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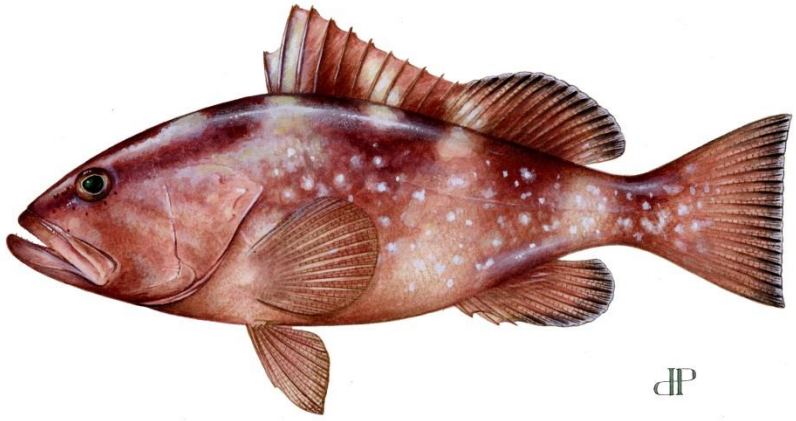
Adjust Red Grouper Allowable Harvest



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

June 2016
Including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

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ENVIRONMENTAL ASSESSMENT COVER SHEET

Adjust Red Grouper Allowable Harvest

Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico to Adjust Red Grouper Allowable Harvest.

Type of Action

( ) Administrative
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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
AM	Accountability measure
CFR	Code of Federal Regulations
COI	Certificate of inspection
Council	Gulf of Mexico Fishery Management Council
CS	Consumer surplus
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EIS	Environmental impact statement
EJ	Environmental justice
E.O.	Executive Order
ESA	Endangered Species Act
FMP	Fishery Management Plan
F_{MSY}	Fishing mortality rate corresponding to an equilibrium yield of MSY
$F_{30\% SPR}$	Fishing mortality corresponding to 30% spawning potential ratio
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
gw	gutted weight
HAPC	Habitat area of particular concern
IFQ	Individual fishing quota
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MRIP	Marine Recreational Information Program
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOR	Net operating revenue
NS1	National Standard 1 guidelines
OFL	Overfishing limit
Opinion	Biological opinion
OY	Optimum yield
PDF	Probability Distribution Function
PS	Producer surplus
pw	product weight
Reef Fish FMP	Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico
RFA	Regulatory Flexibility Act of 1980

RFAA	Regulatory Flexibility Act Analysis
RGM	Red grouper multi-use
RIR	Regulatory impact review
rq	regional quotient
Secretary	Secretary of Commerce
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Focus
SERO	NMFS Southeast Regional Office
SFD	Sustainable Fisheries Division
SPR	Spawning potential ratio
SRHS	Southeast region headboat survey
SSB	Stock sized biomass
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
USFWS	United States Fish and Wildlife Service
VMS	Vessel monitoring system

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CHAPTER 1. INTRODUCTION

1.1 Background

The stock status of red grouper was evaluated in the Southeast Data Assessment Review 42 (SEDAR 42, 2015) and subsequent review by the Science and Statistical Committee (SSC) at its January 2016 meeting. The SSC agreed with the determination that red grouper are not overfished and are not experiencing overfishing, and recommended increases in the overfishing limit (OFL) and the acceptable biological catch (ABC) (Table 1.1.1). The action alternatives in this document consider three levels of increased allowable harvest in the years 2016 through 2020. The SSC provided two alternative catch level recommendations; as a declining yield stream and as a constant catch during this period. The projected yield stream declines through time because there was a strong year class in 2005 that is moving through the fishery and subsequent year classes have not been as strong as this 2005 year class. Analyses by the Southeast Fisheries Science Center (SEFSC) and subsequent review by the SSC have found that catch levels based on the declining yield stream and the mean of this yield stream are functionally equivalent in terms of the risk of overfishing.

The OFL and ABC recommendations from the stock assessment are dramatic increases that exceed observed harvest levels during the management history and are largely driven by increases in estimate of historical discards. The increase in discard estimates effectively increased the estimate of stock productivity and led to a lower mortality estimates for a given harvest level. Although, the projected yields from this stock assessment assume recruitment levels equal to the long-term average levels but red grouper recruitment has been below average since 2005 (SEDAR 42 2015) and this may warrant consideration when establishing appropriate harvest levels.

The SSC noted that red grouper stock biomass has fluctuated above and below minimum stock size threshold (MSST) since 1993 but is currently above both MSST and the maximum sustainable yield (MSY) proxy (Figure 1.1.1). The fishing mortality rate has been below maximum fishing mortality threshold (MFMT) since 1996 except for 2005 (Figure 1.1.2). Mortality due to the red tide event in 2005 was modeled as a fishing fleet. The large peak in mortality is the result of this red tide event (Figure 1.1.2).

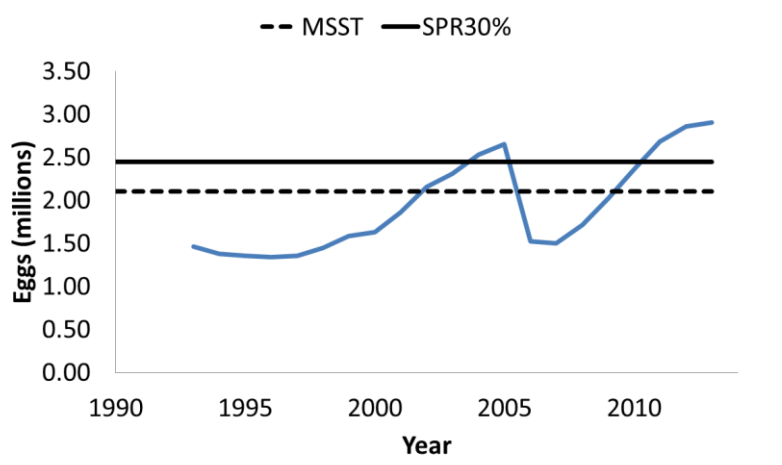

Figure 1.1.1. Red grouper spawning stock biomass (SSB) relative to MSST and MSY proxy 1993-2013. Spawning stock biomass was modeled in terms of egg production (millions of eggs).

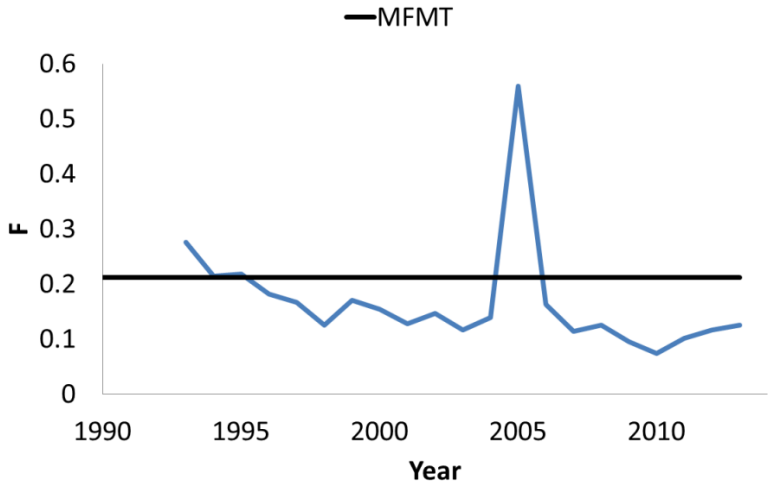

Figure 1.1.2. Red grouper fishing mortality rate relative to MFMT 1993-2013. The peak in 2005 is primarily attributed to a red tide event.

Table 1.1.1. Status determination criteria and stock status of red grouper based on SEDAR 42 (2015) accepted by the SSC. Results indicate that the red grouper stock is not overfished (i.e., $SSB_{current}/MSST > 1$*) and is not experiencing overfishing (i.e., $F_{current}/MFMT < 1$**).

	Definition	Value
Base M	M	0.144
	Mortality rate criteria	
F_{msy} or proxy	$F_{30\%}$	0.212
F_{oy}	75% of $F_{30\%}$	0.164
$F_{current}$	F_{2013}	0.126
$F_{current}/MFMT$**	$F_{2013}/F_{30\%}$	0.594
$F_{current}/F_{oy}$	F_{2013}/75% of $F_{30\%}$	0.766
	Biomass criteria	
SSB_{msy} (Eggs)	SSB at $F_{30\%}$	2,447,900
MSST	$(1-M)*SSB_{30\%}$	2,095,402
SSB_{oy}	75% SSB at $F_{30\%}$	3,081,890
$SSB_{current}$ (Eggs)	Eggs	2,905,630
$SSB_{current}/SSB_{30\%}$	Eggs/ SSB at $F_{30\%}$	1.187
$SSB_{current}/MSST$*	Eggs/ $(1-M)*SSB_{30\%}$	1.387
$SSB_{current}$/SSBoy	Eggs/ 75% SSB at $F_{30\%}$	0.943

Landings Data

Total red grouper landings from 2010 through 2015 ranged from 3.55 million pounds (mp) gutted weight (gw) in 2010 to 7.20 mp gw in 2014 (Table 1.1.2). The recreational landings exceeded the recreational annual catch limit (ACL) in 2013 and in-season recreational closures have occurred in both 2014 and 2015 to prevent exceeding the recreational ACL. Under current catch limits, an in-season closure will likely be necessary in 2016 to constrain the recreational sector to their ACL. Based on historical catch rates, the recreational sector is expected to meet their ACL between October 30 and December 3, 2016. The in-season closure is necessary based on accountability measures (AMs) implemented in Reef Fish Amendment 32 (GMFMC 2011b). The AMs state that when red grouper landings reach or are projected to reach the ACL, the Assistant Administrator for Fisheries will file a notification closing the recreational harvest for the species projected to reach its ACL for the rest of the fishing year. The post-season AM states that if red grouper landings exceed the recreational ACL, the following season will be closed when the annual catch target (ACT) is projected to be met (GMFMC 2012). Recreational red grouper landings did not exceed the ACL in 2015 so it is expected that it will be closed if/when the recreational ACL is expected to be harvested.

If the recreational season remained open throughout 2016, landings are projected to exceed the current recreational ACT by 322,546 to 436,000 lbs gw and the recreational ACL by 152,546 to 266,000 lbs gw. Projections are based upon observed 2015 catch rates and seasonal auto-regressive integrated moving average (SARIMA) models fit to historical catch data (Figure 1.1.3). The increases in allowable harvest for all the action alternatives would be expected to allow for a year-round recreational season at the current catch rates and bag-limits. However, numerous changes in management of the recreational sector have occurred in the last 5-years. For example, changes in total allowable catch (TAC) (GMFMC 2011a,b), bag limits (GMFMC 2014), and methodologies used estimate recreational harvest complicate projections of harvest rate and the date when the recreational ACL will be caught.

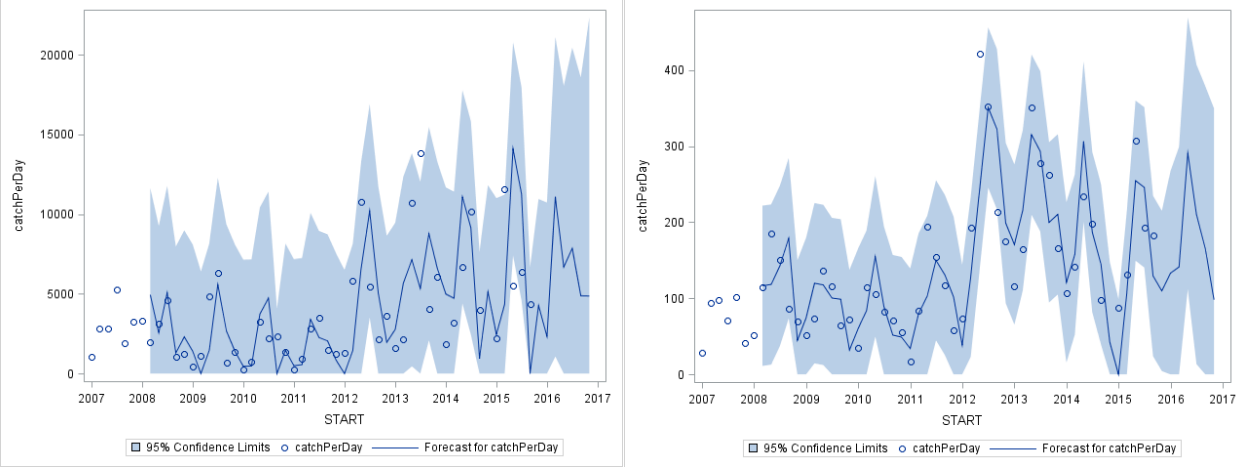

Figure 1.1.3. Seasonal auto-regressive integrated moving average (SARIMA) model fits (blue lines) to 2007-2015 wave-specific daily catch rate data (open circles) for back-calculated MRFSS (left) and Southeast Region Headboat Survey (right) data, with 95% confidence limits denoted by blue bands. SARIMA model fits anticipate a closure date of 30 October 2016 if this framework amendment is not implemented.

The commercial sector is managed under and individual fishing quota (IFQ) system and landings have not exceeded the ACT/quota or ACL between 2010 and 2015. Based on the National Marine Fisheries Service (NMFS) quota monitoring site, accessed April 2016, the commercial sector has landed 83.0 to 99.5% of the ACT in the last 5 years[1]. In addition to quota monitoring, the IFQ program serves as the AM for the commercial sector (GMFMC 2011b). Individual fishing programs are considered proactive AMs because they put measures in place ahead of time to decrease the likelihood that ACLs are exceeded. IFQ programs are consistent with National Standard 1 guidance in that they provide a mechanism to monitor and prevent catches from exceeding ACLs. In terms of the commercial sector, the allowable harvest would greatly increase under all the action alternatives, however, if a large quota increase occurs late in the year, reductions in the market price of commercial red grouper may occur.

[1] http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/commercial_gulf/reef_fish_historical/index.html

Table 1.1.2. Commercial and recreational landings of red grouper (pounds gutted weight) from 2010 to 2015.

Year	Commercial	Recreational	Total	Recreational ACL	Recreational ACT	Recreational Closure Date
2010	2,910,970	635,680	3,546,650	1,850,000	---	none
2011	4,783,668	643,745	5,427,413	1,510,000	---	none
2012	5,219,133	1,752,930	6,972,063	1,900,000	---	none
2013	4,599,001	2,377,111	6,976,112	1,900,000	---	none
2014	5,601,905	1,600,475	7,202,380	1,900,000	1,730,000	10/4/2014
2015	4,797,967	1,781,130	6,579,097	1,900,000	1,730,000	10/8/2015

Source: NMFS SERO 2015.
Note: MRIP recreational landings data are not final for 2015.

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

1.2 Purpose and Need

The purpose of this amendment is to modify the allowable harvest for the Gulf of Mexico red grouper stock, based upon the Scientific and Statistical Committee (SSC) review and recommendations of the most recent SEDAR Red Grouper Stock Assessment (SEDAR 42, 2015).

The need for this amendment is to adjust the allowable harvest based upon the best available science and manage red grouper at a level that achieves optimum yield (OY) and that prevents overfishing from occurring.

1.3 History of Management

The following summary describes management actions that affect the reef fish fishery in the Gulf of Mexico (Gulf). The summary focuses on the management of grouper species in the Reef Fish Fishery Management Plan (FMP). More information on the Reef Fish FMP can be obtained from the Gulf of Mexico Fishery Management Council (Council) at http://www.gulfcouncil.org/fishery_management_plans/index.php.

Amendments to the Reef Fish FMP

Amendment 1, implemented in 1990, set objectives to stabilize long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age fish to achieve at least 20% spawning stock biomass per recruit by January 1, 2000. Among the grouper management measures implemented were:

- Set a 20-inch total length (TL) minimum size limit on red grouper, Nassau grouper, yellowfin grouper, black grouper, and gag;
- Set a 50-inch TL minimum size limit on goliath grouper (jewfish);
- Set a five-grouper recreational daily bag limit;
- Set an 11.0 mp commercial quota for grouper, with the commercial quota divided into a 9.2 mp shallow-water grouper quota and a 1.8 mp deep-water grouper quota. Shallow-water grouper were defined as black grouper, gag, red grouper, Nassau grouper, yellowfin grouper, yellowmouth grouper, rock hind, red hind, speckled hind, and scamp. Scamp would be applied to the deep-water grouper quota once the shallow-water grouper quota was filled. Deep-water grouper were defined as misty grouper, snowy grouper, yellowedge grouper, warsaw grouper, and scamp once the shallow-water grouper quota was filled. Goliath grouper were not included in the quotas;
- Allowed a two-day possession limit for charter vessels and headboats on trips that extend beyond 24 hours, provided the vessel has two licensed operators aboard as required by the U.S. Coast Guard, and each passenger can provide a receipt to verify the length of the trip. All other fishermen fishing under a bag limit were limited to a single day possession limit;
- Established a framework procedure for specification of TAC to allow for annual management changes;
- Established a longline and buoy gear boundary at approximately the 50-fathom depth contour west of Cape San Blas, Florida, and the 20-fathom depth contour east of Cape San Blas, inshore of which the directed harvest of reef fish with longlines and buoy gear was prohibited, and the retention of reef fish captured incidentally in other longline operations (e.g., sharks) was limited to the recreational daily bag limit. Subsequent changes to the longline/buoy boundary could be made through the framework procedure for specification of TAC;
- Limited trawl vessels (other than vessels operating in the unsorted groundfish fishery) to the recreational size and daily bag limits of reef fish;
- Established fish trap permits, allowing up to a maximum of 100 fish traps per permit holder;
- Prohibited the use of entangling nets for directed harvest of reef fish. Retention of reef fish caught in entangling nets for other fisheries was limited to the recreational daily bag limit;
- Established the fishing year to be January 1 through December 31;
- Extended the stressed area to the entire Gulf coast; and
- Established a commercial reef fish vessel permit.

Generic Sustainable Fisheries Act Amendment, partially approved and implemented in November 1999. Among the management measures implemented were:

- Set the MFMT for most reef fish stocks at a fishing mortality rate corresponding to 30% spawning potential ratio ($F_{30\% SPR}$);
- Estimates of MSY, MSST, and OY were disapproved because they were based on spawning potential ratios (SPR) proxies rather than biomass based estimates.

Secretarial Amendment 1 established the following management measures that were implemented July 15, 2004 [69 FR 33315]:

- Established a rebuilding plan with a 5.31 mp gutted weight (gw) commercial quota, and a 1.25 mp gw recreational target catch level for red grouper;
- Reduced the commercial quota for shallow-water grouper from 9.35 to 8.80 mp gw and reduced the commercial quota for deep-water grouper from 1.35 to 1.02 mp gw;
- Reduced the red grouper recreational bag limit to two fish per person per day.

Amendment 18A was implemented on September 8, 2006, except for vessel monitoring system (VMS) requirements which were implemented May 6, 2007. Amendment 18A:

- Prohibited vessels from retaining reef fish caught under recreational bag/possession limits when commercial quantities of Gulf reef fish are aboard;
- Adjusted the maximum crew size on charter vessels that also have a commercial reef fish permit and a United States Coast Guard certificate of inspection (COI) to allow the minimum crew size specified by the COI when the vessel is fishing commercially for more than 12 hours;
- Prohibited the use of reef fish for bait except for sand perch or dwarf sand perch;
- Required devices and protocols for the safe release in incidentally caught endangered sea turtle species and smalltooth sawfish;
- Updated the TAC procedure to incorporate the SEDAR assessment methodology;
- Changed the permit application process to an annual procedure and simplifies income qualification documentation requirements; and
- Required electronic VMS aboard vessels with federal reef fish permits, including vessels with both commercial and charter vessel permits.

Amendment 19, also known as the Generic Amendment Addressing the Establishment of the Tortugas Marine Reserves, or Generic Essential Fish Habitat Amendment 2, was implemented on August 19, 2002. This amendment established:

- Two marine reserves off the Dry Tortugas where fishing for any species and anchoring by fishing vessels is prohibited.

Amendment 21 was implemented in July 2003 and:

- Continued the Steamboat Lumps and Madison-Swanson reserves for an additional six years, until June 2010. In combination with the initial four-year period (June 2000-June 2004), this allowed a total of ten years in which to evaluate the effects of these reserves and to provide protection to a portion of the gag spawning aggregations.

Amendment 27 was implemented on February 28, 2008, except for reef fish bycatch reduction measures that became effective on June 1, 2008. This amendment:

- Addressed 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.

Amendment 29, implemented January 1, 2010:

- Established an IFQ system for the commercial grouper and tilefish fisheries.

Amendment 30B, implemented May 2009, proposed to end overfishing of gag, revise red grouper management measures as a result of changes in the stock condition, establish ACLs and AMs for gag and red grouper, manage shallow-water grouper to achieve optimum yield, and improve the effectiveness of federal management measures. The amendment:

- Defined the gag MSST and OY;
- Set interim allocations of gag and red grouper between recreational and commercial fisheries;
- Made adjustments to the gag and red grouper TACs to reflect the current status of these stocks;
- Established ACLs and AMs for the commercial and recreational red grouper fisheries, commercial and recreational gag fisheries, and commercial aggregate shallow-water grouper fishery;
- Adjusted recreational grouper bag limits and seasons;
- Adjusted commercial grouper quotas;
- Reduced the red grouper commercial minimum size limit;
- Replaced the one month commercial grouper closed season with a four-month seasonal area closure at the Edges, a 390 square nautical mile area in the dominant gag spawning grounds;
- Eliminated the end date for the Madison-Swanson and Steamboat Lumps marine reserves; and
- Required that vessels with a federal charter vessel/headboat permit for Gulf reef fish must comply with the more restrictive of state or federal reef fish regulations when fishing in state waters.

Amendment 31, implemented May 26, 2010, established additional restrictions on the use of bottom longline gear in the eastern Gulf of Mexico in order to reduce bycatch of endangered sea turtles, particularly loggerhead sea turtles. The amendment:

- Prohibited the use of bottom longline gear shoreward of a line approximating the 35-fathom contour from June through August;
- Reduced the number of longline vessels operating in the fishery through an endorsement provided only to vessel permits with a demonstrated history of landings, on average of at

least 40,000 lbs of reef fish annually with fish traps or longline gear during 1999-2007; and

- Restricted the total number of hooks that may be possessed onboard each reef fish bottom longline vessel to 1,000, only 750 of which may be rigged for fishing. The boundary line was initially moved from 20 to 50 fathoms by emergency rule effective May 18, 2009. That rule was replaced on October 16, 2009, by a rule under the Endangered Species Act, moving the boundary to 35 fathoms and implementing the maximum hook provisions.

