Gardnerb, 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 of the United States of America* 111(15): 1510-1518.

IPCC. 2014. Climate Change 2014: impacts, adaptation, and vulnerability. Part A: global and sectoral aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Field, C. B., V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, K. L. Ebi, Y. O. Estrada, R. C. Genova, B. Girma, E. S. Kissel, A. N. Levy, S. MacCracken, P. R. Mastrandrea, and L. L. White (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.

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

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

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. 14 p. In Beard, T. D., Jr., A. J. Loftus, and R. Arlinghaus (editors). *The Angler and the Environment*. American Fisheries Society, Bethesda, MD.

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

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

Muller, R. G., M. D. Murphy, J. de Silva, and L. R. Barbieri. 2003. A stock assessment of yellowtail snapper, *Ocyurus chrysurus*, in the Southeast United States: Final report submitted to the National Marine Fisheries Service, the Gulf of Mexico Fishery Management Council, and the South Atlantic Fishery Management Council as part of the southeast data, assessment, and review (SEDAR) III. Florida Fish and Wildlife Conservation Commission, FWC-FMRI Report: IHR 2003-10. Florida Fish and Wildlife Research Institute. St. Petersburg, Florida.  
[http://myfwc.com/media/199926/2003\\_yel\\_snapper\\_sa\\_4010.pdf](http://myfwc.com/media/199926/2003_yel_snapper_sa_4010.pdf)

Needham, H., D. Brown, and L. Carter. 2012. Impacts and adaptation options in the Gulf coast. Report prepared for the Center for Climate and Energy Solutions. 38 p. Available at:  
<http://www.c2es.org/docUploads/gulf-coast-impacts-adaptation.pdf>.

NMFS. 2002. Status of red grouper in United States waters of the Gulf of Mexico during 1986-2001, revised. Contribution No. SFD-01/02-175rev. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.  
<http://www.sefsc.noaa.gov/sedar/download/S12RD02%202001%20assess.pdf?id=DOCUMENT>

NMFS. 2005. Endangered Species Act – Section 7 consultation on the continued authorization of reef fish fishing under the Gulf of Mexico reef fish fishery management plan and proposed amendment 23. February 15, 2005. National Marine Fisheries Service. St. Petersburg, Florida.  
[http://sero.nmfs.noaa.gov/pr/pdf/Final\\_RFFFMP23.pdf](http://sero.nmfs.noaa.gov/pr/pdf/Final_RFFFMP23.pdf)

NMFS. 2010a. 2010 Recreational Red Snapper Quota Closure Analysis – Fall Reopening. SERO-LAPP-2010-04. Southeast Regional Office, National Marine Fisheries Service. St. Petersburg, Florida. Available at:  
[http://sero.nmfs.noaa.gov/sf/pdfs/2010\\_Recreational\\_Red\\_Snapper\\_Quota\\_Closure\\_Analysis\\_Fall\\_Reopening.pdf](http://sero.nmfs.noaa.gov/sf/pdfs/2010_Recreational_Red_Snapper_Quota_Closure_Analysis_Fall_Reopening.pdf)

NMFS. 2011a. Biological Opinion on the Continued Authorization of Reef Fish Fishing under the Gulf of Mexico Reef Fish Fishery Management Plan. September 30, 2011. Available at:  
<http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/03584%20GOM%20Reef%20Fish%20BiOp%202011%20final.pdf>

NMFS. 2011b. Fisheries Economics of the United States, 2009. U.S. Department of Commerce, NOAA Technical Memorandum. National Marine Fisheries Service-F/SPO-118. Available at: [http://www.st.nmfs.noaa.gov/st5/publication/fisheries\\_economics\\_2009.html](http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html)

O'Hop, J., M. Murphy, and D. Chagaris. 2012. The 2012 stock assessment report for yellowtail snapper in the south Atlantic and Gulf of Mexico. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, Florida. [http://www.sefsc.noaa.gov/sedar/download/YTS\\_FWC\\_SAR.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/YTS_FWC_SAR.pdf?id=DOCUMENT)

Page, L.M., H. Espinoza-Pérez, L.T. Findley, C.R. Gilbert, R.N. Lea, N.E. Mandrak, R.L. Mayden, and J.S. Nelson. 2013. Common and scientific names of fishes from the United States, Canada, and Mexico, 7<sup>th</sup> edition. American Fisheries Society, Special Publication 34, Bethesda, Maryland. 384 p.