Generic ACL/AM Amendment, established:

- In-season and post-season AMs for all stocks that did not already have such measures defined. This includes the "other shallow-water grouper species" complex. The AM states that if an ACL is exceeded, in subsequent years an in-season AM will be implemented that would close shallow-water grouper fishing (for all shallow-water grouper species combined) when the ACL is reached or projected to be reached.

Amendment 32, implemented March 12, 2012:

- Set the commercial and recreational gag ACLs for 2012 through 2015 and beyond.
- Set the constant catch red grouper commercial ACL at 6.03 mp and the red grouper recreational ACL at 1.90 mp;
- Set the commercial and recreational gag ACTs for 2012 through 2015 and beyond;
- Implemented gag commercial quotas for 2012 through 2015 and beyond that included a 14% reduction from the ACT to account for additional dead discards of gag resulting from the reduced harvest;
- Modified grouper IFQ multi-use allocations;
- Reduced the commercial minimum size limit of gag from 24 to 22 inches TL to reduce discards;
- Set the gag recreational season from July 1 through October 31 (the bag limit remained two gag in the four grouper aggregate bag limit);
- Simplified the commercial shallow-water grouper AMs by using the IFQ program to reduce redundancy;
- Added an overage adjustment and in-season measures to the gag and red grouper recreational AMs to avoid exceeding the ACL; and
- Added an AM for the red grouper bag limit that would reduce the four red grouper bag limit in the future to three red grouper, and then to two red grouper, if the red grouper recreational ACL is exceeded.

Amendment 38, implemented March 1, 2013:

- Revised the post-season recreational AM that reduces the length of the recreational season for all shallow-water grouper in the year following a year in which the ACL for gag or red grouper is exceeded. The modified AM reduces the recreational season of only the species for which the ACL was exceeded; and
- Modified the reef fish framework procedure to include the addition of AMs to the list of items that can be changed through the standard framework procedure. This allows for

faster implementation of measures designed to maintain harvest at or below the ACL. General language was added to the framework to accommodate future changes in naming of the Council's advisory committees and panels.

Regulatory Amendments, Emergency and Interim Rules

A July 1991 regulatory amendment, implemented November 12, 1991:

- Provided a one-time increase in the 1991 quota for shallow-water grouper from 9.2 mp to 9.9 mp to provide the commercial fishery an opportunity to harvest 0.7 mp that was not harvested in 1990 [56 FR 58188]. This was a one-time increase with the quota scheduled to return to 9.2 mp unless a subsequent action was taken.

A November 1991 regulatory amendment, implemented June 22, 1992:

- Raised the 1992 commercial quota for shallow-water grouper to 9.8 mp after a red grouper stock assessment indicated that the red grouper SPR was substantially above the Council's minimum target of 20%.

An August 1999 regulatory amendment, implemented June 19, 2000:

- Increased the commercial size limit for gag and black grouper from 20 to 24 inches TL;
- Increased the recreational size limit for gag from 20 to 22 inches TL;
- Prohibited commercial sale of gag, black, and red grouper each year from February 15 to March 15 (during the peak of gag spawning season); and
- Established two marine reserves (Steamboat Lumps and Madison-Swanson) that are closed year-round to fishing for all species under the Council's jurisdiction.

An emergency rule, published February 15, 2005:

- Established a series of trip limits for the commercial grouper fishery in order to extend the commercial fishing season. The trip limit was initially set at 10,000 lbs gw. If on or before August 1, the fishery was estimated to have landed more than 50% of either the shallow-water grouper or the red grouper quota, then a 7,500-lb gw trip limit would take effect; and if on or before October 1, the fishery was estimated to have landed more than 75% of either the shallow-water grouper or the red grouper quota, then a 5,500-lb gw trip limit would take effect [70 FR 8037].

An interim rule, published July 25, 2005, proposed for the period August 9, 2005, through January 23, 2006, established:

- A temporary reduction in the red grouper recreational bag limit from two to one fish per person per day, in the aggregate grouper bag limit from five to three grouper per day, and a closure of the recreational sector from November - December 2005, for all grouper species [70 FR 42510]. These measures were proposed in response to an overharvest of the recreational allocation of red grouper under the Secretarial Amendment 1 red grouper

rebuilding plan. The closed season was applied to all grouper to prevent effort shifting from red grouper to other grouper species and an increased bycatch mortality of incidentally caught red grouper. However, the rule was challenged by organizations representing recreational fishing interests. On October 31, 2005, a U.S. District Court judge ruled that an interim rule to end overfishing can only be applied to the species that is undergoing overfishing. Consequently, the reduction in the aggregate grouper bag limit and the application of the closed season to all grouper were overturned. The reduction in the red grouper bag limit to one per person and the November-December 2005 recreational closed season on red grouper only were allowed to proceed. The approved measures were subsequently extended through July 22, 2006, by a temporary rule extension published January 19, 2006 [71 FR 3018].

An October 2005 regulatory amendment, implemented January 1, 2006, established:

- A 6,000 pound gw aggregate deep-water grouper and shallow-water grouper trip limit for the commercial grouper sector, replacing the 10,000/7,500/5,500-lb gw step-down trip limit that had been implemented by emergency rule for 2005.

A March 2006 regulatory amendment, implemented July 15, 2006, established:

- A red grouper recreational bag limit of one fish per person per day as part of the five grouper per person aggregate bag limit, and prohibited for-hire vessel captains and crews from retaining bag limits of any grouper while under charter [71 FR 34534]; and
- Established a recreational closed season for red grouper, gag, and black grouper from February 15 to March 15 each year (matching a previously established commercial closed season) beginning with the 2007 season.

An interim rule was implemented on January 1, 2009, at the request of the Council to reduce overfishing of gag pending implementation of permanent rules under Amendment 30B [71 FR 66878]. Measures in the temporary rule:

- Established a two-fish gag recreational bag limit (recreational grouper aggregate bag limit remained at five fish);
- Adjusted the recreational closed season for gag to February 1 through March 31 (the recreational closed season for red and black groupers remained February 15 to March 15);
- Established a 1.32 mp gw commercial quota for gag; and
- Required operators of vessels with a federal charter vessel/headboat permit for Gulf reef fish to comply with the more restrictive of federal or state reef fish regulations when fishing in state waters for red snapper, greater amberjack, gray triggerfish, and gag.

An emergency rule was implemented May 18, 2009, through October 28, 2009, prohibiting:

- The use of bottom longline gear to harvest reef fish east of 85°30′ W longitude in the portion of the exclusive economic zone (EEZ) shoreward of the coordinates established to approximate a line following the 50–fathom (91.4–m) contour as long as the 2009

deep-water grouper and tilefish quotas are unfilled. After the quotas have been filled, the use of bottom longline gear to harvest reef fish in water of all depths east of 85°30′ W longitude was prohibited [74 FR 20229].

On August 11, 2009, the Council was notified by National Marine Fisheries Service (NMFS) that the Gulf gag stock was both overfished and undergoing overfishing based on the results of the 2009 update stock assessment. Several measures were enacted to reduce gag overfishing including:

- Suspending the use of red grouper multi-use IFQ allocation so it could not be used to harvest gag. Because these measures could not be implemented quickly through the plan amendment procedure, an interim rule was published on December 1, 2010 [75 FR 74654], to implement these rules until long-term rules could be developed in Amendment 32; and
- A second interim rule to adjust some of the gag measures while continuing the suspension of red grouper multi-use IFQ allocation was effective from June 1, 2011, through November 27, 2011 [76 FR 31874], and was subsequently extended through June 12, 2012 [76 FR 69136].

A rule under the Endangered Species Act was implemented October 16, 2009, that prohibited:

- Bottom longlining for Gulf reef fish east of 85º30'W longitude (near Cape San Blas, Florida) shoreward of a line approximating the 35-fathom depth contour, and restricted the number of hooks on board to 1,000 hooks per vessel with no more than 750 hooks being fished or rigged for fishing at any given time. The rule replaced the 50-fathom boundary emergency rule to relieve social and economic hardship on longline fishermen who were prevented from fishing for shallow-water grouper by the emergency rule, and to keep fishing restrictions in place while proposed Amendment 31 was reviewed. [74 FR 53889].

In response to an uncontrolled oil spill resulting from the explosion on April 20, 2010, and subsequent sinking of the Deepwater Horizon MC252 oil rig approximately 36 nautical miles (41 statute miles) off the Louisiana coast:

- NMFS issued an emergency rule to temporarily close a portion of the Gulf EEZ to all fishing [75 FR 24822]. The initial closed area extended from approximately the mouth of the Mississippi River to south of Pensacola, Florida and covered an area of 6,817 square statute miles. The coordinates of the closed area were subsequently modified periodically in response to changes in the size and location of the area affected by the spill. At its largest size on June 1, 2010, the closed area covered 88,522 square statute miles, or approximately 37 percent of the Gulf EEZ. The size of the closed area was subsequently reduced in stages, and on April 19, 2011, all remaining waters that had been closed were reopened. This closure was implemented for public safety.

On November 10, 2010, NMFS reopened most of the closed area to fishing except for a 1,041 square mile area immediately surrounding the wellhead where the spill occurred.

An August 2010 regulatory amendment, implemented January 1, 2011:

- Reduced the total allowable catch for red grouper from 7.57 mp gw to 5.68 mp gw, based on the optimum yield projection from a March 2010 re-run of the projections from the 2009 red grouper update assessment. Although the stock was found to be neither overfished nor undergoing overfishing, the update assessment found that spawning stock biomass levels had decreased since 2005, apparently due to an episodic mortality event in 2005 which appeared to be related to an extensive red tide that year. Based on the 76%:34% commercial and recreational allocation of red grouper, the commercial quota was reduced from 5.75 to 4.32 mp gw, and the recreational allocation was reduced from 1.82 to 1.36 mp gw. No changes were made to the recreational fishing regulations as the recreational landings were already below the adjusted allocation in recent years.

An August 2011 regulatory amendment, implemented November 2, 2011:

- Increased the 2011 red grouper TAC to 6.88 mp gw with subsequent increases each year from 2012 to 2015. These catch limits were subsequently replaced by a constant catch ACL and ACT under Amendment 32, which was being developed concurrently; and

- The amendment also increased the red grouper bag limit to 4 fish per person. However, this increase did not include the provision later added under Amendment 32 that if there is a recreational overage, the bag limit would be reduced to 3 red grouper within the 4-grouper aggregate bag limit in the subsequent season. A subsequent overage would result in the bag limit being further reduced to 2 red grouper within the 4-grouper aggregate bag limit.

A December 2012 framework action, implemented July 5, 2013 established:

- The 2013 gag recreational fishing season to open on July 1 and close on December 3, unless closed sooner due to the recreational ACL being reached. The framework action also eliminated the February 1 through March 31 recreational shallow-water grouper closed season shoreward of 20 fathoms (except for gag). However, the closed season remains in effect beyond 20 fathoms to protect spawning aggregations of gag and other species that spawn offshore during that time. Because the framework action was implemented after the 2013 recreational closed season, the revision to the closed season shoreward of 20 fathoms first took effect in 2014

A December 2014 framework action, implemented May 7, 2015:

- Reduced the bag limit from 4 fish per person per day to 2 fish per person per day and eliminated the bag limit reduction AM in 50 CFR 622.41(e)(2)(ii).

A January 2016 framework action, implemented May 25, 2016:

- Increased the minimum size limit for recreationally caught gag and black grouper to 24 inches TL, and changed the gag recreational fishing season to June 1 through December 31, unless closed sooner due to the recreational ACL being reached.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action - Modifications to the Red Grouper Overfishing Limit, Acceptable Biological Catch, Sector Annual Catch Limits, and Sector Annual Catch Targets

The current sector allocations for red grouper are 76% commercial and 24% recreational as established in Amendment 30B (GMFMC 2008).

Alternative 1: No Action. Maintain the current overfishing limit (OFL), acceptable biological catch (ABC), annual catch limits (ACLs), and annual catch targets (ACTs; quota) for each sector. Values are in pounds gutted weight (gw).

Year	OFL	ABC	Commercial ACL	Commercial ACT/Quota	Recreational ACL	Recreational ACT
2015+	8,100,000	7,930,000	6,030,000	5,720,000	1,900,000	1,730,000

Alternative 2: Use the declining OFL and ABC recommended by the Scientific and Statistical Committee (SSC) from 2016 through 2020. Establish annual sector ACLs equal to the annual ABCs based on the current allocation. Establish ACTs for each sector where the commercial ACT (quota) is set at 95% of the commercial ACL and the recreational ACT is 92% of the recreational ACL.

Year	OFL	ABC	Commercial ACL	Commercial ACT/Quota	Recreational ACL	Recreational ACT
2016	20,400,000	20,100,000	15,280,000	14,520,000	4,820,000	4,430,000
2017	15,730,000	15,480,000	11,760,000	11,170,000	3,720,000	3,420,000
2018	12,550,000	12,340,000	9,380,000	8,910,000	2,960,000	2,720,000
2019	11,120,000	10,930,000	8,310,000	7,890,000	2,620,000	2,410,000
2020	10,980,000	10,770,000	8,190,000	7,780,000	2,580,000	2,370,000

Values are in pounds gutted weight (gw).

Alternative 3: Use the constant catch OFL and ABC recommended by the SSC. Establish sector ACLs equal to the ABC based on the current allocation. Establish ACTs for each sector where the commercial ACT (quota) is set at 95% of the commercial ACL and the recreational ACT is 92% of the recreational ACL.

Year	Mean OFL	Mean ABC	Commercial ACL	Commercial ACT/Quota	Recreational ACL	Recreational ACT
2016+	14,160,000	13,920,000	10,580,000	10,050,000	3,340,000	3,070,000

Values are in pounds gutted weight (gw).

Preferred Alternative 4: Use the constant catch OFL and ABC recommended by the SSC but set the ACLs and ACTs for each sector below the constant catch OFL and ABC. Base the sector ACLs and sectors ACTs on the minimum ABC of 10,770,000 lbs gw from the declining yield stream. Use the current allocations on the minimum ABC to establish ACLs. Set ACTs for each sector where the commercial ACT (quota) is set at 95% of the commercial ACL and the recreational ACT is 92% of the recreational ACL.

Year	Mean OFL	Mean ABC	Commercial ACL	Commercial ACT/Quota	Recreational ACL	Recreational ACT
2016+	14,160,000	13,920,000	8,190,000	7,780,000	2,580,000	2,370,000

Values are in pounds gutted weight.
Note: This alternative would create the equivalent of a stock ACL = 10,770,000 lbs gw.

Discussion

Red grouper is currently managed under an optimum yield strategy, following the protocol established in Amendment 30B (GMFMC 2008). The current red grouper OFL and ABC are 8.10 and 7.93 mp gw respectively, based on the 2009 red grouper update assessment and projection re-runs in January 2011 (SEDAR 12 Update. 2009). The commercial and recreational red grouper ACLs for 2012 through 2015 were established in a 2011 Reef Fish Regulatory Amendment (GMFMC 2011a). In this 2011 Regulatory Amendment the following were established: OFL is set at the equilibrium maximum sustainable yield (8.10 mp gw) as set by the SSC in March 2011. The ABC is set at the equilibrium optimum yield (7.93 mp gw) as set by the SSC in March 2011. Under equilibrium conditions, managing toward the optimum yield harvest level is expected to produce a yield that is between 94% and 98% of the yield when fishing at maximum sustainable yield (Restrepo et al. 1998) with less risk of overfishing.

An interim allocation of red grouper between the recreational and commercial sectors was established in Amendment 30B (GMFMC 2008). The total allowable catch (now ACL) was set equal to the ABC and allocated to the commercial (76%) and recreational (24%) sectors. Based

on this allocation, the current commercial ACL is equal to 6.03 mp gw and the recreational ACL is equal to 1.90 mp gw. For red grouper, the ACT equals the catch level corresponding to fishing at equilibrium OY that is equal to the yield at 75% of the maximum sustainable fishing mortality rate. Based on this approach, the commercial ACT (quota) is set at 5.72 mp gw and the recreational ACT is set at 1.73 mp gw.

A red grouper stock assessment was recently completed (SEDAR 42 2015) and reviewed by the SSC at its January 2016 meeting. At the SEDAR 42 Review Workshop, the panelists recommended using $F_{SPR30\%}$ as a proxy for F_{msy} because they thought that the stock-recruitment relationship in the assessment model was not well informed. Using $F_{SPR30\%}$ as a reference point implies that we cannot predict long-term recruitment. This is in conflict with computing equilibrium yield, which requires the assumption that we can predict long-term recruitment. As a result, the Southeast Fisheries Science Center's (SEFSC) Sustainable Fisheries Division (SFD) does not recommend using equilibrium OY to set the ACT when MSY proxies are used as reference points in the future.

The SSC recommended an OFL and ABC yield stream based on this assessment that allows for increased harvest levels from the status quo. The OFL and ABC for **Alternatives 2**, **3**, and **Preferred Alternative 4** were established using the ABC control rule with a P* = 0.50 (OFL) and P* = 0.43 (ABC). **Alternative 1** would retain the existing management values (OFL, ABC, sector ACLs, and sector ACTs) but would not use the best scientific information available. **Alternative 2** would establish a large increase in allowable harvest although in the form of a declining yield stream from 2016 through 2020. As with **Alternative 1**, the commercial and recreational ACLs in **Alternative 2** are equal to the stock ABC multiplied by the sector allocation for each year. In **Alternatives 2**, **3**, and **Preferred Alternative 4**, the recreational ACT was determined using the ACL/ACT control rule that resulted in an 8% buffer between the ACL and ACT based on landings by sector from 2012 through 2015 (Appendices B and C).

The commercial sector is managed under an individual fishing quota (IFQ) program and the application of the ACL/ACT control rule using landings from 2012 through 2015 results in a 0% buffer (Appendix C). However, use of the ACL/ACT control rule is advisory only and does not account for the overage allowance or multi-use provisions in the IFQ program. For red grouper, a vessel is permitted to exceed the allocation in the vessel account for at least one trip of the year by up to 10%. Many vessels use this on the last trip of the year or do not use this provision, but potential usage rates across the entire sector are difficult to predict. Additionally, the multi-use allocation provision for red grouper and gag requires a commercial ACL buffer, resulting in an ACT. The buffer in 2015 was 5% and has provided an adequate buffer to prevent ACL overages and this 5% buffer between the commercial ACL and commercial ACT is retained for all the alternatives.

Alternative 3 would establish a constant catch scenario that uses the mean of the OFL and ABC yield streams from 2016 through 2020 as recommended by the SSC. Analyses by the SEFSC and subsequent review by the SSC has found that a declining yield stream (**Alternative 2)** and mean of this yield stream (**Alternative 3**) to be functionally equivalent in terms of the risk of overfishing. The sector ACLs and ACTs in **Alternative 3** for 2016 onward were calculated using the same procedure as **Alternative 2.**

Preferred Alternative 4 would also establish a constant catch scenario that uses the mean OFL and ABC yield streams from 2016 through 2020 as recommended by the SSC and are equivalent to the OFL and ABC values in **Alternative 3**. **Preferred Alternative 4** would set the sector ACLs at the minimum recommended value in the yield schedule (year 2020 in **Alternative 2**). The rationale for **Preferred Alternative 4** is that the OFL and ABC recommendations from the stock assessment are dramatic increases compared to **Alternative 1** and exceed observed harvest levels during the management history. Moreover, the projected yields assume recruitment levels equal to the long-term average levels but red grouper recruitment has been below average since 2005 (SEDAR 42 2015). **Preferred Alternative 4** is a more conservative approach than **Alternatives 2-3** that reduces the likelihood of overfishing, yet allows a 35% increase in ABC from **Alternative 1**.

Currently, a portion of the gag or red grouper allocation may be reserved each year for multi-use allocation, which may be used to land either gag or red grouper. The multi-use provision is intended to ensure that there is allocation to use if either gag or red grouper are landed as incidental catch. The percentage of multi-use allocation may change each year and may even be zero. Since 2013, the red grouper multi-use (RGM) and gag multi-use allocation has been based on formulas (see below) using the ACT (commercial quota) and the ACLs for gag and red grouper.

Formulas used to distribute gag and red grouper multi-use allocation.

$$GGM\ allocation = 100 * \frac{(Red\ Grouper\ ACL - Red\ Grouper\ Commercial\ Quota)}{Gag\ Commercial\ Quota}$$

$$RGM\ allocation = 100 * \frac{(Gag\ ACL - Gag\ Commercial\ Quota)}{Red\ Grouper\ Commercial\ Quota}$$

The purpose of this approach was to ensure that the ACL for gag or red grouper was not exceeded if all multi-use allocation was landed for only one of these species. Multi-use allocation is distributed at the beginning of each calendar year. A mid-year increase of red grouper quota (including red grouper and red grouper multi-use allocation) could allow the ACL for gag to be exceeded if the red grouper multi-use allocation is used extensively to harvest gag. If this amendment is implemented before the end of the year, only red grouper allocation would be distributed in 2016 (i.e., no red grouper multi-use allocation) to ensure that the gag ACL is not exceeded. Multi-use allocation has been distributed after January 1 in previous years, but this occurred prior to using the formulaic approach (described above) to distribute the allocation.

CHAPTER 3. AFFECTED ENVIRONMENT

The actions considered in this amendment and associated environmental assessment would affect fishing in the Gulf of Mexico (Gulf), both in state and federal waters (Figure 3.1). Descriptions of the physical, biological, economic, social, and administrative environments are available in Reef Fish Amendment 32 (GMFMC 2011b) and associated environmental impact statement (EIS). Information from this EIS is being incorporated herein by reference and the reader is directed to the document to obtain the information which is located at http://www.gulfcouncil.org/fishery_management_plans/index.php.

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73º F through 83º F (23-28º C) including bays and bayous (Figure 3.1.1) between 1982 and 2009, according to satellite-derived measurements (NODC 2012: http://accession.nodc.noaa.gov/0072888). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

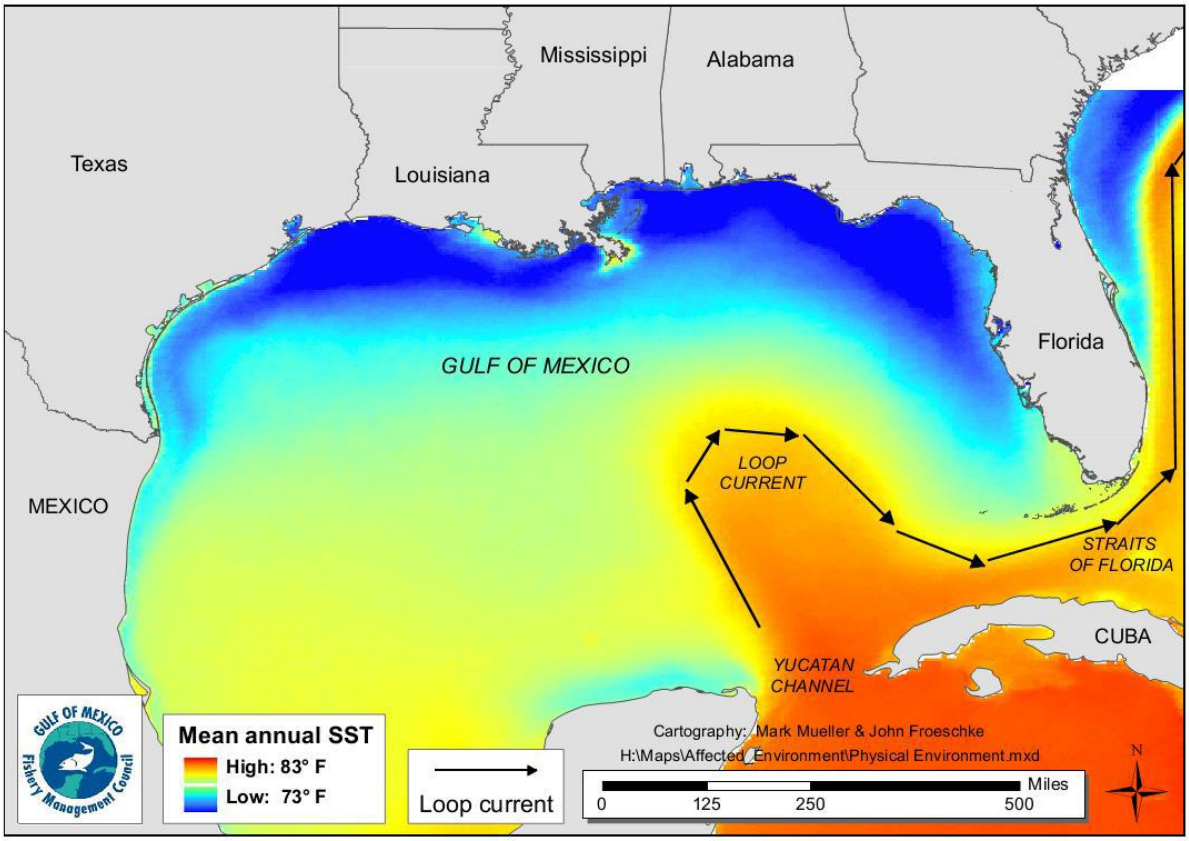

Figure 3.1.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (http://accession.nodc.noaa.gov/0072888).

The physical environment for reef fish, including red grouper and other shallow water grouper species, has been described in detail in the 2004 EIS for the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a). The ecologically critical areas in the Gulf, such as the Flower Garden Banks National Marine Sanctuary and the Tortugas Ecological Reserve are described in detail in Generic EFH Amendment Number 3 (GMFMC 2005) and are incorporated by reference. The primary habitat for red grouper is located in the eastern Gulf as described in Amendment 32 (GMFMC 2011b). In summary, red grouper are associated with hard bottom areas primarily on the eastern Gulf shelf.

Amendment 32 (GMFMC 2011b) also describes environmental sites of special interest relevant to the reef fish fishery including gear restricted areas, area closures, and habitat areas of particular concern (HAPCs). Gear restricted areas include the Longline/Buoy Gear Area Closure and Stressed Areas for Reef Fish; closed areas such as Madison/Swanson and Steamboat Lumps Marine Reserves, The Edges seasonal area closure, and the Tortugas North and South Marine Reserves; and HAPCs such as the individual reef areas and bank HAPCs of the northwestern Gulf, the Middle Grounds HAPC, and the Pulley Ridge HAPC. There is one site listed in the National Register of Historic Places in the Gulf. This is the wreck of the *U.S.S. Hatteras*, located in federal waters off Texas.

Habitat Areas of Particular Concern (HAPC)

Generic EFH Amendment 3 (GMFMC 2005) for addressing EFH, HAPCs, and adverse effects of fishing in the following fishery management plans of the Gulf Reef Fish Resources, Red Drum, and Coastal Migratory Pelagics is hereby incorporated by reference. Amendment 32 (GMFMC 2011b) also describes environmental sites of special interest relevant to the reef fish fishery including gear restricted areas, area closures, and HAPCs.

Environmental Sites of Special Interest Relevant to Reef Fish, Red Drum, Coastal Migratory Pelagics, Spiny Lobster, Red Drum, and Coral and Coral Reefs (Figure 3.1.2)

Longline/Buoy Gear Area Closure – Permanent closure to use of these gears for reef fish harvest inshore of 20 fathoms (36.6 meters) off the Florida shelf and inshore of 50 fathoms (91.4 meters) for the remainder of the Gulf, and encompasses 72,300 square nautical miles (nm^2) or 133,344 km^2 (GMFMC 1989). Bottom longline gear is prohibited inshore of 35 fathoms (54.3 meters) during the months of June through August in the eastern Gulf (GMFMC 2009).

Madison-Swanson and Steamboat Lumps Marine Reserves - No-take marine reserves (total area is 219 nm^2 or 405 square kilometers (km^2) sited based on gag spawning aggregation areas where all fishing is prohibited except surface trolling from May through October (GMFMC 1999a; 2003a).

The Edges Marine Reserve – All fishing is prohibited in this area (390 nm^2 or 1,338 km^2) from January through April and possession of any fish species is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified. The provisions of this do not apply to highly migratory species (GMFMC 2008).

Tortugas North and South Marine Reserves – No-take marine reserves (185 nm^2) cooperatively implemented by the state of Florida, National Ocean Service, the Gulf of Mexico Fishery Management Council (Council), and the National Park Service in Generic Amendment 2 establishing the Tortugas Marine Reserves (GMFMC 2001).

Reef and bank areas designated HAPCs in the northwestern Gulf include – East and West Flower Garden Banks, Stetson Bank, Sonnier Bank, MacNeil Bank, 29 Fathom, Rankin Bright Bank, Geyer Bank, McGrail Bank, Bouma Bank, Rezak Sidner Bank, Alderice Bank, and Jakkula Bank – pristine coral areas protected by preventing the use of some fishing gear that interacts with the bottom and prohibited use of anchors (totaling 263.2 nm^2 or 487.4 km^2). Subsequently, three of these areas were established as a marine sanctuary (i.e., East and West Flower Garden Banks and Stetson Bank). Bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots on coral reefs are prohibited in the East and West Flower Garden Banks, McGrail Bank, and on significant coral resources on Stetson Bank (GMFMC 2005).

Florida Middle Grounds HAPC - Pristine soft coral area (348 nm^2 or 644.5 km^2) that is protected by prohibiting the following gear types: bottom longlines, trawls, dredges, pots and traps (GMFMC and SAFMC 1982).

Pulley Ridge HAPC - A portion of the HAPC (2,300 nm^2 or 4,259 km^2) where deepwater hermatypic coral reefs are found is closed to anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots (GMFMC 2005).

Alabama Special Management Zone – For vessels operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, fishing is limited to hook-and-line gear with no more than three hooks. Nonconforming gear is restricted to recreational bag limits, or for reef fish without a bag limit, to 5% by weight of all fish aboard.

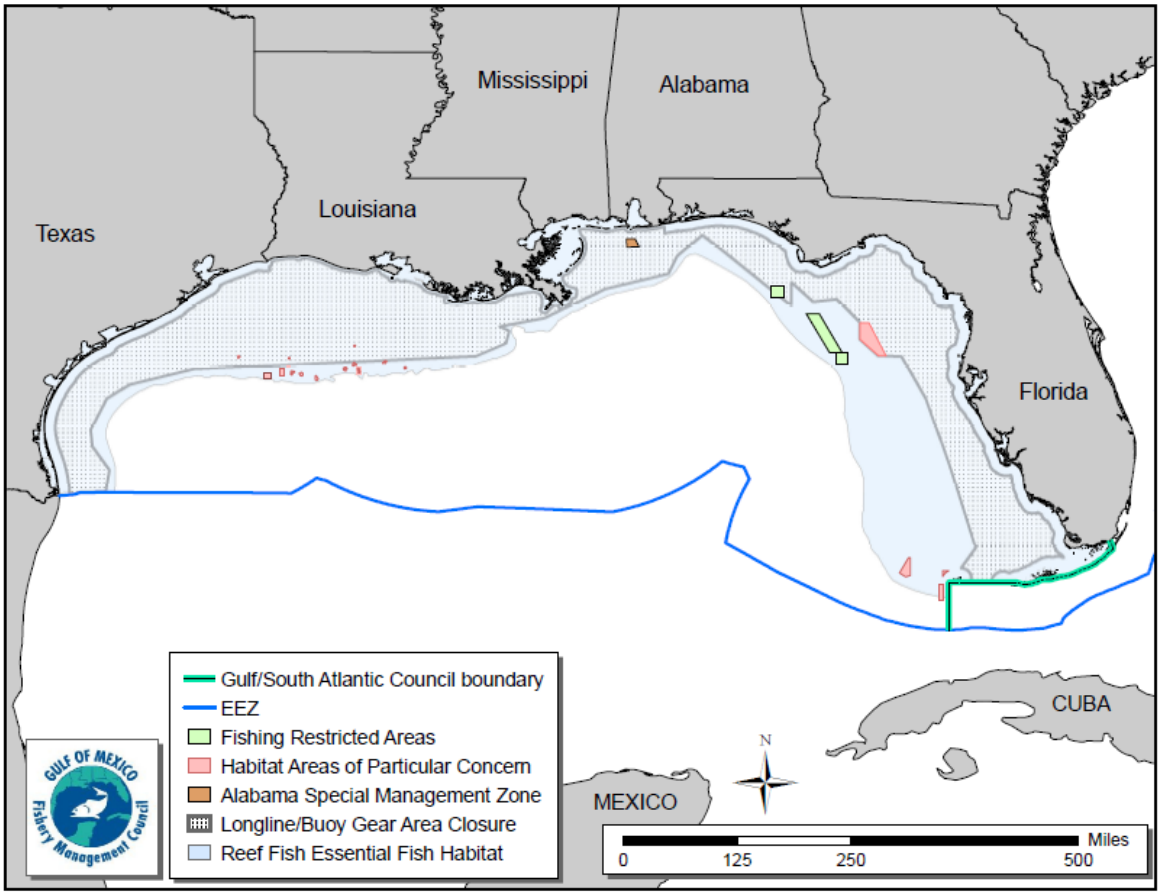

Figure 3.1.2. Map of most fishery management closed areas in the Gulf.

Deepwater Horizon MC252

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 were

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.

The Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement describe the physical environment in further detail, and are hereby incorporated by reference (DPARP 2016). Some of the key findings of the injury assessment are listed below.

• The Trustees documented that oil flowed within deep ocean water currents hundreds of miles away from the blown-out well; and that it moved upwards and across a very large area of the ocean surface. This movement resulted in observable slicks that extended over 43,300 square miles (an area about the size of the State of Virginia), affecting water quality and exposing aquatic biota. Oil was deposited onto at least 400 square miles of the sea floor and washed up onto more than 1,300 miles of shoreline from Texas to Florida.

• The oil came into contact with and injured natural resources as diverse as deep-sea corals, fish and shellfish, productive wetland habitats, sandy beaches, birds, endangered sea turtles, and protected marine life. The oil spill prevented people from fishing, going to the beach, and enjoying their typical recreational activities along the Gulf of Mexico. Extensive response actions, including cleanup activities and actions to try to prevent the oil from reaching sensitive resources, were undertaken to try to reduce harm to people and the environment. However, many of these response actions had collateral impacts on the environment.

• The oil released into the environment by the *Deepwater Horizon* incident was toxic to a wide range of organisms, including fish, invertebrates, plankton, birds, turtles, and mammals. It caused a wide array of toxic effects, including death, disease, reduced growth, impaired reproduction, and physiological impairments that made it more difficult for organisms to survive and reproduce.

• The waters, sediments, and marsh habitats in many locations in the northern Gulf of Mexico had concentrations of oil that were high enough to cause toxic effects. The degree and extent of these toxic concentrations varied by location and time. The extent and degree of toxic levels of oil has declined substantially from 2010 to the present.

• Exposure to oil and response activities resulted in extensive injuries to multiple habitats, species, and ecological functions, across broad geographic regions.

• The *Deepwater Horizon* incident resulted in injuries to intertidal marsh habitats, including marsh plants and associated organisms; shoreline beaches and sediments, and organisms that live on and in the sand and sediment; fish and shellfish and other invertebrates that live in the water; a wide range of bird species; floating *Sargassum* habitats offshore and submerged aquatic vegetation; deep-sea and nearshore ocean-bottom habitats, including rare, deep water corals; endangered and threatened sea turtles; and several species of dolphins and whales.

• The spill directly reduced the use of popular recreational activities including boating, fishing, and going to the beach between May 2010 and November 2011.

• Overall, the ecological scope of impacts from the *Deepwater Horizon* incident was unprecedented, with injuries affecting a wide array of linked resources across the northern Gulf ecosystem.

3.2 Description of the Biological/Ecological Environment

The biological and ecological environment of the Gulf, including the species addressed in this regulatory amendment, is described in detail in the final EIS for the Generic EFH amendment and is incorporated here by reference (GMFMC 2004a). Summaries of this information can be found in GMFMC (2010) and Amendment 30B (GMFMC 2008). Information for this section has been presented in GMFMC (2010) except for updated material resulting from the 2011 rerun of the red grouper assessment with revised estimates of historical discards (Walter 2011). Therefore, information on grouper life history, reef fish, protected resources, and possible effects of the Deepwater Horizon MC252 oil spill are being incorporated herein by reference and information relevant to the proposed actions are further summarized below. This regulatory amendment GMFMC (2010) can also be viewed at http://www.gulfcouncil.org/docs/amendments/2010 Red Grouper Regulatory Amendment 9-17-10 final with signed FONSI.pdf. Information on red grouper life history and the status of the stock are summarized and updated below.

In 2005, a red tide event on the west Florida shelf may have impacted red grouper populations. It has only been in the last ten years that mortalities of higher vertebrates have been indisputably demonstrated to be due to acute red tide blooms and their brevotoxins (Landsberg et al. 2009). The extent of this event and possible effects of fish community structure has been described in Gannon et al. (2009). The red tide event in 2014 was concluded to be negligible in SEDAR 42 (2015).

Status of the Red Grouper Stock and Scientific and Statistical Committee (SSC) Recommendations

A summary of the red grouper benchmark stock assessment (SEDAR 12 2007) and 2009 update stock assessment (SEDAR 12 Update. 2009) can be found in GMFMC (2010) and is incorporated here by reference. These assessments showed that red grouper were neither overfished nor undergoing overfishing. The 2009 update stock assessment did suggest the stock has declined since 2005, much of which was attributed to an episodic mortality event in 2005 (most likely associated with red tide). The update assessment was rerun in late 2010 to incorporate new information on red grouper harvest. Specifically, the assessment used revised estimates of historical discards in the commercial sector based on newly available observer estimates from the years 2006-2008 and updated projections taking into account the reduction in the commercial size limit from 20 inches to 18 inches total length (Walter 2011). Given these changes, the assessment rerun resulted in a slightly improved estimate of the stock status for the last year of the assessment (2008) and indicated the total allowable catch in the near term could be substantially increased. After reviewing the rerun of the assessment update, the SSC recommended that the overfishing limit (OFL) for red grouper be set at 8.10 million pounds (mp) (the equilibrium yield at the fishing mortality rate associated harvesting the equilibrium

maximum sustainable yield) and the acceptable biological catch (ABC) be set at 7.93 mp (the equilibrium yield at the fishing mortality rate associated harvesting the equilibrium optimum sustainable yield).

In October 2015, the SEDAR 42 stock assessment for red grouper was completed using the Stock Synthesis model. SEDAR 42 found the red grouper stock was not undergoing overfishing and was not overfished. In order to develop ABC projections, the SSC determined P* using the ABC control rule Tier 1 spreadsheet. The P* analysis for red grouper, shown in Figure 4 resulted in a P* of 0.427, which the SSC rounded off to 0.43. Given that the red grouper stock is neither overfished nor experiencing overfishing (as of 2013), SSC members felt it was appropriate to provide OFL and ABC recommendations for a 5-year period beginning in 2016. However, a decision was needed on how to handle landings for the years 2014-2015, which are not in the assessment. For 2014, final landings are available and will be used. For 2015 the SSC recommended that the assessment group use landings estimates based on the current quotas and annual catch limits (ACLs).

The SSC recommends that the annual OFL for Gulf red grouper for years 2016-2020 be set at the 50th percentile of the OFL probability distribution function (PDF), assuming estimated landings for 2014 and 2015 fishing years. The annual ABC for years 2016-2020 will be computed as the 43rd percentile of the OFL PDF. Under a constant catch scenario, the mean of these time series for OFL or ABC would be utilized. The OFLs and ABCs can be found in the Alternatives in Action 1 of this document.

As a result of these findings this document is being completed to adjust the OFL, ABC, ACLs, and annual catch targets (ACTs) for the red grouper stock in the Gulf of Mexico.

Description of the Fishery

The reef fish fishery of the Gulf is divided into two broad sectors, recreational and commercial. Recreational includes fishing from charter vessels and headboats (collectively referred to as for-hire vessels) as well as from private vessels, rented 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 or be registered in the federal National Saltwater Registry system, subject to appropriate exemptions. For-hire vessels fishing for reef fish are required to have a federal Gulf charter/headboat permit for reef fish. As a condition of the permit, federal permit holders must comply with the more restrictive of state or federal regulations, whether in federal or state waters. Reef fish caught under recreational bag limits are not allowed to be sold, and captains and crew on for-hire vessels are not allowed to retain a recreational bag limit. Commercial fishing requires a commercial reef fish permit for the vessel to possess in excess of the recreational bag limit and to sell reef fish. In addition to red grouper, the commercial harvest of red snapper, shallow-water grouper, deep-water grouper, and tilefish is managed under individual fishing quota (IFQ) programs, which require that vessels have adequate quota for those species in the vessel's IFQ account to harvest and land the catch. Both charter/headboat and commercial reef fish permits are under a moratorium. Except for the historical captain permits, 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 include handline and bandit reel 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 National Marine Fisheries Service (NMFS) published a list of authorized fisheries and fishing gear used in those fisheries (64 FR 67511). Previous stock assessments conducted in 2002, 2006, and 2009 used a 10% fishing mortality rate.

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, bandit gear, handline, rod and reel, cast net.

Table 3.2.1. Estimated Discard Mortality Rates listed in SEDAR 42. Data from Florida Fish and Wildlife Commission (FWC) Observer Program 2009-2013, and NMFS Observer Program 2006-2013.

Fleet	Data Source	Mortality Rate
Recreational Fleets	FWC Observer Program	11.6%
Commercial HL	FWC Observer Program (41-50m only)	19%
Commercial LL	NMFS Observer Program	43.6%
Commercial Trap*	SEDAR update 2009*	10%

General Information on Reef Fish Species

See GMFMC (2010). This regulatory amendment can also be viewed at http://sero.nmfs.noaa.gov/sf/pdfs/2010_Red_Grouper_Regulatory_Amendment_91710_final.pdf.

Status of Reef Fish Stocks

The Reef Fish FMP currently encompasses 31 species (Table 3.2.1). Eleven other species were removed from the Reef Fish FMP in 2012 through the Generic Annual Catch Limit/Accountability Measures (ACL/AM) Amendment (GMFMC 2011c). Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council (www.gulfcouncil.org) and Southeast Data, Assessment and Review (SEDAR) (www.sefsc.noaa.gov/sedar) websites. The assessed species are:

- Red Snapper (SEDAR 7 2005; SEDAR 7 Update 2009; SEDAR 31 2013; SEDAR 31 Update 2014)
- Vermilion Snapper (Porch and Cass-Calay 2001; SEDAR 9 2006c; SEDAR 9 Update 2011a)
- Yellowtail Snapper (Muller et al. 2003; SEDAR 3 2003; O'Hop et al. 2012)
- Mutton Snapper (SEDAR 15A 2008; SEDAR 15A Update 2014)
- Gray Triggerfish (Valle et al. 2001; SEDAR 9 2006a; SEDAR 9 Update 2011b; SEDAR 43 2015)
- Greater Amberjack (Turner et al. 2000; SEDAR 9 2006b; SEDAR 9 Update 2010; SEDAR 33 2014b)
- Hogfish (Ault et al. 2003; SEDAR 6 2004b; SEDAR 37 2013)
- Red Grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009; SEDAR 42 2015)
- Gag (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009; SEDAR 33 2014a)
- Black Grouper (SEDAR 19 2010)
- Yellowedge Grouper (Cass-Calay and Bahnick 2002; SEDAR 22 2011b)
- Tilefish (Golden) (SEDAR 22 2011a)
- Atlantic Goliath Grouper (Porch et al. 2003; SEDAR 6 2004a; SEDAR 23 2011)

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress on a quarterly basis utilizing the most current stock assessment information. The most recent update can be found at: http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/). The status of both assessed and unassessed stocks as of the writing of this report is shown in Table 3.2.2.

Definition of Overfishing

In January 2012, the Generic ACL/AM Amendment (GMFMC 2011c) became effective. Under this amendment, in years when there is a stock assessment, overfishing is defined as the current fishing mortality rate reported in the assessment exceeding the maximum fishing mortality threshold. In years when there is no stock assessment, overfishing is defined as the catch exceeding the OFL. 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 grouper and other reef fish could change on a year-to-year basis.

Table 3.2.2. Species of the Reef Fish FMP grouped by family.

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

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

Bycatch

The reef fish fishery is multi-species and handlines are a popular gear type. Handline gear is not selective; therefore, the vulnerability of the reef fish fishery to bycatch is high. Bycatch can negatively impact the ability of a stock to maintain itself at a level where fishing can be optimized.

Population and ecosystem effects resulting from changes in the bycatch of other species of fish and invertebrates are difficult to predict. As discussed in Amendment 30B (GMFMC 2008), snappers, greater amberjack, gray triggerfish and other reef fishes are commonly caught in association with red grouper. Three of these species are in rebuilding plans (red snapper, gray triggerfish, and greater amberjack) with the stocks improving. Regulatory discards significantly contribute to fishing mortality in all of these reef fish fisheries.