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

Porch, C. E., and S. L. Cass-Calay. 2001. Status of the vermilion snapper fishery in the Gulf of Mexico – assessment 5.0 (revised 2005). Sustainable Fisheries Division Contribution No. SFD-2005.034. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida. <http://www.sefsc.noaa.gov/sedar/download/SEDAR-AW-04-REVISED.pdf?id=DOCUMENT>

Porch, C. E., A. M. Eklund, and G. P. Scott. 2003. An assessment of rebuilding times for goliath grouper. Contribution: SFD 2003-0018. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida. [http://www.sefsc.noaa.gov/sedar/download/SEDAR6\\_RW3\\_GGRebuild.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/SEDAR6_RW3_GGRebuild.pdf?id=DOCUMENT)

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

Schirripa, M. J. and C. M. Legault. 1999. Status of the red snapper in U.S. waters of the Gulf of Mexico updated through 1998. National Marine Fisheries Service, Southeast Fisheries Science Center, Miami, Florida. Sustainable Fisheries Division Contribution SFD-99/00-75. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RSAssess99.pdf>

Schofield, P.J. 2010. Update of the geographic spread of lionfish (*Pterois volitans* [Linnaeus, 1758] and *P. miles* [Bennet, 1828]) in the western North Atlantic Ocean, Caribbean Sea and Gulf of Mexico. Aquatic Invasions 5 (Supplement 1):S117-122. [http://www.aquaticinvasions.net/2010/Supplement/AI\\_2010\\_5\\_S1\\_Schofield.pdf](http://www.aquaticinvasions.net/2010/Supplement/AI_2010_5_S1_Schofield.pdf)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SEDAR 33. 2014a. Stock assessment report Gulf of Mexico greater amberjack. Southeast Data, Assessment, and Review. North Charleston, South Carolina. <http://www.sefsc.noaa.gov/sedar/>.

SEDAR 33. 2014b. Stock assessment report Gulf of Mexico gag. Southeast Data, Assessment, and Review. North Charleston, South Carolina.  
<http://www.sefsc.noaa.gov/sedar/>.

SERO-LAPP-201x-xx Coming soon

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

Shipp, R.L. and S.A. Bortone. 2009. A perspective of the importance of artificial habitat on the management of red snapper in the Gulf of Mexico. *Reviews in Fisheries Science*, 17:1,41-47.  
[http://www.sefsc.noaa.gov/sedar/download/SEDAR24-RD39\\_Shipp2009.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/SEDAR24-RD39_Shipp2009.pdf?id=DOCUMENT)

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

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

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

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

Turner, S. C., N. J. Cummings, and C. P. Porch. 2000. Stock assessment of Gulf of Mexico greater amberjack using data through 1998. SFD-99/00-100. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.  
[http://www.sefsc.noaa.gov/sedar/download/S9RD06\\_GAJassessGulf.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/S9RD06_GAJassessGulf.pdf?id=DOCUMENT)

Turner, S. C., C. E. Porch, D. Heinemann, G. P. Scott, and M. Ortiz. 2001. Status of the gag stocks of the Gulf of Mexico: assessment 3.0. August 2001. Contribution: SFD-01/02-134. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.  
[http://www.sefsc.noaa.gov/sedar/download/GulfMexicoGagAssessment86\\_2000.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/GulfMexicoGagAssessment86_2000.pdf?id=DOCUMENT)

Valle, M., C. Legault, and M. Ortiz. 2001. A stock assessment for gray triggerfish, *Balistes capriscus*, in the Gulf of Mexico. Contribution: SFD-01/02-124. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.  
[http://www.sefsc.noaa.gov/sedar/download/S9RD11\\_GrayTrig01.pdf?id=DOCUMENT](http://www.sefsc.noaa.gov/sedar/download/S9RD11_GrayTrig01.pdf?id=DOCUMENT)

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

Wilson, C. A., and D. L. Nieland. 2001. Age and growth of red snapper *Lutjanus campechanus* from the northern Gulf of Mexico off Louisiana. *Fishery Bulletin* 99:653–664.

## APPENDIX A. OTHER APPLICABLE LAW

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the Exclusive Economic Zone. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making include the National Environmental Policy Act (sections throughout the document), Endangered Species Act (Section 3.2.2), Marine Mammal Protection Act (Section 3.2.3), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Section 3.4.2). Other applicable laws are summarized below.

### **Administrative Procedures Act**

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

### **Coastal Zone Management Act**

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

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

### **Data Quality Act**

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

Specifically, the DQA directs the Office of Management and Budget to issue government wide guidelines that “provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies.” Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: 1) ensure information quality and develop a pre-dissemination review process; 2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and 3) report periodically to Office of Management and Budget on the number and nature of complaints received.

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

### **Executive Orders**

#### **E.O. 12630: Takings**

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

#### **E.O. 12962: Recreational Fisheries**

This Executive Order requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it establishes a seven-member National Recreational Fisheries Coordination Council (Council) responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for

developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

**E.O. 13132: Federalism**

The Executive Order on Federalism requires agencies in formulating and implementing policies, to be guided by the fundamental Federalism principles. The Order serves to guarantee the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendments given the overlapping authorities of NMFS, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes, and local entities (international, too).

## **APPENDIX B. SUMMARIES OF PUBLIC COMMENTS RECEIVED**

This section will be completed after all comments have been received and the Council takes final action.