Various studies to help gauge bycatch from the directed reef fish fishery (commercial or recreational) have been implemented over time, including use of logbooks, port sampling, observers and fishery independent studies.

Protected Species

The Marine Mammal Protection Act (MMPA) and ESA provide special protections to some species that occur in the Gulf. Appendix A includes a very brief summary of how these two laws, and more information is available on NMFS Office of Protected Resources website (http://www.nmfs.noaa.gov/pr/laws/). All 22 marine mammals in the Gulf are protected under the MMPA. Two marine mammals (sperm whales and manatees) are also protected under the ESA. Other species protected under the ESA include 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). Critical habitat designated under the ESA for smalltooth sawfish, Gulf sturgeon, and the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles also occur in the Gulf, though only loggerhead critical habitat occurs in federal waters.

The following sections provide a brief overview of the marine mammals, sea turtles, and fish that may be present in or near areas where Gulf reef fish fishing occurs and their general life history characteristics. Since none of the listed corals or designated critical habitats in the Gulf are likely to be adversely affected by the Gulf reef fish fishery, they are not discussed further.

Marine Mammals

The 22 species of marine mammals in the Gulf include one sirenian species (a manatee), which is under U.S. Fish and Wildlife Service's (USFWS) jurisdiction, and 21 cetacean species (dolphins and whales), all under NMFS' jurisdiction. Manatees primarily inhabit rivers, bays, canals, estuaries, and coastal waters rich in seagrass and other vegetation off Florida, but can occasionally be found in seagrass habitats as far west as Texas. Although most of the cetacean species reside in the oceanic habitat ($\geq$ 200 m), the Atlantic spotted dolphin is found in waters over the continental shelf (20-200 m), and the common bottlenose dolphin (hereafter referred to

as bottlenose dolphins) is found throughout the Gulf, including within bays, sounds, and estuaries; coastal waters over the continental shelf; and in deeper oceanic waters.

Sperm whales are one of the cetacean species found in offshore waters of the Gulf (>200m) and are listed endangered under the ESA. Sperm whales, are the largest toothed whales and are found year-round in the northern Gulf along the continental slope and in oceanic waters (Waring et al. 2013). There are several areas between Mississippi Canyon and De Soto Canyon where sperm whales congregate at high densities, likely because of localized, highly productive habitats (Biggs et al. 2005; Jochens et al. 2008). There is a resident population of female sperm whales, and whales with calves are frequently sighted there.

Bryde's whales are the only resident baleen whales in the Gulf and are currently being evaluated to determine if listing under the ESA is warranted. Bryde's whales (pronounced "BREW-days") in the Gulf are currently restricted to a small area in the northeastern Gulf near De Soto Canyon in waters between 100 – 400 m depth along the continental shelf break, though information in the southern Gulf of Mexico is sparse (Waring et al. 2013). On September 18, 2014, NMFS received a revised petition from the Natural Resource Defense Council to list the Gulf of Mexico Bryde's whale as an endangered Distinct Population Segment. On April 6, 2015, NMFS found the petitioned action may be warranted and convened a Status Review Team to prepare a status review report. NMFS will rely on the information status review report to make a 12-month determination as to whether or not listing as endangered or threatened the species is warranted, and if so, a proposed rule will be published in the Federal Register.

Although they are all the same species, **bottlenose dolphins** in the Gulf can be separated into demographically independent populations called stocks. Bottlenose dolphins are currently managed by NMFS as 36 distinct stocks within the Gulf. These include 31 bay, sound and estuary stocks, three coastal stocks, one continental shelf stock, and one oceanic stock (Waring et al. 2014). Additional climatic and oceanographic boundaries delineate the three coastal stocks such that the Gulf Eastern Coastal Stock ranges from 84^{o}W to Key West, FL, the Gulf Northern Coastal Stock ranges from 84^{o}W to the Mississippi River Delta, and the Gulf Western Coastal stock ranges from the Mississippi River Delta to the Texas/Mexico border. Marine Mammal Stock Assessment Reports and additional information on these species in the Gulf are available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/sspecies/.

Bottlenose dolphin adults range from 6 to 9 feet (1.8 to 2.8 m) long and weigh typically between 300 to 600 lbs (136 to 272 kg). Females and males reach sexual maturity between ages 5 to 13 and 9 to 14, respectively. Once mature, females give birth once every 3 to 6 years. Maximum known lifespan can be 50 years for males and greater than 60 years for females (Reynolds 2000).

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 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 List of Fisheries and the classification process can be found at: http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html.

NMFS classifies reef fish bottom longline/hook-and-line gear in the MMPA 2015 List of Fisheries as a Category III fishery (79 FR 77919). 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 are a common predator around reef fish vessels. They prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery.

Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the Gulf. Several volumes exist that cover the biology and ecology of these species (i.e., Lutz and Musick (eds.) 1997; Lutz et al. (eds.) 2003, Wynekan et al. (eds.) 2013).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987; Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976; Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also known to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

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

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987; Ogren 1989). After the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated

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

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984; Eckert et al. 1986; Eckert et al. 1989; Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

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

All five species of sea turtles are adversely affected by the Gulf reef fish fishery. Incidental captures are infrequent, but occur in all commercial and recreational hook-and-line and longline components of the reef fish fishery. Observer data indicate that the bottom longline component of the fishery interacts solely with loggerhead sea turtles. Captured loggerhead sea turtles can be released alive or can be found dead upon retrieval of bottom longline gear as a result of forced submergence. Sea turtles caught during other reef fish fishing with other gears are believed to all be released alive due to shorter gear soak. All sea turtles released alive may later succumb to

injuries sustained at the time of capture or from exacerbated trauma from fishing hooks or lines that were ingested, entangled, or otherwise still attached when they were released. Sea turtle release gear and handling protocols are required in the commercial and for-hire reef fish fisheries to minimize post-release mortality.

NMFS has conducted specific analyses ("Section 7 consultations") evaluating potential effects from the Gulf reef fish fishery on sea turtles (as well as on other ESA-listed species and critical habitat) as required by the ESA. On September 30, 2011, the Southeast Regional Office (SERO) of NMFS completed a biological opinion (Opinion), which concluded that the continued execution of the Gulf reef fish fishery is not likely to jeopardize the continued existence of any sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) (NMFS 2011). 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.

Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. Smalltooth sawfish primarily occur in the Gulf off peninsular Florida and are most common off Southwest Florida and the Florida Keys. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 meters (Bigelow and Schroeder 1953; Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer and Wiley 2005). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938; Bigelow and Schroeder 1953).

Smalltooth sawfish are also adversely affected by the Gulf reef fish fishery, but are interacted with to a much lesser extent than sea turtles. Although the long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in fishing gear, incidental captures in the commercial and recreational hook-and-line components of the reef fish fishery are rare events. Only eight smalltooth sawfish are anticipated to be incidentally caught every three years in the entire reef fish fishery, and none are expected to result in mortality (NMFS 2011). In the September 30, 2011 Opinion, NMFS concluded that the continued authorization of the Gulf reef fish fishery is not likely to jeopardize the continued existence of smalltooth sawfish (NMFS 2011). 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. Fishermen in this fishery are required to follow smalltooth sawfish safe handling guidelines.

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 Florida in the 1990s and 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 used species in aquaculture. The following synopsis is based on Fuller (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. However, they were not seen again in U.S. water 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.

Deepwater Horizon MC252

Changes have occurred in the amount and distribution of fishing effort in the Gulf in response to the oil spill. This has made the analysis of the number of days needed for the recreational sector to fill its quota more complex and uncertain, and will make the requirement to allow the recreational sector to harvest its quota of red grouper while not exceeding the quota particularly challenging. Nevertheless, substantial portions of the red grouper population are found in the northern and west Florida shelf. Thus, spawning by this segment of the stock may not be impacted, which would mitigate the overall impact of a failed spawn by that portion of the stock located in oil-affected areas.

As a result of the Deepwater Horizon MC252 spill, a consultation pursuant to Endangered Species Act (ESA) Section 7(a)(2) was reinitiated on the Gulf of Mexico Reef Fish FMP. On September 30, 2011, NMFS completed a biological opinion which, after analyzing best available data, the current status of the species, environmental baseline (including a preliminary assessment of the impacts of the recent Deepwater Horizon MC252 oil release event on listed sea turtles), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011).

Further details on the biological effects from the Deepwater Horizon MC252 oil spill are addressed in the DPARP 2016, and are hereby incorporated by reference.

3.3 Description of the Economic Environment

A description of the Gulf red grouper stock is provided in Chapter 1.1. Details on the economic environment for both sectors of the grouper component of the Gulf reef fish fishery are provided in the 2010 Red Grouper Regulatory Amendment (GMFMC, 2010). Recent performance information related to the Gulf grouper IFQ program is included in the Gulf of Mexico 2014 Grouper-Tilefish Individual Fishing Quota Annual Report (NMFS, 2015a). The following section contains updated information on the economic environment of this fishery.

3.3.1 Commercial Sector

The major sources of data summarized in this description are the Federal Logbook System, supplemented by average prices calculated from the NMFS Accumulated Landings System and the Gulf of Mexico 2014 Grouper Tilefish IFQ program Annual Report (NMFS, 2015a). Inflation adjusted revenues and prices are reported in 2015 dollars using the GDP Implicit Price Deflator. Landings are expressed in gutted weight to match the method for collecting ex-vessel price information. The gutted to whole weight conversion rate is ww = gutted weight (gw) x 1.2. In addition, select statistics pertaining to the IFQ program, not included in the annual report, were provided by the Southeast Regional Office (SERO).

Permits

Any fishing vessel that harvests and sells any of the reef fish species managed under the reef fish FMP from the Gulf EEZ must have a valid Gulf reef fish permit. In order to harvest red grouper, a vessel permit must also be linked to an IFQ account and possess sufficient allocation for this species. IFQ accounts can be opened and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive red grouper allocation from other IFQ participants. As of March 7, 2016, there were 852 valid or renewable reef fish permits, 62 of which had longline endorsements.

Landings, Value, and Effort

The majority of red grouper landings on average (2010 through 2014) were harvested using longlines, with most of the remainder being harvested by electric reel or bandit gear, followed by vertical lines (Table 3.3.1.1). Although not shown in the table, preliminary logbook data for 2015 shows approximately 64% of red grouper landings were from longlines, 21% were from electric reel or bandit, and 15% were from vertical lines[2].

Table 3.3.1.1. Federal red grouper landings and percentage of landings by gear (2010 through 2014).*

Landings by gear (lbs gw)							
Year	**Buoy lines**	**Electric reel or bandit**	**Vertical lines**	**Longlines**	**Other gears**	**Diving-no powerheads**	**Trolling lines**
2010	0	819,466	474,466	1,256,007	241,707	21,182	0
2011	0	1,244,992	373,251	2,916,825	28,496	20,114	0
2012	24,819	1,580,023	522,513	2,776,668	0	20,775	3,522
2013	21,439	1,057,803	390,443	2,939,121	0	16,810	183
2014	109,583	1,268,803	522,491	3,306,716	0	32,501	43
Average	31,168	1,194,217	456,633	2,639,067	54,041	22,276	750
Percent of total landings by gear							
2010	0.0%	29.1%	16.9%	44.7%	8.6%	0.8%	0.0%
2011	0.0%	27.2%	8.1%	63.6%	0.6%	0.4%	0.0%
2012	0.5%	32.1%	10.6%	56.3%	0.0%	0.4%	0.1%
2013	0.5%	23.9%	8.8%	66.4%	0.0%	0.4%	0.0%
2014	2.1%	24.2%	10.0%	63.1%	0.0%	0.6%	0.0%
Average	0.6%	27.3%	10.9%	58.8%	1.8%	0.5%	0.0%

*Gears that accounted for less than .01% of landings on average are excluded from this table.
Source: NMFS SEFSC Coastal Fisheries Logbook.

The number of vessels that landed red grouper in the Gulf each year remained relatively stable from 2010 through 2014 (Table 3.3.1.2). On average (2010 through 2014), these vessels landed

[2] These values are subject to change as 2015 landings data are finalized.

red grouper on 69% of their Gulf trips and in total, Gulf red grouper accounted for 40% of their annual all species landings, including landings that occurred in the South Atlantic. On trips in which red grouper was harvested (2010 through 2014), red grouper accounted for just over half of landings and revenues on average (Table 3.3.1.2 and Table 3.3.1.3). Vessels that harvested red grouper derived approximately 41% of their annual all species revenue (on average; 2010 through 2014) from red grouper (Table 3.3.1.3). Average annual revenue for these vessels increased steadily from 2010 through 2014. During this time period, the average annual price of red grouper increased modestly from $3.28 (2015 dollars) to $3.82. Although not shown in the table, almost all of the red grouper landings occurred in Florida.

Table 3.3.1.2. Number of vessels, number of trips and landings (lbs gw) by year.

Year	Number of vessels that landed red grouper (> 0 lbs gw)	Number of trips that landed red grouper	red grouper landings (lbs gw)	Other species' landings jointly harvested with red grouper (lbs gw)	Number of Gulf trips that only landed other species	Other species' landings on Gulf trips without red grouper (lbs gw)	All species landings on South Atlantic trips (lbs gw)
2010	406	3,524	2,913,858	3,217,460	1,407	2,202,795	130,399
2011	395	3,761	4,782,194	4,304,707	1,546	2,373,105	187,826
2012	401	3,871	5,217,205	4,551,497	1,865	2,838,317	132,014
2013	379	3,734	4,594,569	4,130,661	1,665	2,416,058	106,450
2014	405	4,032	5,498,754	4,078,361	1,893	3,686,898	149,005
Average	397	3,784	4,601,316	4,056,537	1,675	2,703,435	141,139

Source: NMFS (2015a) for red grouper IFQ landings and NMFS SEFSC Coastal Fisheries Logbook for all other data.

Table 3.3.1.3. Number of vessels and ex-vessel revenues by year (2015 dollars)*.

Year	Number of vessels that landed red grouper (> 0 lbs gw)	Dockside revenue from red grouper	Dockside revenue from 'other species' jointly landed with red grouper	Dockside revenue from 'other species' landed on Gulf trips without red grouper	Dockside revenue from 'all species' landed on South Atlantic trips.	Total dockside revenue	Average total dockside revenue per vessel
2010	406	$9,564,319	$10,681,103	$6,260,213	$290,479	$26,796,114	$66,000
2011	395	$15,938,353	$13,898,008	$6,834,744	$554,209	$37,225,314	$94,241
2012	401	$17,440,872	$15,650,242	$8,546,068	$383,843	$42,021,026	$104,791
2013	379	$16,658,716	$15,175,695	$8,304,259	$316,453	$40,455,123	$106,742
2014	405	$20,992,221	$14,572,712	$13,031,214	$541,501	$49,137,648	$121,328
Average	397	$16,118,896	$13,995,552	$8,595,300	$417,297	$39,127,045	$98,620

Source: Red grouper revenue is calculated from IFQ landings and ex-vessel prices reported in NMFS (2015a). All other data is from the SEFSC Coastal Fisheries Logbook, augmented by the NMFS Accumulated Landings System for prices.

*Revenues converted to 2015 dollars using the annual, seasonally-adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Red grouper landings tend to fluctuate a lot throughout the fishing season (Figure 3.3.1.1). On average (2010 through 2014) landings are typically lower during the summer months, with an increased harvest rate at the end of the year (Figure 3.3.1.1). This seasonal trend may be due in part to the 35-fathom June through August longline closure implemented under Reef Fish Amendment 31 in 2010 (GMFMC, 2009).

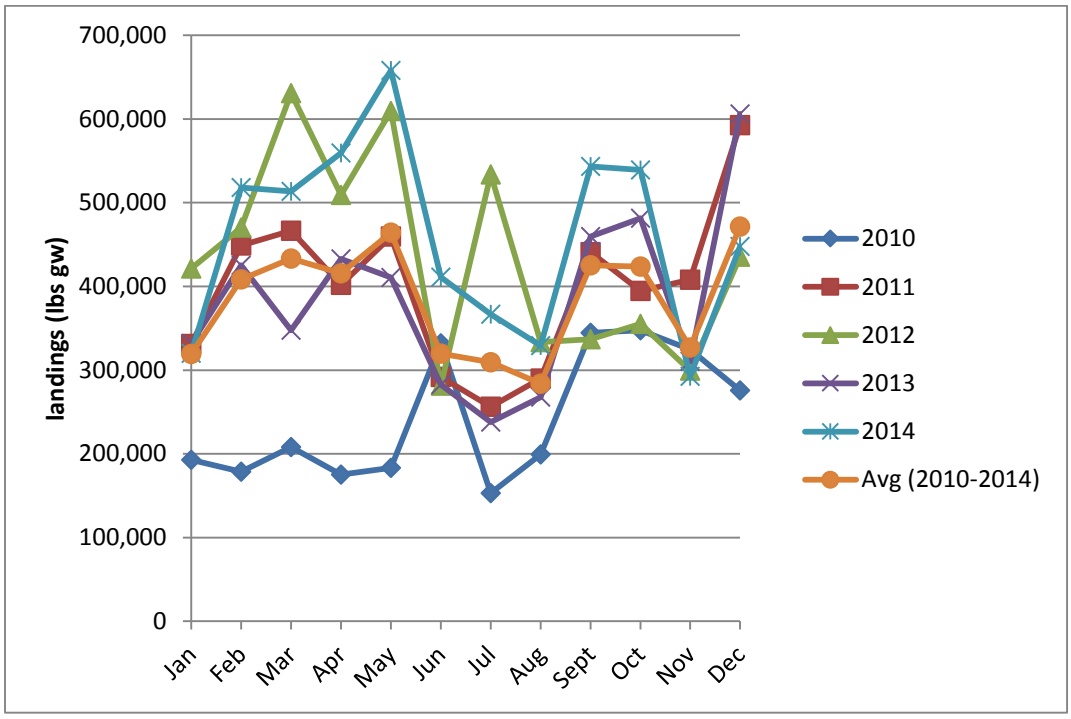

Figure 3.3.1.1. Monthly red grouper IFQ landings (lbs gw).
Source: NMFS (2015a).

IFQ Allocation Transfers and Prices

Changes in quota, especially mid-season, have the potential to disrupt the allocation transfer market. Effects may depend in part on the seasonality of allocation transfers and prices. As shown in Figure 3.3.1.2, allocation transfers are typically most concentrated at the very beginning of the fishing season. In 2015, approximately 39% of all red grouper allocation pounds transferred were transferred in January. Allocation prices were quite volatile in 2010, the year the red grouper IFQ program was implemented as well as the year of the Deepwater Horizon oil spill[3] (Figure 3.3.1.3). In subsequent years, prices were relatively stable, with a gentle peak in the middle of the year on average (2011 through 2015). Although not shown in the figures, as of March 1, 2016, approximately 70% of the red grouper quota for the year has already been transferred, but only 13% of it has been landed. The average nominal price per pound (gw) of allocation, as of March 1, 2016, was $0.79. It is important to note that in a typical season the total number of allocation pounds transferred far exceeds the actual quota and so substantial

[3] For information on fishery closures resulting from the Deepwater Horizon oil spill, see http://sero.nmfs.noaa.gov/deepwater_horizon/index.html.

allocation transfer activity may be yet to occur in 2016.

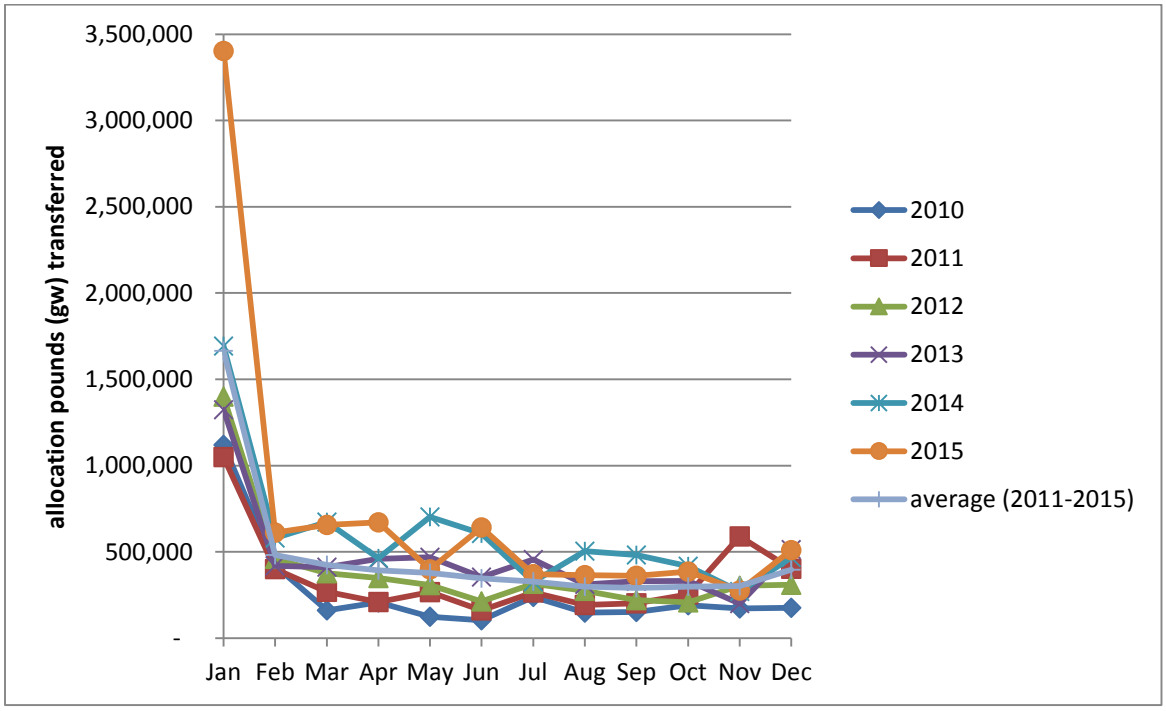

Figure 3.3.1.2. Allocation pounds (gw) transferred by month (2010 through 2015).
Source: SERO, Neptune database accessed on 03/01/16.

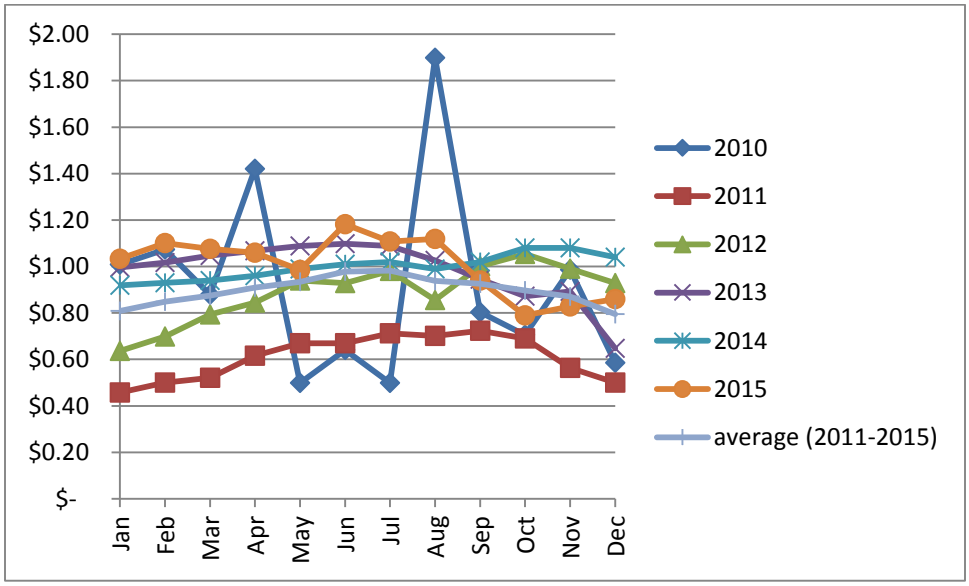

Figure 3.3.1.3. Monthly transaction price per allocation pound (gw) transferred (2015 dollars).
Source: SERO, Neptune database accessed on 03/01/16.

Imports

Imports of seafood products compete in the domestic seafood market and have in fact dominated many segments of the seafood market. Imports aid in determining the price for domestic seafood products and tend to set the price in the market segments in which they dominate. Seafood imports have downstream effects on the local fish market. At the harvest level for reef fish in general and red grouper in particular, imports affect the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to domestic production of reef fish, including red grouper, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. The following describes the imports of fish products which directly compete with domestic harvest of reef fish, including red grouper.

Imports of fresh snapper increased steadily from 21.7 mp product weight (pw) in 2011 to 26 mp pw in 2015[4]. Total revenue from fresh snapper imports increased from $65 million (2015 dollars[5]) in 2011 to a five-year high of $78.7 million in 2015. Imports of fresh snappers primarily originated in Mexico, Central America, or South America, and entered the U.S. through the port of Miami. Imports of fresh snapper were highest on average (2011 through 2015) during the months March through August.

Imports of frozen snapper were substantially less than imports of fresh snapper from 2011 through 2015. Frozen snapper imports ranged from 8.5 mp pw worth $21.1 million (2015 dollars) in 2011 to 12.3 mp pw worth $33.2 million in 2015. Imports of frozen snapper primarily originated in South America (especially Brazil), Indonesia, and Mexico. The majority of frozen snapper imports entered the U.S. through the ports of Miami and New York. Imports of frozen snappers tended to be lowest during March through June when fresh snapper imports were strong.

Imports of fresh grouper ranged from 8.2 mp pw in 2011 to 10.7 mp pw in 2015. Total revenue from fresh grouper imports ranged from $27.9 million (2015 dollars) to $44.4 million during this time period. The bulk of fresh grouper imports originated in Mexico and entered the U.S. through Miami and Tampa. From 2011 through 2015, fresh grouper imports were lowest on average during the month of March and higher the rest of the year, with a peak in July.

Imports of frozen grouper were minimal and stable from 2011 through 2015, ranging from 1.3 mp pw to 2 mp pw. The average annual value of frozen grouper imports during this time period was $3.3 million (2015 dollars). Frozen grouper imports generally originated in Mexico and to a lesser extent, Asia and entered the U.S. through Miami and Tampa. There was an inverse relationship in monthly landings between frozen and fresh groupers, with average imports being the highest in March for frozen grouper and lower during other months.

[4] NOAA Fisheries Service purchases fisheries trade data from the Foreign Trade Division of the U.S. Census Bureau. Data are available for download at http://www.st.nmfs.noaa.gov/st1/trade/index.html.

[5] Converted to 2015 dollars using the annual, seasonally-adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Business Activity

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as red grouper purchased at a local fish market and served during restaurant visits. These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic effects may be distributed through regional markets and should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

Estimates of the U.S. average annual business activity associated with the commercial harvest of red grouper, and all species harvested by the vessels that harvested these red grouper, were derived using the model[6] developed for and applied in NMFS (2015b) and are provided in Table 3.3.1.4. This business activity is characterized as full-time equivalent jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting. It should be noted that the results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models to address individual species are not available. For example, the results provided here apply to a general reef fish category rather than just red grouper, and a harvester job is "generated" for approximately every $31,000 (2015 dollars) in ex-vessel revenue. These results contrast with the information provided in Table 3.3.1.4 which shows an average of 397 harvesters (vessels) with recorded landings of red grouper.

Table 3.3.1.4. Average annual business activity (2010 through 2014) associated with the commercial harvest of red grouper and the harvest of all species by vessels that landed red grouper. All monetary estimates are in 2015 dollars*.

Species	Average Ex-vessel Value ($ thousands)	Total Jobs	Harvester Jobs	Output (Sales) Impacts ($ thousands)	Income Impacts ($ thousands)
Red grouper	$15,196	2,060	489	$150,692	$55,339
All species on all trips made by vessels that landed greater than one pound of red grouper in a year.	$37,846	5,130	1,218	$375,310	$137,827

* Converted to 2015 dollars using the annual, seasonally-adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

[6] A detailed description of the input/output model is provided in NMFS (2011).

3.3.2 Recreational Sector

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

Landings

Private vessels accounted for the majority of red grouper landings on average (2011 through 2014), followed by charter vessels and headboats, with no recorded landings from shore (Table 3.3.2.1). Preliminary estimates for 2015 show charter vessels were responsible for a higher percentage of red grouper landings than in previous years (Table 3.3.2.1). The majority of estimated landings occurred during May through August from 2011 through 2014 (Table 3.3.2.2). Preliminary data for 2015 shows a departure from this seasonal trend, with a spike in landings in wave 2. Although not shown in the tables, approximately 99.7% of red grouper landings on average (2013 through 2015) were recorded in the state of Florida[7].

Table 3.3.2.1. Recreational landings (lbs gw) and percent distribution of red grouper across all states by mode (2011 through 2015).

	Landings (pounds gw)				Percent Distribution			
	Charter boat	**Headboat**	**Private**	**Shore**	**Charter boat**	**Headboat**	**Private**	**Shore**
2011	225,087	36,697	381,961	0	35%	6%	59%	0%
2012	527,371	83,324	1,141,896	0	30%	5%	65%	0%
2013	773,797	77,542	1,526,069	0	33%	3%	64%	0%
2014	484,441	45,107	1,070,607	0	30%	3%	67%	0%
2015*	828,201	50,610	902,317	0	46%	3%	51%	0%
Average (2011-2014)	502,674	60,667	1,030,133	0	32%	4%	64%	0%

Source: SEFSC MRFSS ACL dataset (January 2016).
*Preliminary estimates are only available through wave 5 for 2015. As such, averages are only provided for 2011 through 2014.

[7] Prior to 2013, Northwest Florida and Alabama headboat landings were reported together so it is not possible to disaggregate them. Non-headboat landings in Florida accounted for greater than 94% of total Gulf red grouper landings in 2011 and 2012.

Table 3.3.2.2. Recreational red grouper landings (lbs gw) and percent distribution by wave (2011 through 2015).

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)
	Landings (pounds gw)					
2011	11,386	46,542	182,885	225,553	98,099	79,280
2012	60,632	275,742	681,513	361,839	143,004	229,861
2013	78,219	107,382	674,960	874,930	263,075	378,841
2014	115,342	203,140	422,972	644,108	135,657	78,937
2015*	136,072	712,840	356,499	408,374	167,345	0
Average (2011-2014)	80,330	269,129	463,766	502,961	161,436	153,384
	Percent Distribution					
2011	1.77%	7.23%	28.41%	35.04%	15.24%	12.32%
2012	3.46%	15.73%	38.89%	20.65%	8.16%	13.12%
2013	3.29%	4.52%	28.39%	36.80%	11.07%	15.94%
2014	7.21%	12.70%	26.43%	40.25%	8.48%	4.93%
2015*	N/A	N/A	N/A	N/A	N/A	N/A
Average (2011-2014)	3.93%	10.04%	30.53%	33.18%	10.74%	11.57%

Source: SEFSC MRFSS ACL dataset (January 2016).
*Preliminary estimates are only available through wave 5 for 2015. As such, averages are only provided for 2011 through 2014.

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 the 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. All of the estimated

target trips and almost all of the estimated catch trips for Gulf red grouper occurred in Florida from 2011 through 2015 (Table 3.3.2.3 and Table 3.3.2.4). The majority of this estimated effort was recorded from the private mode. Although there were a small number of red grouper target and catch trips estimated for the shore mode, there were no actual landings reported from 2011 through 2015, as discussed earlier, suggesting no keepers were encountered. On average (2011 through 2015), the majority of red grouper target and catch effort was estimated to occur in May through August (Table 3.3.2.5 and Table 3.3.2.6). Estimates of red grouper target or catch 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 3.3.2.3. Number of red grouper recreational target trips, by mode and state, 2011-2015*.

	Alabama	Florida	Louisiana	Mississippi	Total
Shore Mode					
2011	0	3,387	0	0	3,387
2012	0	263	0	0	263
2013	0	5,723	0	0	5,723
2014	0	13,151	N/A**	0	13,151
2015	0	0	0	0	0
Average	0	4,505	0	0	4,505
Charter Mode					
2011	0	27,704	0	0	27,704
2012	0	50,669	0	0	50,669
2013	0	52,264	0	0	52,264
2014	0	38,616	N/A**	0	38,616
2015	0	52,540	0	0	52,540
Average	0	44,359	0	0	44,359
Private/Rental Mode					
2011	0	131,471	0	0	131,471
2012	0	207,099	0	0	207,099
2013	0	344,622	0	0	344,622
2014	0	240,456	N/A**	0	240,456
2015	0	166,465	0	0	166,465
Average	0	218,023	0	0	218,023
All Modes					
2011	0	162,561	0	0	162,561
2012	0	258,031	0	0	258,031
2013	0	402,608	0	0	402,608
2014	0	292,223	N/A**	0	292,223
2015	0	219,005	0	0	219,005
Average	0	266,886	0	0	266,886

Source: MRIP database, SERO, NMFS.

* Texas and headboat information unavailable. 2015 estimates are preliminary as of February 16, 2016.

** MRIP sampling was not conducted in Louisiana in 2014, so these values are not available. Based on red grouper effort data in surrounding years, it is assumed these values would be negligible or zero.

Table 3.3.2.4. Number of red grouper recreational catch trips, by mode and state, 2011-2015*.

	Alabama	Florida	Louisiana	Mississippi	Total
Shore Mode					
2011	0	2,030	0	0	2,030
2012	0	1,711	0	0	1,711
2013	0	1,701	0	0	1,701
2014	0	3,087	N/A**	0	3,087
2015	0	9,289	0	0	9,289
Average	0	3,564	0	0	3,564
Charter Mode					
2011	0	99,195	0	0	99,195
2012	606	132,620	0	0	133,226
2013	3,472	136,587	0	0	140,059
2014	118	126,144	N/A**	0	126,262
2015	2,152	116,660	0	0	118,812
Average	1,270	122,241	0	0	123,511
Private/Rental Mode					
2011	0	271,990	0	0	271,990
2012	0	363,310	0	0	363,310
2013	1,736	449,527	0	0	451,263
2014	1,933	394,685	N/A**	0	396,618
2015	645	326,534	0	0	327,179
Average	863	361,209	0	0	362,072
All Modes					
2011	0	373,215	0	0	373,215
2012	606	497,641	0	0	498,247
2013	5,208	587,815	0	0	593,022
2014	2,051	523,917	N/A**	0	525,968
2015	2,797	452,484	0	0	455,280
Average	2,132	487,014	0	0	489,146

Source: MRIP database, SERO, NMFS.

* Texas and headboat information unavailable. 2015 estimates are preliminary as of February 16, 2016.

** MRIP sampling was not conducted in Louisiana in 2014, so these values are not available. Based on red grouper effort data in surrounding years, it is assumed these values would be negligible or zero.

Table 3.3.2.5. Red grouper target trips and percent distribution across all modes and states, by wave, 2011 – 2015*.

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)
	Red grouper Target Trips					
2011	10,856	24,836	26,712	50,378	23,965	25,815
2012	26,805	36,179	72,369	63,671	35,880	23,127
2013	36,320	10,904	120,566	127,385	74,062	33,371
2014**	31,050	27,646	65,680	118,402	31,437	18,007
2015	26,141	59,561	48,809	57,442	21,821	5,231
Average	26,234	31,825	66,827	83,456	37,433	21,110
	Percent Distribution					
2011	6.68%	15.28%	16.43%	30.99%	14.74%	15.88%
2012	10.39%	14.02%	28.05%	24.68%	13.91%	8.96%
2013	9.02%	2.71%	29.95%	31.64%	18.40%	8.29%
2014**	10.63%	9.46%	22.48%	40.52%	10.76%	6.16%
2015	11.94%	27.20%	22.29%	26.23%	9.96%	2.39%
Average	10%	14%	24%	31%	14%	8%

Source: MRIP database, SERO, NMFS.

* Texas and headboat information unavailable. 2015 estimates are preliminary as of February 16, 2016.

** Louisiana effort information is unavailable for 2014; however, based on historical data, this is not expected to have any impact on 2014 Gulf totals.

Table 3.3.2.6. Red grouper catch trips and percent distribution across all modes and states, by wave, 2011 – 2015*.

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov-Dec)
	Red grouper Catch Trips					
2011	21,859	75,973	90,841	80,135	57,053	47,354
2012	59,144	56,385	120,016	150,689	52,923	59,090
2013	62,970	46,535	137,857	211,728	66,140	67,793
2014**	42,489	80,563	119,717	170,090	52,579	60,530
2015	47,330	104,232	87,004	105,811	62,279	48,623
Average	46,758	72,738	111,087	143,691	58,195	56,678
	Percent Distribution					
2011	5.86%	20.36%	24.34%	21.47%	15.29%	12.69%
2012	11.87%	11.32%	24.09%	30.24%	10.62%	11.86%
2013	10.62%	7.85%	23.25%	35.70%	11.15%	11.43%
2014**	8.08%	15.32%	22.76%	32.34%	10.00%	11.51%
2015	10.40%	22.89%	19.11%	23.24%	13.68%	10.68%
Average	9%	16%	23%	29%	12%	12%

Source: MRIP database, SERO, NMFS.
* Texas and headboat information unavailable. 2015 estimates are preliminary as of February 16, 2016.
** Louisiana effort information is unavailable for 2014; however, based on historical data, this is not expected to have any impact on 2014 Gulf totals.

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 total number of standardized full-day angler trips[8]. The stationary "fishing for demersal species" nature of headboat fishing, as opposed to trolling, suggests that most headboat trips and, hence, angler days, are demersal or reef fish trips by intent. According to a recent survey of the recreational for-hire industry in the Gulf of Mexico, on average approximately 84% of headboat trips target reef fish species such as snappers or groupers (Savolainen et al. 2012).

The distribution of headboat effort (angler days) by geographic area is presented in Table 3.3.2.7. For purposes of data collection, the headboat data collection program divides the Gulf into several areas. In Table 3.3.2.7, FLW refers to areas in Florida from the Dry Tortugas through the Florida Middle Grounds, FL-AL covers Northwest Florida and Alabama, MS-LA refers to the combined coastlines of Mississippi and Louisiana, and TX includes areas in Texas from Sabine Pass-Freeport south to Port Isabel. The number of headboat angler days in West Florida

[8] Headboat trip categories include half-, three-quarter-, full-, and 2-day trips. A full-day trip equals one angler day, a half-day trip equals .5 angler days, etc. Angler days are not standardized to an hourly measure of effort and actual trip durations may vary within each category.

increased steadily from 2011 through 2015 (Table 3.3.2.7). In Northwest Florida through Alabama, the number of angler days increased steadily from 2011 through 2014 and then dipped slightly in 2015. In Mississippi through Louisiana and Texas, the number of angler days was relatively stable from 2011 through 2015. On average (2011 through 2015), West Florida through Alabama accounted for the majority of headboat angler days reported, followed by Texas, whereas Mississippi through Louisiana accounted for only a small percentage (Table 3.3.2.7).

Table 3.3.2.7. Headboat angler days and percent distribution by state (2011 through 2015).

	Angler Days				Percent Distribution			
	FLW	**FL-AL***	**MS-LA****	**TX**	**FLW**	**FL-AL**	**MS-LA**	**TX**
2011	79,722	77,303	3,657	47,284	38.33%	37.17%	1.76%	22.74%
2012	84,205	77,770	3,680	51,776	38.73%	35.77%	1.69%	23.81%
2013	94,752	80,048	3,406	55,749	40.50%	34.22%	1.46%	23.83%
2014	102,841	88,524	3,257	51,231	41.83%	36.01%	1.32%	20.84%
2015	107,910	86,473	3,587	55,135	42.63%	34.16%	1.42%	21.78%
Average	93,886	82,024	3,517	52,235	40%	35%	2%	23%

Source: NMFS Southeast Region Headboat Survey (SRHS).
*Beginning in 2013, HBS data was reported separately for NW Florida and Alabama, but has been combined here for consistency with previous years.
**Heaboat data from Mississippi and Louisiana are combined for confidentiality purposes.

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 2015) (Table 3.3.2.8). 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 3.3.2.8. Headboat angler days and percent distribution by month (2011 through 2015).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Headboat Angler Days												
2011	5,242	9,174	16,378	17,626	16,148	39,775	42,089	22,513	10,766	12,609	8,514	7,132
2012	7,924	9,364	18,326	16,404	17,708	39,662	46,468	21,440	12,629	13,281	7,135	7,090
2013	8,630	9,576	16,759	16,426	17,150	47,791	38,304	27,610	12,697	21,256	8,654	9,102
2014	7,069	12,402	18,626	18,733	21,345	44,342	46,246	30,893	12,089	17,395	7,557	9,156
2015	9,444	10,594	22,827	20,684	20,973	44,731	45,192	26,637	15,114	17,246	9,757	9,906
Avg	7,662	10,222	18,583	17,975	18,665	43,260	43,660	25,819	12,659	16,357	8,323	8,477
Percent Distribution												
2011	2.5%	4.4%	7.9%	8.5%	7.8%	19.1%	20.2%	10.8%	5.2%	6.1%	4.1%	3.4%
2012	3.6%	4.3%	8.4%	7.5%	8.1%	18.2%	21.4%	9.9%	5.8%	6.1%	3.3%	3.3%
2013	3.7%	4.1%	7.2%	7.0%	7.3%	20.4%	16.4%	11.8%	5.4%	9.1%	3.7%	3.9%
2014	2.9%	5.0%	7.6%	7.6%	8.7%	18.0%	18.8%	12.6%	4.9%	7.1%	3.1%	3.7%
2015	3.7%	4.2%	9.0%	8.2%	8.3%	17.7%	17.9%	10.5%	6.0%	6.8%	3.9%	3.9%
Avg	3.3%	4.4%	8.0%	7.8%	8.0%	18.7%	18.9%	11.1%	5.5%	7.0%	3.6%	3.6%

Source: NMFS Southeast Region Headboat Survey (SRHS).

Permits

For-hire vessels are required to have a Charter/Headboat for Reef Fish permit (for-hire permit) to fish for or possess reef fish species in the Gulf EEZ (a similar, but separate, permit is required for coastal migratory pelagic species). This sector is currently under a permit limitation program since June, 2006. On March 10, 2016, there were 1,280 valid (non-expired) or renewable[9] Gulf for-hire permits listed in SERO's Permits Information Management System. 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 February 22, 2016, 69 Gulf headboats were registered in the SRHS (K. Fitzpatrick, NMFS SEFSC, pers. comm.). The majority of these headboats were located in Florida (40), followed by Texas (16), Alabama (8), and Mississippi/Louisiana (5).

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, including red grouper. Instead, anglers are required to possess either a state

[9] A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration.

recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed amendment.

Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus. The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips. The estimated value of the consumer surplus for catching and keeping a second grouper on an angler trip is approximately $104 (values updated to 2015 dollars[10]), and decreases thereafter (approximately $69 for a third grouper, $51 for a fourth grouper, and $40 for a fifth grouper) (Carter and Liese 2012). Values by specific grouper species are not available.

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

With regard 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 $154 (2015 dollars) per charter angler trip (Liese and Carter 2011). The estimated NOR value per headboat angler trip is $53 (2015 dollars) (C. Liese, NMFS SEFSC, pers. comm.). Estimates of NOR per red grouper target trip are not available.

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.

[10] Converted to 2015 dollars using the 2015 annual Consumer Price Index (CPI) for all US urban consumers provided by the Bureau of Labor and Statistics (BLS).

Estimates of the business activity (economic impacts) associated with recreational angling for red grouper were calculated using average trip-level impact coefficients derived from the 2013 Fisheries Economics of the U.S. report (NMFS, 2015b) and underlying data provided by the National Oceanic and Atmospheric Administration (NOAA) Office of Science and Technology. 2013 impacts estimates were adjusted to 2015 dollars using the annual, seasonally-adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

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 grouper target effort (2011-2015) and associated business activity (2015 dollars) are provided in Table 3.3.2.9. Florida was the only state with estimated economic impacts because it was the only state with recorded target effort for red grouper. The average impact coefficients, or multipliers, used in the model are invariant to the "type" of effort and can therefore be directly used to measure the impact of other effort measures such as red grouper catch trips. To calculate the multipliers from Table 3.3.2.9, simply divide the desired impact measure (output impact, value-added impact, or jobs) associated with a given state and mode by the number of target trips for that state and mode.

The estimates provided in Table 3.3.2.9 only apply at the state-level. These numbers should not be added across the region. Addition of the state-level estimates to produce a regional (or national) total could either under- or over-estimate the actual amount of total business activity because of the complex relationship between different jurisdictions and the expenditure/impact multipliers. State-level impacts do not account for interstate and interregional trading.

Table 3.3.2.9. Estimated economic impacts from average annual Gulf red grouper recreational target trips by state and mode (2011 through 2015), using state-level multipliers. All monetary estimates are in 2015 dollars in thousands.*

	FL	AL	MS	LA**	TX***
	Charter Mode				
Target Trips	44,359	0	0	0	N/A
Value Added Impacts	$18,277	$0	$0	$0	N/A
Sales Impacts	$30,055	$0	$0	$0	N/A
Income Impacts	$12,718	$0	$0	$0	N/A
Employment (Jobs)	274	0	0	0	N/A
	Private/Rental Mode				
Target Trips	218,023	0	0	0	N/A
Value Added Impacts	$6,958	$0	$0	$0	N/A
Sales Impacts	$10,993	$0	$0	$0	N/A
Income Impacts	$4,210	$0	$0	$0	N/A
Employment (Jobs)	102	0	0	0	N/A
	Shore				
Target Trips	4,505	0	0	0	N/A
Value Added Impacts	$123	$0	$0	$0	N/A
Sales Impacts	$196	$0	$0	$0	N/A
Income Impacts	$75	$0	$0	$0	N/A
Employment (Jobs)	2	0	0	0	N/A
	All Modes				
Target Trips	266,887	0	0	0	N/A
Value Added Impacts	$25,358	$0	$0	$0	N/A
Sales Impacts	$41,245	$0	$0	$0	N/A
Income Impacts	$17,002	$0	$0	$0	N/A
Employment (Jobs)	378	0	0	0	N/A

Source: effort data from MRIP, economic impact results calculated by NMFS SERO using NMFS (2015b) and underlying data provided by the NOAA Office of Science and Technology.
* 2015 effort estimates are preliminary as of February 16, 2016.
** MRIP sampling was not conducted in Louisiana in 2014, so 2014 is excluded from these averages. Based on red grouper effort data in surrounding years, it is assumed 2014 values would be negligible or zero.
** Because target information is unavailable, associated business activity cannot be calculated.

3.4 Description of the Social Environment

This section provides community background and current descriptions of red grouper fishing for which the proposed action will be evaluated in Chapter 4. The following description focuses on

both commercial and recreational fishing communities that can be identified as having some relationship to red grouper fishing. Recent amendments (GMFMC 2010; 2011b) include more detailed descriptions of the commercial sector and that information will be incorporated by reference as necessary. More recent information will be provided here. In particular, more recent community landings and fishing engagement measures are provided.

As mentioned earlier, red grouper is one species in a multispecies IFQ program established through Amendment 29 (GMFMC 2008) which requires commercially harvested red grouper to be landed through IFQ dealers only. The commercial fishing community description is predicated on landings through those dealers which provide one perspective on the importance of the fishery within a community. As mentioned, more detailed information on commercial fishing communities was included in the regulatory amendment (GMFMC 2010) which includes community demographics and discussions of historic participation with the red grouper component of the reef fish fishery. A more general measure of fishing engagement based upon both vessel and dealer permits and pounds and value of all species landed within a community described below was not available in earlier amendments. Another important factor in the harvest of commercial red grouper was the recent longline endorsement which required longline vessels without an endorsement to fish outside the 20 fathom line off the Florida west coast (GMFMC 2009). Some vessels switched gears to use bandit reels to fish within the restricted area while others either sought to purchase endorsements or fished further offshore. Because we do not currently have data on endorsement sales or tracked gear modifications, it is difficult to measure the precise impacts of that management change (see GMFMC 2009 for projected impacts). Since most red grouper is harvested off the west coast of Florida, the majority of communities that are engaged in the harvest of red grouper are located there (GMFMC 2010) and will be discussed in the following description of the commercial sector.

In Figure 3.4.1 the community regional quotient (rq) for red grouper is illustrated for the years 2009-2013. The community rq is the amount of red grouper landed within a community out of all red grouper landed within the region. The communities are ranked based upon their 2013 rq value. All of the top fifteen communities are in Florida as would be expected. As shown in Figure 3.4.1, many communities have seen a fluctuation in their regional quotient over the four years represented, yet their ranking remains about the same for most. Madeira Beach remains the top community and has been throughout recent years, but has seen substantial fluctuation in its rq value. The communities of St. Petersburg, Largo, and Seminole have seen their regional quotient rise recently with Seminole and Largo being recent additions to the top communities in terms of regional quotient. Other communities have relatively stable regional quotient, although Cortez has seen some fluctuation in the intervening years. The fluctuations in regional quotient may represent vessel movement or other factors within a particular community that might have restricted the harvest of red grouper in a particular year. It may be related to vessel downtime, lack of available IFQ allocation, or other issues. It is the trend of the regional quotient that is likely more informative of what is happening in the community over time with regard to its dependence upon red grouper.

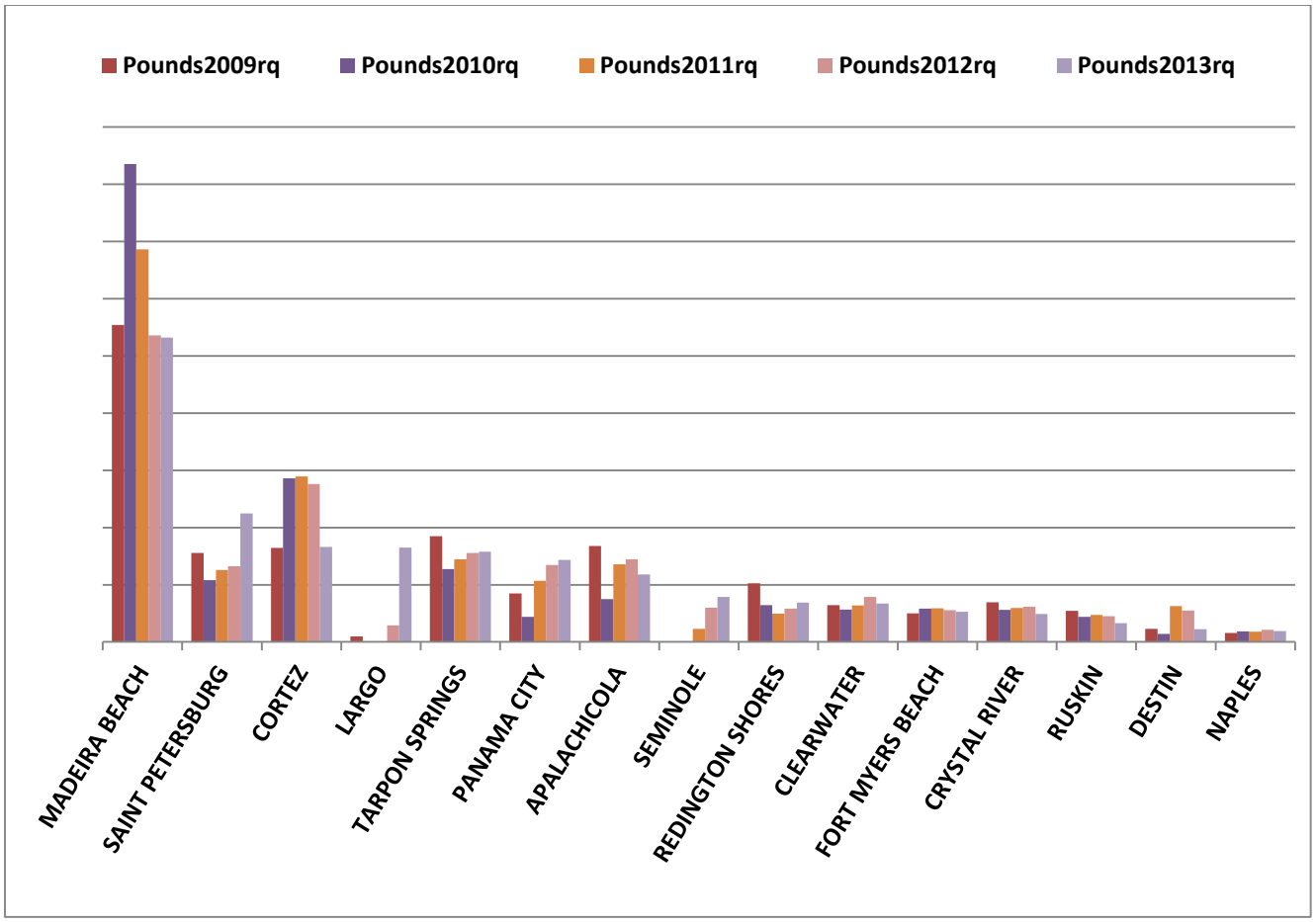

Figure 3.4.1. The top fifteen communities ranked by red grouper regional quotient 2009-2013 with 2013 as base year.
Source: Community Accumulated Landings System based on dealer addresses, NMFS, SERO (2015).

Another way to examine a community's fishing engagement is represented in Figure 3.4.2. Most communities in Figure 3.4.2 would be considered to be highly or moderately engaged in commercial fishing as many are above 1 standard deviation for all years represented and all have been at ½ standard deviation at one point in time. Redington Shores and Ruskin have shown the least amount of engagement in commercial fishing overall, while all others are highly engaged.

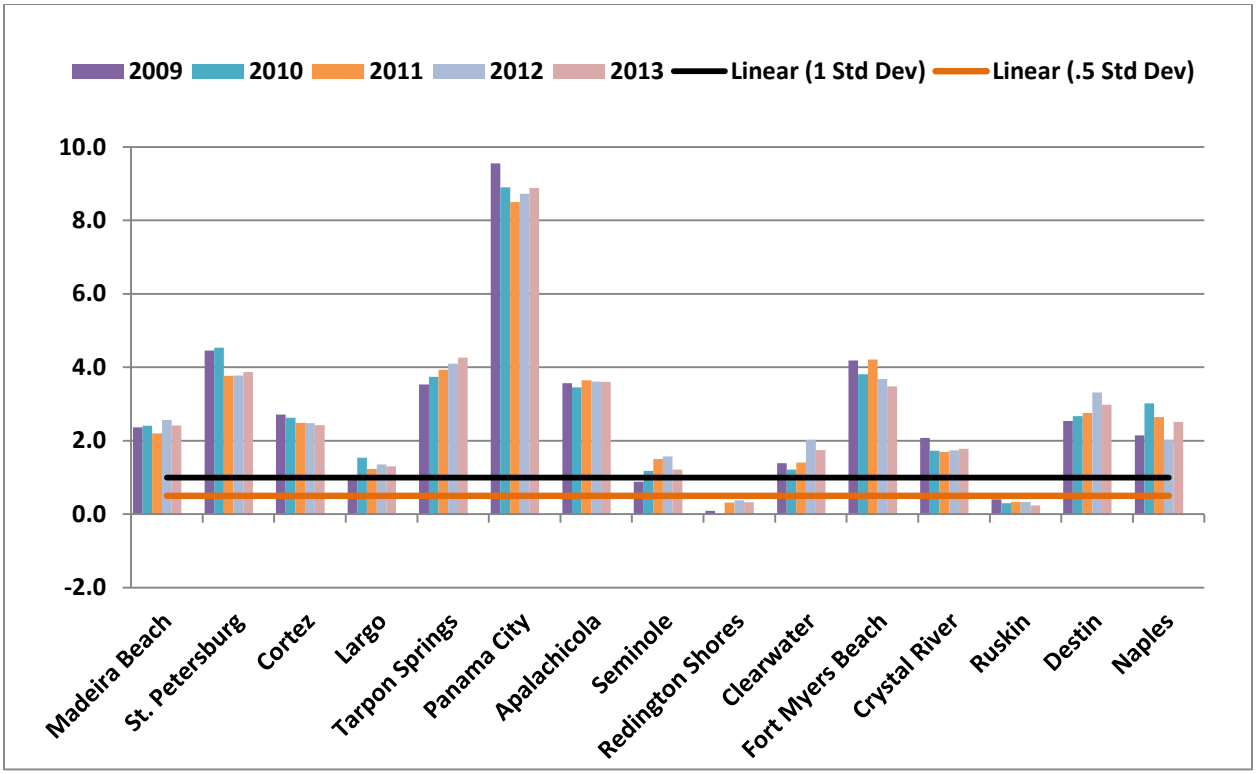

Figure 3.4.2. Commercial fishing engagement of the top fifteen communities for 2009-2013.
Source: Social Indicators Database, NMFS, SERO (2015).

While we do not have data that would allow for a recreational regional quotient because recreational landings by species are not available at the community level, we do have an overall measure of recreational fishing engagement and reliance for communities along Florida's west coast. The communities were chosen because of their location and likely participation in the red grouper component of the reef fish fishery. This engagement and reliance measures consist of recreational permit and infrastructure counts (boat ramps and marinas) within a community to gauge absolute recreational fishing activity and relative to its population. These measures are not specific to red grouper, but a measure of overall recreational fishing. Figure 3.4.3 indicates that most of these communities have a high engagement in recreational fishing as most are at or above the 1 standard deviation threshold. Crystal River and Cortez are below 1 standard deviation, but both are above the ½ standard deviation and demonstrate moderate engagement. Horseshoe Beach is not highly or moderately engaged but does demonstrate high reliance on recreational fishing. This is due to its small population and probably a small amount of infrastructure related to recreational fishing, but substantial enough for a small community to depend on it for a good portion of its local economy. Other smaller communities, like St. Marks, Cedar Key, Apalachicola, and Carrabelle, also demonstrate high reliance on recreational fishing.

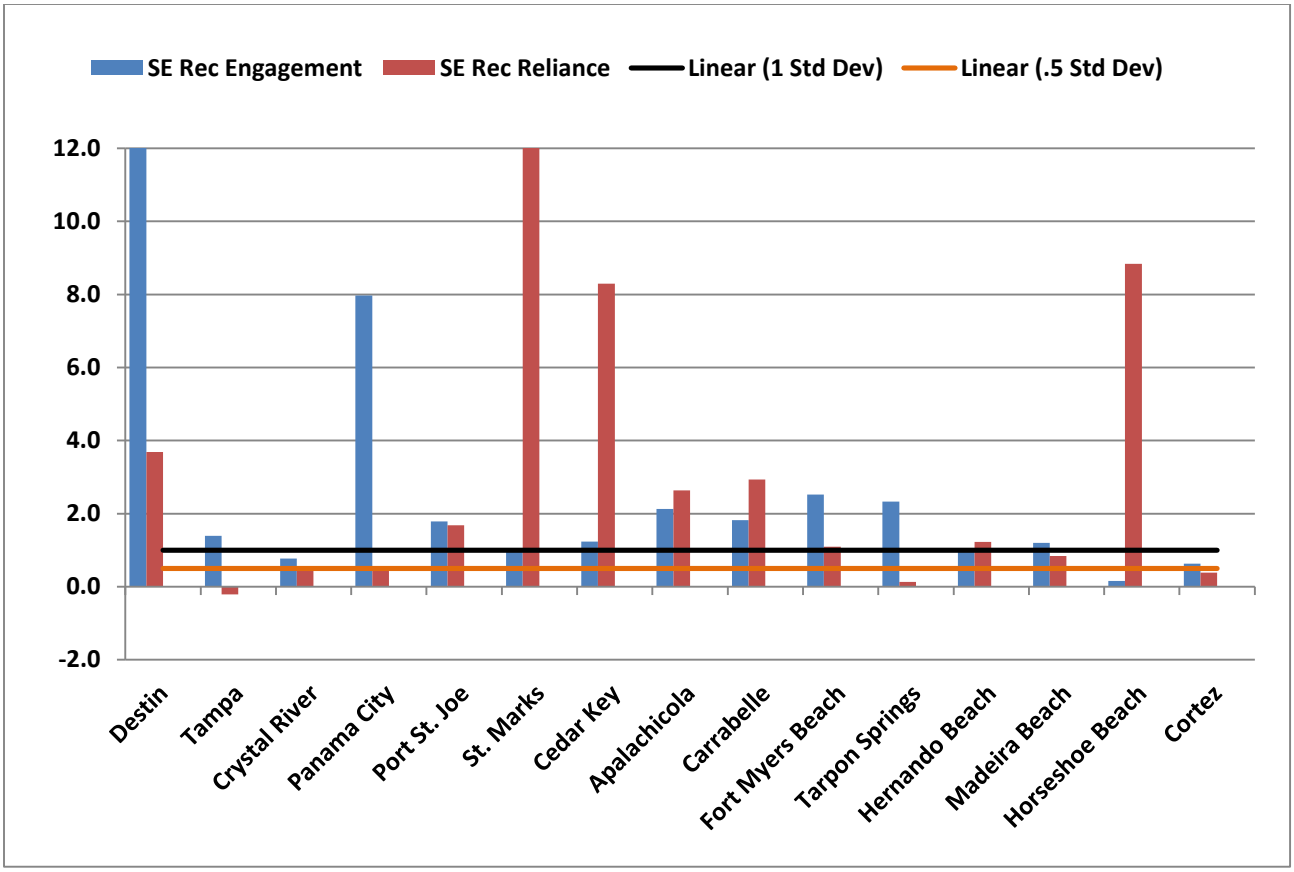

Figure 3.4.3. Recreational fishing engagement and reliance for communities on Florida's west coast.
Source: Social Indicators Database, NMFS, SERO (2015).

The brief description of fishing activities presented here highlight which communities are most involved in red grouper fishing. It is expected that the impacts from the regulatory action in this amendment, whether positive or negative, will most likely affect those communities identified above. At this time we are unable to provide a more detailed description of vessel involvement at the community level. It is likely that certain vessels within a community are more dependent upon red grouper than others, as are particular households. Until we are able to access those types of data, we cannot speculate at the impacts upon either vessels or households within communities.

3.4.1 Environmental Justice Considerations

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. This executive order is generally referred to as environmental justice (EJ).

The proposed modifications to the red grouper ACLs will allow additional red grouper to be caught by both the commercial and recreational sectors. Benefits to the social environment are expected under any of the proposed alternatives compared with taking no action. Thus, this action is expected to result in broad positive effects for the social environment and not result in negative impacts to any EJ population.

Although no EJ issues have been identified or are expected to arise, information on the race and income status for groups at the different participation levels (for-hire captains and crew and employees of associated support industries, etc.) is not available. There is no known subsistence consumption of red grouper, nor are there any claims to customary usage or subsistence consumption of red grouper by any indigenous or tribal group in the Gulf.

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

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

The Council is responsible for fishery resources in federal waters of the Gulf. These waters extend to 200 nautical miles offshore from the seaward boundaries of the Gulf states of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law, including the Congressional Omnibus Appropriations Bill signed into law on December 18, 2015, which will remain in place for one year unless Congress takes additional action. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline of 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles).

The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process

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

Regulations contained within FMPs are enforced through actions of the NOAA's Office of Law Enforcement, the U.S. 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 and they have developed a two year "Gulf of Mexico Cooperative Law Enforcement Strategic Plan – 2011-2012."

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 states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states' natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004b).

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Direct and Indirect Effects on the Physical Environment

A brief summary of red grouper use of the physical environment is provided in Chapter 3.1. A more detailed description is included in the Generic Essential Fishery Habitat (EFH) Amendment (GMFMC 2004a) and Amendment 32 (GMFMC 2011b) which are incorporated by reference. The effects of fishing gears used in the fishery on the physical environment are also briefly described in Chapter 3.2 and in more detail in Amendment 32.

The degree to which a habitat is affected by fishing gear depends largely on the vulnerability of the affected habitat to disturbance, and on the rate that the habitat can recover from disturbance (Barnette 2001). For example, the complex structure and vertical growth pattern of coral reef species makes reef habitat more vulnerable to adverse impacts from fishing gear and slower to recover from such impacts than sand and mud bottom habitat (Barnette 2001). Red grouper are also associated with hard bottom habitat, but tend to prefer lower relief habitat than gag.

The primary effects of grouper fishing on the physical environment generally result from fishing gear interactions with the sea floor. Most grouper are caught with hook-and-line fishing gear, although some spearfishing does occur. Fishing gear can damage or disturb bottom structures, and occasionally incidentally harvest such habitat.

Longlines

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

Vertical lines

Concentrations of many managed reef fish species are higher on hard bottom areas than on sand or mud bottoms, thus vertical line gear fishing generally occurs over hard bottom areas

(GMFMC 2004a). Vertical lines include multi-hook lines known as bandit gear, handlines, and rod-and-reels. Vertical-line gear is less likely to contact the bottom than longlines, but still has the potential to snag and entangle bottom structures and cause tear-offs or abrasions (Barnette 2001). In using bandit gear, a weighted line is lowered to the bottom, and then the lead is raised slightly off the bottom (Siebenaler and Brady 1952). The gear is in direct contact with the bottom for only a short period of time. Barnette (2001) suggests that physical impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers). Commercial or recreational fishing with rod-and-reel and handlines also puts gear on the bottom. The terminal part of the gear is either lifted off the bottom like fishing with bandit gear, or left contacting the bottom. Sometimes the fishing line can become entangled on coral and hard bottom outcroppings. The subsequent algal growth can foul and eventually kill the underlying coral (Barnette 2001). Researchers conducting studies in the restricted fishing area at Madison-Swanson reported seeing lost fishing line on the bottom, much of which appeared to be fairly old and covered with growth (A. David, pers comm), a clear indication that bottom fishing has had an impact on the physical environment prior to fishing being prohibited in the area (GMFMC 2003). The National Fish and Wildlife Foundation, in issuing grants to remove marine debris, established monofilament fishing line is a priority marine debris issue.

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

Spear and Powerhead

Spear guns and slings are used in both commercial and recreational grouper fishing but are a relatively minor component of both. Barnette (2001) cited a study by Gomez et al. (1987) that concluded that spearfishing on reef habitat may result in some coral breakage, but damage is probably negligible. In addition, there could be some impacts from divers touching coral with hands or from resuspension of sediment by fins (Barnette 2001). Such impacts should be negligible to non-existent for well-trained and experienced spear fishermen who stay in the water column and avoid contact with the bottom, but would be expected to occur among spear fisherman who are less experienced.

Alternative 1, (No action), would be expected to have less indirect impact to the physical environment than **Alternatives 2, 3, or Preferred Alternative 4.** The impacts associated with **Alternatives 2, 3**, or **Preferred Alternative 4** would be from the expected increase in fishing effort necessary to harvest the increased commercial and recreational red grouper quotas, and therefore, an increase in gear interactions with the physical environment.

The alternatives consider a range of red grouper harvest annual catch limits (ACLs) and annual catch targets (ACTs). **Alternative 1** would not be expected to result in any additional effects to the physical environment. **Alternative 2** would increase the commercial ACL from the current 6.03 mp gutted weight (gw), to 15.28 mp gw in 2016, 11.76 mp gw in 2017, 9.38 mp gw in 2018,

8.31 mp gw in 2019, and 8.19 mp gw in 2020, respectively. **Alternative 2** would increase the commercial ACT from the current 5.72 mp gw, to 14.52 mp gw in 2016, 11.17 mp gw in 2017, 8.91 mp gw in 2018, 7.89 mp gw in 2019, and 7.78 mp gw in 2020. **Alternative 3** would increase the commercial ACL for the fishing year 2016 through 2020 to 10.58 mp gw, and the commercial ACT to 10.05 mp gw. **Preferred Alternative 4** would increase the commercial ACL to 8.19 mp gw and the commercial ACT to 7.78 mp gw for the fishing year 2016-2020. **Preferred Alternative 4** uses the lowest of the five year projected acceptable biological catches (ABC's) (10.77 mp gw) to determine the ACL's and ACT's for 2017-2020 compared to **Alternative 3** which uses the mean of the projected ABC's.

Alternative 1, the no action alternative, would not be expected to result in any additional effects to the physical environment. **Alternative 2** would increase the recreational ACL from the current 1.9 mp gw, to 4.82 mp gw in 2016, 3.72 mp gw in 2017, 2.96 mp gw in 2018, 2.62 mp gw in 2019, and 2.58 mp gw in 2020, respectively. **Alternative 2** would increase the recreational ACT from the current 1.73 mp gw, to 4.43 mp gw in 2016, 3.42 mp gw in 2017, 2.72 mp gw in 2018, 2.41 mp gw in 2019, and 2.37 mp gw in 2020. **Alternative 3** would increase the recreational ACL for the fishing year 2016 through 2020 to 3.34 mp gw, and the commercial ACT to 3.07 mp gw. **Preferred Alternative 4** would increase the recreational ACL to 2.58 mp gw and the recreational ACT to 2.37 mp gw for the fishing year 2016-2020. **Preferred Alternative 4** uses the lowest of the five year projected ABC's (10.77 mp gw) to determine the ACL's and ACT's for 2017-2020 compared to **Alternative 3** which uses the mean of the projected ABC's.

Any increase in ACLs and ACTs would be expected to increase fishing effort to achieve these catch targets. The magnitude of the effects is expected to be proportional to the increase in allowable harvest. **Alternative 2** increases the ACL and ACT the most and would be expected to increase fishing effort the greatest, and therefore would be expected to have a higher level of physical impacts than **Alternative 1, 3,** or **Preferred Alternative 4**. **Preferred Alternative 4** would increase the ACL and ACT the least, and therefore would be expected to have less physical impacts to the environment than **Alternatives 2** and **3**. All of the **Alternatives** with the exception of the no action, **Alternative 1** may result in minor increased negative effects on the physical environment. However, the **Alternatives** are not expected to alter the overall execution of the fishery and therefore would not be expected to have any significant effects on the physical environment.

4.2 Direct and Indirect Effects on the Biological/Ecological Environment

The red grouper stock is neither overfished nor undergoing overfishing. A 2015 benchmark stock assessment (SEDAR 42 2015) determined that the red grouper spawning stock biomass was above the level needed to support maximum sustainable yield (MSY). SEDAR 42 indicated that the red grouper overfishing limit (OFL) and ABC can be adjusted to provide an increase in harvest levels beginning in 2016.

The recreational red grouper season is closed when the National Marine Fisheries Service (NMFS) projects that the ACL will be reached. However, if the ACL is exceeded in a given year, the following year the recreational red grouper season is closed when the ACT is projected to be reached. The ACLs and ACTs selected in this action, could potentially provide an increase in harvest to the recreational and commercial fishing sectors. The commercial ACT is 95% of the commercial ACL, and the recreational ACT is 92% of the recreational ACL. This increased harvest quota is expected to provide the recreational fishing season the opportunity to remain open all year. The commercial sector would receive an increase in quota to the IFQ program participants.

Alternative 1 will have less indirect impact to the biological environment than **Alternatives 2, 3,** or **Preferred Alternative 4. Alternatives 2, 3,** and **Preferred Alternative 4** would be expected to increase the amount of fishing effort to harvest the recreational and commercial red grouper ACLs, and therefore, would be expected to have an increase in discards of red grouper, and other reef fish caught with red grouper when the fishing season is closed or when a commercial fisherman does not have any remaining allocation of IFQ shares. Any increase in ACLs would be expected to increase discards due to management measures, such as, bag and size limits. However, increasing the recreational ACL is expected to result in the recreational season remaining open year round, which would be expected to reduce discards resulting from no longer needing to close the season.

The alternatives for this action consider a range of red grouper harvest ACLs and ACTs. **Alternative 1** would not be expected to result in any additional effects to the biological environment. **Alternative 2** would increase the commercial ACL from the current 6.03 mp gw, to 15.28 mp gw in 2016, 11.76 mp gw in 2017, 9.38 mp gw in 2018, 8.31 mp gw in 2019, and 8.19 mp gw in 2020, respectively. **Alternative 2** would increase the commercial ACT from the current 5.72 mp gw, to 14.52 mp gw in 2016, 11.17 mp gw in 2017, 8.91 mp gw in 2018, 7.89 mp gw in 2019, and 7.78 mp gw in 2020. **Alternative 3** would increase the commercial ACL for the fishing year 2016 through 2020 to 10.58 mp gw, and the commercial ACT to 10.05 mp gw. **Preferred Alternative 4** would increase the commercial ACL to 8.19 mp gw and the commercial ACT to 7.78 mp gw for the fishing year 2016-2020. **Preferred Alternative 4** uses the lowest of the five year projected ABC's (10.77 mp gw) to determine the ACL's and ACT's for 2017-2020 compared to **Alternative 3** which uses the mean of the projected ABC's.

Alternative 1 would not be expected to result in any additional effects to the biological environment. **Alternative 2** would increase the recreational ACL from the current 1.9 mp gw, to 4.82 mp gw in 2016, 3.72 mp gw in 2017, 2.96 mp gw in 2018, 2.62 mp gw in 2019, and 2.58 mp gw in 2020, respectively. **Alternative 2** would increase the recreational ACT from the current 1.73 mp gw, to 4.43 mp gw in 2016, 3.42 mp gw in 2017, 2.72 mp gw in 2018, 2.41 mp gw in 2019, and 2.37 mp gw in 2020. **Alternative 3** would increase the recreational ACL for the fishing year 2016 through 2020 to 3.34 mp gw, and the commercial ACT to 3.07 mp gw. **Preferred Alternative 4** would increase the recreational ACL to 2.58 mp gw and the recreational ACT to 2.37 mp gw for the fishing year 2016-2020. **Preferred Alternative 4** uses the lowest of the five year projected ABC's (10.77 mp gw) to determine the ACL's and ACT's for 2017-2020 compared to **Alternative 3** which uses the mean of the projected ABC's.

Any increase in ACLs and ACTs would be expected to increase fishing effort to achieve the increased catch targets. The magnitude of the effects is expected to be proportional to the increase in allowable harvest. **Alternative 2** increases the ACLs and ACTs the most and would be expected to increase fishing effort, and therefore would be expected to have a higher level of biological impacts than **Alternative 1, 3,** or **4**. **Preferred Alternative 4** would increase the ABC the least and therefore would be expected to have less biological impacts to the environment than **Alternatives 2** and **3**. All of the **Alternatives** with the exception of the no action, **Alternative 1** may have increased negative effects on the biological environment. However, the **Alternatives** are not expected to alter the overall execution of the fishery and therefore would not be expected to have any significant effects on the biological environment.

4.3 Direct and Indirect Effects on the Economic Environment

Alternative 1 (No Action) would maintain current red grouper stock OFL and ABC and commercial and recreational ACLs and ACTs. **Alternative 1** would not be expected to affect current recreational and commercial red grouper harvests or other customary uses for red grouper. However, **Alternative 1** would prevent the recreational and commercial sectors from taking advantage of additional fishing opportunities that the proposed increase in ACL and ACT would offer. Therefore, **Alternative 1** would be expected to result in adverse direct economic effects stemming from forgone fishing opportunities.

For the recreational sector, economic effects expected to result from ACL/ACT changes can be measured by changes in economic value. Changes in economic value include consumer surplus (CS) changes for recreational anglers and producer surplus (PS) changes for for-hire operators. A detailed discussion of CS and PS, including current CS and PS estimates, is provided in Chapter 3.3. Proposed recreational red grouper ACLs and differences between ACLs proposed in **Alternatives 2-3** and **Preferred Alternative 4** and the status quo ACL are provided in Table 4.3.1. Similar information based on the proposed ACTs (quotas) is provided in Table 4.3.2.

Table 4.3.1. Recreational red grouper proposed ACLs and differences between the proposed ACLs and the status quo ACL (2016-2020).

	2016	2017	2018	2019	2020
Alternative 1					
ACL	1,900,000	1,900,000	1,900,000	1,900,000	1,900,000
Alternative 2					
ACL	4,820,000	3,720,000	2,960,000	2,620,000	2,580,000
Difference	2,920,000	1,820,000	1,060,000	720,000	680,000
Alternative 3					
ACL	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000
Difference	1,440,000	1,440,000	1,440,000	1,440,000	1,440,000
Alternative 4					
ACL	2,580,000	2,580,000	2,580,000	2,580,000	2,580,000
Difference	680,000	680,000	680,000	680,000	680,000

Table 4.3.2. Recreational red grouper proposed ACTs (quotas) and differences between the proposed ACTs and the status quo ACT (2016-2020).

	2016	2017	2018	2019	2020
Alternative 1					
ACT/Quota	1,730,000	1,730,000	1,730,000	1,730,000	1,730,000
Alternative 2					
ACT/Quota	4,430,000	3,420,000	2,720,000	2,410,000	2,370,000
Difference	2,700,000	1,690,000	990,000	680,000	640,000
Alternative 3					
ACT/Quota	3,070,000	3,070,000	3,070,000	3,070,000	3,070,000
Difference	1,340,000	1,340,000	1,340,000	1,340,000	1,340,000
Preferred Alternative 4					
ACT/Quota	2,370,000	2,370,000	2,370,000	2,370,000	2,370,000
Difference	640,000	640,000	640,000	640,000	640,000

Alternative 2 would set declining ACLs ranging approximately from 4.82 mp in 2016 to 2.58 mp in 2020. Because ACTs are set at 92% of the respective ACLs, proposed ACTs follow a similar pattern. During the 2016-2020 time period, **Alternative 3** would set constant ACLs and ACTs of 3.34 mp and 3.07 mp, respectively. During the same time period, **Preferred Alternative 4** proposes to establish constant ACLs and ACTs of 2.58 mp and 2.37 mp, respectively. Relative to status quo, **Alternatives 2-3** and **Preferred Alternative 4** would all substantially increase the ACL and ACT between 2016 and 2020. Because **Alternatives 2-3** and **Preferred Alternative 4** would all increase ACLs and ACTs, direct positive economic effects would be expected to result from these alternatives. The economic benefits that would be expected to result from **Alternatives 2-3** and **Preferred Alternative 4** would be commensurate with the size of the ACL/ACT increase proposed. The ACL increases would range from a minimum of 0.68 mp to a maximum of 2.92 mp while ACT increases range from 0.64 mp to 2.70 mp. With the current 2-fish bag limit, it is estimated that if the recreational season remains open this year, the recreational sector could exceed the current 1.9 mp ACL by 266,000 lbs and exceed the current ACT by 436,000 lbs. However, because of the time required to implement a proposed ACL/ACT increase, a possible for 2016 would be that the season will close at the latest by October 31 and subsequently reopen. Therefore, additional recreational red grouper harvests that would result from an ACL/ACT increase in 2016 would fall below the estimates provided above. For subsequent years, although recreational red grouper harvest projections are not available at this time, it is expected that private recreational anglers and anglers fishing from for-hire vessels would take advantage of the additional fishing opportunities offered by proposed ACL and ACT increases. The extent to which the recreational sector can increase its red grouper harvests in a given year would determine the magnitude of the economic benefits expected to result from an ACL/ACT increase. In general, greater additional red grouper harvests would translate into greater increases in CS for recreational anglers. In addition, if the increase in the red grouper ACL leads to higher demand for charter and headboat services, then for-hire businesses would likely experience an increase in PS as more trips are booked. It is emphasized that, without a bag limit increase, it would be unlikely that the recreational sector would be able

to harvest the totality of the additional red grouper made available by the proposed ACL/ACT increases. Although greater increase in ACL/ACT would typically be expected to generate greater economic benefits, based on the substantial increases proposed, it is plausible that **Alternatives 2**, **3**, and **Preferred Alternative 4** would result in comparable levels of economic benefits given the limited ability of the recreational sector to increase red grouper harvests without a change in the current 2-fish bag limit.

For the commercial sector, because red grouper are managed under an individual fishing quota (IFQ) program, short term economic effects expected to result from ACL/ACT changes are typically measured by changes in the value of annual allocation. As of March, 1, 2016, the average nominal price per pound (gw) of red grouper annual allocation was $0.79. In addition, changes in ex-vessel revenues are also generally included in the evaluation of potential economic effects. As of February 26, 2016, the average nominal ex-vessel price per pound (gw) of red grouper was $3.94 (SERO IFQ database system, 2/26/16; values are preliminary). Longer term economic effects can be evaluated based on changes in the value of IFQ shares. As of February 26, 2016, the average nominal price per pound (gw) of red grouper IFQ share was $12.86 (SERO IFQ database system, 2/26/16; values are preliminary). Proposed commercial red grouper ACLs and differences between ACLs proposed in **Alternatives 2**, **3**, and **Preferred Alternative 4** and the status quo ACL are provided in Table 4.3.3. Comparable information based on the proposed commercial ACTs (quotas) is provided in Table 4.3.4.

Table 4.3.3. Commercial red grouper proposed ACLs and differences between the proposed ACLs and the status quo ACL (2016-2020).

	2016	2017	2018	2019	2020
Alternative 1					
ACL	6,030,000	6,030,000	6,030,000	6,030,000	6,030,000
Alternative 2					
ACL	15,280,000	11,760,000	9,380,000	8,310,000	8,190,000
Difference	9,250,000	5,730,000	3,350,000	2,280,000	2,160,000
Alternative 3					
ACL	10,580,000	10,580,000	10,580,000	10,580,000	10,580,000
Difference	4,550,000	4,550,000	4,550,000	4,550,000	4,550,000
Alternative 4					
ACL	8,190,000	8,190,000	8,190,000	8,190,000	8,190,000
Difference	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000

Table 4.3.4. Commercial red grouper proposed ACTs (quotas) and differences between the proposed ACTs and the status quo ACT (2016-2020).

	2016	2017	2018	2019	2020
Alternative 1					
ACT/Quota	5,720,000	5,720,000	5,720,000	5,720,000	5,720,000
Alternative 2					
ACT/Quota	14,520,000	11,170,000	8,910,000	7,890,000	7,780,000
Difference	8,800,000	5,450,000	3,190,000	2,170,000	2,060,000
Alternative 3					
ACT/Quota	10,050,000	10,050,000	10,050,000	10,050,000	10,050,000
Difference	4,330,000	4,330,000	4,330,000	4,330,000	4,330,000
Alternative 4					
ACT/Quota	7,780,000	7,780,000	7,780,000	7,780,000	7,780,000
Difference	2,060,000	2,060,000	2,060,000	2,060,000	2,060,000

Alternative 2 would set declining ACLs ranging approximately from 15.28 mp in 2016 to 8.19 mp in 2020. Because ACTs are set at 95% of the respective ACLs, proposed ACTs follow a similar pattern. During the 2016-2020 time period, **Alternative 3** would set constant ACLs and ACTs of 10.58 mp and 10.05 mp, respectively. During the same time period, **Preferred Alternative 4** proposes to establish constant ACLs and ACTs of 8.19 mp and 7.78 mp, respectively. Relative to status quo, **Alternatives 2-3** and **Preferred Alternative 4** would all substantially increase the ACL and ACT between 2016 and 2020. The ACL increases would range from a maximum of 9.25 mp to a minimum of 2.16 mp. ACT increases range from 8.80 mp to 2.06 mp. Although it generally follows that greater increases in ACL/ACT would be expected to result in greater direct positive economic benefits, the substantial size of the commercial ACL/ACT increased proposed in **Alternatives 2-3** and **Preferred Alternative 4** may not necessarily be consistent with such an inference due to the limited harvesting capacity

of commercial vessels and the potential effects of the increases on red grouper ex-vessel, annual allocation, and IFQ share prices.

Red grouper are generally harvested with other reef fish species. Between 2010 and 2014, red grouper and the other species jointly harvested with red grouper accounted, on average, for 53% and 47% of the harvests for trips with multi-species harvests. In addition, as of March 7, 2016, there were 852 valid or renewable reef fish permits, 62 of which had longline endorsements. On average, between 2010 and 2014, longline endorsements accounted for 58% of the red grouper commercial harvests. For 2016, proposed increases in commercial ACLs range from 153% to 36% of the current ACL. Proposed increases in ACT are of a comparable magnitude. For 2016, it is not plausible to assume that the commercial fleet would be able to harvest the totality of the additional red grouper amounts made available by the increase. The later in the year this regulatory action is implemented, the least plausible the harvest of the entirety of the red grouper proposed quota becomes. In subsequent years, commercial fishermen would be expected to adjust their fishing practices and take advantage of the increased quotas by possibly increasing their red grouper harvests, assuming that additional red grouper harvests fit within their multi-species profit maximization strategies. The multi-species profit maximization strategies are constrained by many factors, including the harvesting and holding capacities of the fleet. Given the very substantial size of the proposed increases (especially increases under Alternative 2 in the beginning years), it is not likely that the commercial fleet would be able to harvest the entirety of the quota each year. Therefore, although positive direct economic benefits may result from additional red grouper harvests, they would be constrained by the industry's capacity.

Additional red grouper harvests, if they materialize, could result in adverse economic effects because of the potential effects on ex-vessel prices of a massive influx of additional red grouper on the markets. It is expected that an increase in the availability of red grouper would result in a decrease in ex-vessel prices for red grouper. The relative magnitude of the change in the amounts of red grouper landed (measured in percent) relative to the expected change in ex-vessel price (also measured in percent) would determine whether total revenues from red grouper would increase or decrease. In other terms, the ex-vessel price elasticity of demand (dealers' demand) for red grouper would determine the magnitude of the expected changes in total ex-vessel revenues. If the elasticity is less than one, then the decrease in price that results from the increase in landings, would result in a decrease in total ex-vessel revenue. Conversely, if the elasticity is greater than one, then an increase in total ex-vessel revenue would ensue. Estimates of the price elasticity of demand for red grouper over the range of relevant prices and quantities are currently unavailable; however, generally speaking, the greater the number of substitutes, the more elastic the demand and the more likely ex-vessel revenues would increase as landings increase.

The proposed increases in commercial quotas would substantially increase the availability of annual allocation for sale. Holders of red grouper annual allocation would have to lower the price to be able to move the large quantity of annual allocation at their disposal. Here again, the annual allocation price elasticity of demand (demand by potential annual allocation buyers) would determine whether the total proceeds from the sale of annual allocation would increase or decrease. Although total proceeds from the sale of annual allocation may increase or decrease, fishermen who routinely purchase annual allocation to harvest red grouper are expected to

benefit from the lower price and increased availability of annual allocation. However, these potential benefits would be lessened by the impact of the foreseeable decrease in the ex-vessel prices on their total ex-vessel revenues. In addition, those who have already purchased annual allocation for use later in 2016 would incur supplementary costs because they would have likely overpaid for the allocation. It is noted that multi-use red grouper annual allocation (available to harvest red or gag grouper) would not be distributed mid-year in 2016. Beyond 2016, the potential increase in the amount of red grouper multi use would be expected to increase gag harvests and may potentially result in negative economic effects stemming from the adverse biological effects on gag stocks.

IFQ share prices could rise or fall as potential investors try to anticipate the price effects of increased quota in the allocation and ex-vessel markets. In the short-term, share prices would likely fluctuate as allocation and ex-vessel markets re-stabilize and investors speculate on future market and stock conditions, as well as management measures. Overall, if investors collectively believe that the discounted future revenue stream derived from the substantial increase in red grouper allocation is higher under the new ACL than under the status quo ACL, then IFQ share prices would be expected to increase and vice versa. However, the potential increase in share prices may be partially crowded out by the unprecedented magnitude of the additional red grouper amounts made available by the proposed quota increases. Finally, additional red grouper harvests could result in adverse economic effects due to possible increases in fishing effort. Effort increases may result in increased congestion, as well as bycatch of other species.

4.4 Direct and Indirect Effects on the Social Environment

Although additional effects would not be expected from retaining **Alternative 1** (No Action), the catch levels provided under **Alternative 1** are no longer supported as the best scientific information available. Based on the results of the recent stock assessment (SEDAR 42 2015), **Alternatives 2, Alternative 3,** and **Preferred Alternative 4** provide increases to the commercial and recreational sectors' ACLs and resulting ACTs. Compared to **Alternative 1**, each of **Alternatives 2, Alternative 3,** and **Preferred Alternative 4** would result in greater positive effects to both sectors by increasing the amount of red grouper that may be harvested.

The amount of the sector ACL/ACT increases differs among the alternatives, although each represents a large increase to the sector ACLs and resulting ACTs. **Alternative 3** and **Preferred Alternative 4** provide a constant value for the sector ACLs and resulting ACTs for the years 2016 onward. In contrast, the ACLs and resulting ACTs under **Alternative 2** would begin dramatically higher in 2016 and decrease each year thereafter through 2020. The average of these combined sector ACLs for the years 2016 – 2020 equal the constant ACLs under **Alternative 3**. By pounds, **Preferred Alternative 4** would increase the combined sector ACLs by 2.84 mp gw from **Alternative 1**. **Alternative 3** would increase the combined sector ACLs by 5.99 mp gw from **Alternative 1**, resulting in an additional 3.15 mp gw of red grouper available for harvest to both sectors compared to **Preferred Alternative 4**.

For the commercial sector, red grouper has been managed under an IFQ program since January 1, 2010. Commercial landings of red grouper have remained below the commercial quota every

year from 2010 – 2015. Increasing the commercial ACL will provide more IFQ allocation to the commercial sector for harvest, and it is expected that fishermen will use and benefit from additional quota. These positive effects would continue to accrue to the extent fishermen use the additional quota.

The larger the ACL, the less likely availability of quota is the reason commercial fishermen are unable to harvest red grouper. Fishermen are generally fishing year-round under the IFQ program and many plan their allocation use to carry throughout the year. This often includes securing allocation ("leasing") early each year. Because the amount of additional red grouper the commercial sector would harvest under an increased ACL is unknown, which, if any, of the proposed harvest levels would be a limiting factor to harvest is also unknown. In public testimony and at the April 1, 2016 Reef Fish Advisory Panel meeting, commercial fishermen expressed concern that the red grouper stock is not as healthy as suggested by the stock assessment, and urged caution in increasing the allowable harvest levels.

The smallest increase among the alternatives (**Preferred Alternative 4**) is 2.16 mp gw greater than the current commercial ACL (**Alternative 1**). Among **Alternatives 2, Alternative 3,** and **Preferred Alternative 4**, it is most likely that the commercial sector would be able to harvest the majority of these additional fish while not exceeding the commercial ACL. It is less likely that the commercial sector would harvest as much of the red grouper allocation provided under a commercial quota of 10.05 mp gw (**Alternative 3**), which is nearly twice the current ACT (**Alternative 1**). **Alternative 3** has the potential for greater benefits than **Preferred Alternative 4** if the commercial sector would be able to harvest the greater amount of red grouper. In 2013, the commercial sector landed only 83% of its red grouper quota, while in 2014, the commercial sector landed 98% of its red grouper quota (NMFS 2015a). Nevertheless, unintended indirect effects could result among IFQ program participants following such a large increase to the commercial ACL; such effects would likely be greater under **Alternative 3** than **Preferred Alternative 4**, but the direction, subject, and intensity of these potential effects are unknown. Because of the consistency in the amount of pounds that are represented by shares each year (i.e., annual allocation), greater positive effects are expected for the commercial sector under a constant quota (**Alternative 3**) compared to a declining quota (**Alternative 2**).

For the recreational sector, the current ACL (**Alternative 1**) has been a limiting factor on recreational fishing in 2014 and 2015, and negative effects would be expected to continue. The recreational ACL has been exceeded one time from 2010 through 2015, by 25% in 2013. The ACL overage triggered a bag limit reduction from four to three fish that was in place for 2014, only. The bag limit reverted to four fish at the beginning of 2015 until a bag limit reduction to two fish became effective May 7, 2015. Even with the bag limit reduction slowing the harvest rate, an in-season closure occurred October 8, 2015 based on estimates that the ACT had been met, the second year in a row that an in-season recreational closure occurred. The bag limit reductions and in-season closures have resulted in negative effects on fishing activity and opportunities for recreational anglers and for-hire operators.

Direct positive effects will result for the recreational sector from an ACL increase that allows the red grouper fishing season to remain open year-round.[11] Additional indirect benefits would result if the ACL increase allows for the bag limit to increase, as well. These potential benefits would be more likely to occur under **Alternative 3** (ACT is 1.34 mp gw greater than **Alternative 1**) than **Preferred Alternative 4** (ACT is 0.64 mp gw greater than **Alternative 1**). Although over five years (2016 – 2020) **Alternatives 2** and **3** represent an equivalent amount of fish, under the declining yield of **Alternative 2,** increasing the bag limit and maintaining a year-round season would be less likely in the later years of the yield stream when catch limits are at their lowest, compared with **Alternative 3**. Thus, the potential for the greatest benefits would be expected under **Alternative 3**.

It is possible that the quota increase proposed through this action will become final before the end of 2016. Due to the multi-use provision for grouper shares in the commercial IFQ program, distributing a large increase of red grouper allocation to shareholders late in the year could complicate efforts to ensure the commercial ACL is not exceeded. For the recreational sector, direct positive effects would be expected if the increase in quota allows the season to remain open uninterrupted, through the end of the year. If the final rule becomes effective before the end of the year but after an in-season recreational closure has gone into effect, re-opening the season could be disruptive, although many recreational fishermen would be expected to be able to take advantage of the additional fishing opportunities.

4.5 Direct and Indirect Effects on the Administrative Environment

Alternative 1 maintains the current commercial and recreational ACLs and ACTs at the 2015 level, or until the next stock assessment is completed and thus is not expected to alter the administrative burden. **Alternatives 2**, **3,** and **Preferred Alternative 4** would allow for an increase in harvest levels and have the potential to eliminate the need for a recreational fishing season closure, thus reducing the burden of announcing and enforcing the closed recreational season. **Alternative 1** has the potential to result in additional administrative burden should NMFS need to close the recreational fishing season when the ACL or ACT is meet. **Alternative 2** would be expected to result in the least amount of administrative burden as it has the largest allowable harvest increase which reduces the probability of needing a recreational season closure. **Preferred Alternative 4** which has the smallest increase in allowable harvest would be expected to result in a higher potential of needing a recreational season closure than **Alternatives 2** and **3**, and thus potentially more administrative burden if a recreational season closure is needed. The act of adding the portion of quota to the 2016 red snapper commercial quota, **Preferred Alternative 2**, is a one-time event, and thus these alternatives would have an equivalent burden to this environment through the minor direct administrative impacts associated with the rulemaking. However, the **Alternatives** are not expected to alter the overall execution of the fishery and therefore would not be expected to have any significant effects on the administrative environment.

[11] SWG closure remains in effect past 20 fathoms from February 1 through March 31.

4.6 Cumulative Effects Analysis

Cumulative effects to the reef fish fishery have been analyzed in Amendments 30A (GMFMC 2008b), 30B (GMFMC 2008), 31 (GMFMC 2009), and 32 (GMFMC 2011b) and are incorporated here by reference. Additional pertinent past actions are summarized in the history of management in Chapter 1.4. The effects of adjusting the red grouper ACLs and ACTs are most closely aligned with the effects from the revisions developed in Amendment 32 (GMFMC 2011b), Amendment 38 (2013), and the red grouper regulatory amendment in 2010 (GMFMC 2010). Currently, there are no other reasonably foreseeable future actions being considered by the Gulf of Mexico Fishery Management Council (Council) specifically for red grouper. The gag stock recently completed rebuilding and increases to the gag ACL could result in effort shifting away from red grouper. These actions could influence the fishing behavior of the recreational sector and possibly have additional cumulative effects. However, the effects are not known at this time and will be analyzed for those future actions. There are no other projects that NMFS is aware of (past, present, or foreseeable future) which, when combined with this proposed action will cause any measurable cumulative effects.

The affected area of this proposed action encompasses the state and federal waters in the Gulf of Mexico (Gulf) along with the Gulf communities dependent on reef fish fishing. The proposed action would modify the harvest levels for red grouper. This action is not expected to have significant beneficial or adverse cumulative effects on the physical, biological/ecological, social, and economic environments as it would minimally affect fishing practices (Chapter 4). These actions combined with past and present foreseeable future actions Regulatory Flexibility Analysis Act Analysis (RFAAs) is not expected to have substantial adverse effects on public health or safety. Because the reef fish fishery is a multi-species fishery, there are always fish to target throughout the year for the commercial and recreational sectors such that the proposed actions, along with past and RFAAs, are not expected to substantially alter the manner in which the fishery is prosecuted.

Alternatives 2, **3,** and **Preferred Alternative 4** would allow for an increase red grouper fishing effort and harvest, and would be expected to have an increase in discards of red grouper, and other reef fish caught with red grouper when the fishing season is closed or when a commercial fisherman does not have any remaining allocation of IFQ species. Ultimately, recreational red grouper discards should decrease as there should not be a fall recreational fishing season closure and the recreational season would be open in June when the red snapper fishing season is open. The commercial sector has not harvested their full commercial quota in recent years and any increase in commercial quota would be expected to increase the number of commercial discards for red grouper and associated species. The magnitude of the effects is expected to be proportional to the increase in allowable harvest. **Alternative 1** would not be expected to have any different cumulative effects.

Millions of barrels of oil were released into the Gulf from the Deepwater Horizon MC252 event (see http://response.restoration.noaa.gov/deepwaterhorizon; also see Section 3.3). The effects on the environment on reef fish and the reef fish fisheries may not be known for several years when affected year classes of larval and juvenile fish enter the adult spawning population or fishery. For red grouper, this occurs at approximately 4 years of age, so a year class failure in 2010 may not be

detected in the spawning populations or by harvesters of red grouper until 2014 at the earliest. The results of the studies detecting these impacts on recruitment should be available soon and will be taken into consideration in the next SEDAR assessment. In addition to impacts on recruitment, adult reef fish may also have been negatively affected by the oil spill. For example, Weisberg et al. (2014) suggested the hydrocarbons associated with Deepwater Horizon MC252 oil spill did transit onto the Florida shelf and may be associated with the occurrences of reef fish (including red grouper) with lesions and other deformities. The overall impact of the oil spill may not be realized for quite some time and study results are just now becoming available.

Please refer to the Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement completed by the National Marine Fisheries Service (Final PDARP/PEIS (2016)) for further details on the impacts from the Deepwater Horizon MC252 oil spill.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. The Environmental Protection Agency's climate change web page provides basic background information on these and other measured or anticipated effects. In addition, the Intergovernmental Panel on Climate Change has numerous reports addressing their assessments of climate change (http://www.ipcc.ch/publications_and_data/publications_and_data.shtml). Global climate changes could affect the Gulf fisheries; however, the extent of these effects is not known at this time. Possible impacts include temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002). It is unclear how climate change would affect reef fishes, and likely would affect species differently. Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Hollowed et al. (2013) provided a review of projected effects of climate change on the marine fisheries and dependent communities. Integrating the potential effects of climate change into the fisheries assessment is currently difficult due to the time scale differences (Hollowed et al. 2013). The fisheries stock assessments rarely accurately project for more than a few years, a time span that would preclude detectable climate change effects. Although climate change may impact Gulf reef fish species in the future, the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts would occur. Conversely, the proposed action is not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing.

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, the Southeast Headboat Survey, and the Texas Marine Recreational Fishing Survey. In addition, the Louisiana Department of Wildlife and Fisheries and the Alabama Department of Conservation and Natural Resources have instituted programs to collect red grouper recreational landings information in their respective states. Commercial data are collected through trip ticket programs, port samplers, and logbook programs, as well as dealer reporting through the IFQ program.

CHAPTER 5. REGULATORY IMPACT REVIEW

5.1 Introduction

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

5.2 Problems and Objectives

The problems and objectives addressed by this action are discussed in Chapter 1.1.

5.3 Description of Fisheries

A description of the red grouper component of the Gulf reef fish fishery is provided in Chapter 3.3.

5.4 Impacts of Management Measures

A detailed analysis of the economic effects expected to result from this action is provided in Chapter 4.3. The following discussion summarizes the key points of this analysis.

During the 2016-2020 time period, **Preferred Alternative 4** proposes to establish constant recreational annual catch limits (ACLs) and annual catch targets (ACTs) of 2.58 mp and 2.37 mp, respectively. Relative to status quo, **Preferred Alternative 4** would substantially increase the ACL and ACT between 2016 and 2020. Therefore, **Preferred Alternative 4** would be expected to result in direct positive economic effects. With the current 2-fish bag limit, it is estimated that if the recreational season remains open this year, the recreational sector could exceed the current ACL of 1.9 mp by 266,000 lbs and exceed the current ACT by 436,000 lbs. However, because of the time required to implement a proposed ACL/ACT increase, a possible scenario for 2016 would be that the season will close at the latest by October 31 and subsequently reopen. Therefore, additional recreational red grouper harvests that would result from an ACL/ACT increase in 2016 would likely fall below the proposed quota increase. For subsequent years, although recreational red grouper harvest projections are not available at this

time, it is expected that private recreational anglers and anglers fishing from for-hire vessels would take advantage of the additional fishing opportunities offered by the ACL and ACT increases proposed in **Preferred Alternative 4**. The extent to which the recreational sector can increase its red grouper harvests in a given year would determine the magnitude of the economic benefits expected to result from **Preferred Alternative 4**. In general, greater additional red grouper harvests would be expected to result in greater increases in consumer surplus for recreational anglers. In addition, if the increase in the red grouper ACL leads to higher demand for charter and headboat services, then for-hire businesses would likely experience an increase in producer surplus as more trips are booked. It is noted that without a bag limit increase, it would be unlikely that the recreational sector would be able to harvest the totality of the additional red grouper made available by the proposed ACL/ACT increases.

For the commercial sector, **Preferred Alternative 4** would establish constant ACLs and ACTs of 8.19 mp and 7.78 mp, respectively. Relative to status quo, **Preferred Alternative 4** would substantially increase the ACL and ACT by 2.16 mp and 2.06 mp, respectively. Although it generally follows that greater increases in ACL/ACT would be expected to result in greater direct positive economic benefits, the substantial size of the commercial ACL/ACT increase proposed in **Preferred Alternative 4** may not necessarily be consistent with such an inference due to the limited harvesting capacity of commercial vessels and the potential effects of the increases on red grouper ex-vessel, annual allocation, and individual fishing quota (IFQ) share prices. For 2016, it is not plausible to assume that the commercial fleet would be able to harvest the totality of the additional red grouper amounts made available by the increase. The later in the year this regulatory action is implemented, the least plausible the harvest of the entirety of the red grouper proposed quota becomes. In subsequent years, commercial fishermen would be expected to adjust their fishing practices and take advantage of the increased quotas by possibly increasing their red grouper harvests, assuming that additional red grouper harvests fit within their multi-species profit maximization strategies. The multi-species profit maximization strategies are constrained by many factors, including the harvesting and holding capacities of the fleet. Given the substantial size of the proposed increases, it is not likely that the commercial fleet would be able to harvest the entirety of the quota each year. Therefore, although positive direct economic benefits may result from additional red grouper harvests, they would be constrained by the industry's capacity.

Additional red grouper harvests, if they materialize, could result in adverse economic effects because of the potential effects on ex-vessel prices of a sizeable influx of additional red grouper on the markets. It is expected that an increase in the availability of red grouper would result in a decrease in ex-vessel prices for red grouper. The ex-vessel price elasticity of demand (dealers' demand) for red grouper would determine the magnitude of the expected changes in total ex-vessel revenues. If the elasticity is less than one, then the decrease in price that results from the increase in landings, would result in a decrease in total ex-vessel revenue. Conversely, if the demand for red grouper is elastic, then an increase in total ex-vessel revenue would ensue. Estimates of the price elasticity of demand for red grouper over the range of relevant prices and quantities are currently unavailable; however, generally speaking, the greater the number of substitutes, the more elastic the demand and the more likely ex-vessel revenues would increase as landings increase. Holders of red grouper annual allocation would have to lower the price to be able to move the large quantity of annual allocation at their disposal under **Preferred**

Alternative 4. Here again, the annual allocation price elasticity of demand (demand by potential annual allocation buyers) would determine whether the total proceeds from the sale of annual allocation would increase or decrease. Fishermen who routinely purchase annual allocation to harvest red grouper are expected to benefit from the lower price and increased availability of annual allocation. However, these potential benefits would be lessened by the impact of the foreseeable decrease in the ex-vessel prices on their total ex-vessel revenues. In addition, those who have already purchased annual allocation for use later in 2016 would incur supplementary costs because they would have likely overpaid for the allocation. IFQ share prices could rise or fall as potential investors try to anticipate the price effects of increased quota in the allocation and ex-vessel markets. If investors collectively believe that the discounted future revenue stream derived from the substantial increase in red grouper allocation is higher under the new ACL than under the status quo ACL, then IFQ share prices would be expected to increase and vice versa. However, the potential increase in share prices may be partially crowded out by the unprecedented magnitude of the additional red grouper amounts made available by the proposed quota increases. Finally, additional red grouper harvests could result in adverse economic effects due to possible increases in fishing effort. Effort increases may increase congestion, as well as bycatch of other species.

5.5 Public and Private Costs of Regulations

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

Council costs of document preparation, meetings, public hearings, and information dissemination……$35,000

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

TOTAL ….....$60,000

The estimate provided above does not include any law enforcement costs. Any enforcement duties associated with this action would be expected to be covered under routine enforcement costs rather than an expenditure of new funds.

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the

rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this action has been determined to not be economically significant for the purposes of E.O. 12866.

CHAPTER 6. REGULATORY FLEXIBILITY ACT

6.1 Introduction

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

The RFA requires agencies to conduct a Regulatory Flexibility Act Analysis (RFAA) for each proposed rule. The RFAA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An RFAA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." The RFAA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule; 6) a description and estimate of the expected economic impacts on small entities; and 7) a description of the significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities.

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

The need for and objective of this proposed action are provided in Chapter 1. In summary, the Scientific and Statistical Committee (SSC) made new recommendations for managing red grouper in response to the latest red grouper stock assessment report. The objective of this proposed action is to modify the red grouper overfishing limit (OFL), acceptable biological catch (ABC), sector annual catch limits (ACLs), and sector annual catch targets (ACTs) to be consistent with best available scientific information and the SSC's recommendations, while achieving optimum yield (OY) and preventing overfishing. The Magnuson-Stevens Fishery Conservation and Management Act provides the statutory basis for this proposed action.

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

The proposed action would modify the red grouper OFL, ABC, and commercial and recreational sector ACLs and ACTs. This proposed action, if implemented, would be expected to directly affect all commercial vessels that harvest red grouper under the Gulf Reef Fish FMP.

Only recreational anglers, who may fish from shore, man-made structures, private, rental, or charter vessels, and headboats, are allowed a bag or possession limit of grouper species in the Gulf. Captains or crew members on charter vessels or headboats (for-hire vessels) cannot harvest or possess red grouper under the recreational bag limits. Therefore, only recreational anglers would be directly affected by the proposed changes to the red grouper recreational ACL and ACT. Recreational anglers, however, are not considered to be small entities under the RFA and the economic effects of this proposed action on these anglers are outside the scope of the RFA.

For-hire vessels sell fishing services to recreational anglers. The proposed changes to the red grouper ACL and ACT would not directly alter the services sold by these vessels. Any change in demand for these fishing services, and associated economic effects, as a result of the proposed action would be a consequence of behavioral change by anglers, secondary to any direct effect on anglers and, therefore, an indirect effect of the proposed rule. Because the effects on for-hire vessels would be indirect, they fall outside the scope of the RFA.

As of March 7, 2016, there were 852 valid or renewable Gulf commercial reef fish permits. Each of these commercial permits is associated with an individual vessel. In order to harvest red grouper, a vessel permit must be linked to an individual fishing quota (IFQ) account and possess sufficient allocation for this species. IFQ accounts can be opened and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can lease red grouper allocation or purchase red grouper shares from other IFQ participants. On average (2010 through 2014), 397 vessels landed red grouper each year. Their average annual vessel-level revenue for 2010 through 2014 was approximately $99,000 (2015 dollars), of which $41,000 was from red grouper.

The Small Business Administration has established size criteria for all major industry sectors in the U.S., including commercial finfish harvesters (NAICS code 114111). A business primarily involved in finfish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $20.5 million for all its affiliated operations worldwide. All of the vessels directly regulated by this action are believed to be small entities based on the SBA size criteria.

6.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed action, including an estimate of the classes of small entities which will be subject to the

requirement and the type of professional skills necessary for the preparation of the report or records

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

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

No duplicative, overlapping, or conflicting federal rules have been identified.

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

Substantial number criterion

There are 852 commercial vessels eligible to fish for the species managed under the reef fish FMP and 397 of them are expected to be affected by this proposed action (approximately 47%).

Significant economic impacts

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

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

All entities expected to be affected by this action are believed to be small entities and, thus, the issue of disproportionality does not arise.

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

A detailed discussion of the economic effects associated with each alternative considered is provided in Chapter 4. The following information summarizes the expected effects of this proposed action.

This proposed action would set the red grouper OFL and ABC at the constant catch values recommended by the SSC, and the sector ACLs and ACTs would be set using the minimum ABC of 10,770,000 lbs gutted weight (gw) from the declining yield stream recommended by the SSC. Using the current sector allocation, the commercial ACL would be set at 76% of the minimum ABC from the declining yield stream. The commercial ACT would be set at 95% of the commercial ACL. This would represent a 2.06 million pounds gw (36%) increase in the

commercial quota relative to the status quo. The higher quota would be expected to result in an increase in commercial red grouper harvests, although this increase would be constrained by industry capacity, individual harvesters' profit maximization strategies, and current management restrictions. Economic benefits may accrue to the commercial sector as a result of the increased landings and availability of red grouper allocation; however, these would be tempered by potential decreases in ex-vessel and IFQ allocation prices. It is not possible to quantify these economic effects with available data. For 2016, it is unlikely that the commercial fleet would be able to harvest the totality of the additional red grouper amounts made available by the increase. In subsequent years, commercial fishermen may or may not be able to scale-up their operations to harvest the full quota. Price effects in both the ex-vessel and allocation transfer markets would depend on the price elasticity of demand for red grouper and red grouper allocation, respectively. Assuming the price elasticity of demand for red grouper in the ex-vessel market is greater than 1 (i.e. it is elastic), then an increase in landings would result in an increase in ex-vessel revenue and vice versa. Assuming the price elasticity of demand for red grouper allocation is greater than 1, IFQ shareholders would experience an overall increase in allocation transfer proceeds and vice versa. With respect to IFQ share value, if investors believe that the discounted future revenue stream associated with shares is higher under the new ACL than under the status quo ACL, then share prices would be expected to increase, otherwise they would remain the same or decrease. Vessels that routinely purchase red grouper allocation would likely benefit from the wider availability and cheaper price of allocation. Again, these cost savings may be offset by changes in ex-vessel prices. Additionally, if the proposed action is implemented in 2016, those who have already purchased annual allocation for use later in 2016 would incur supplementary costs because they would have likely overpaid for the allocation. Finally, the higher quota could result in increased congestion of fishing grounds, which in turn, could have a minor impact on harvesting costs.

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

Four alternatives were considered for the action to modify the red grouper OFL, ABC, and commercial and recreational sector ACLs and ACTs. The first alternative, the no action alternative, would not be expected to affect current commercial red grouper harvests. This alternative was not selected because the OFL and ABC would not be based on the best scientific information available and economic benefits derived from increased commercial and recreational harvests would be forgone, possibly preventing the achievement of OY.

The second alternative would adopt the OFL and ABC schedule recommended by the SSC for 2016 through 2020. Using the current sector allocation, the commercial and recreational ACLs would be set at 76% and 24% of the ABC, respectively. Under the second alternative, the commercial ACT would be set at 95% of the commercial ACL and the recreational ACT would be set at 92% of the recreational ACL. This alternative would result in a 154% increase in commercial quota in, followed by successively lower quotas through 2020. In 2020, the red grouper commercial ACL and ACT would be equivalent to the constant catch values specified in the preferred alternative. Economic effects to commercial vessels under this alternative would

depend on the capacity of the fleet, individual harvesters' profit maximization strategies, current management restrictions, and the effects of the quota increase on ex-vessel, IFQ allocation, and IFQ and share prices. Given the very substantial size of the quota increases under this alternative, and current management restrictions, it is not likely that the commercial fleet would be able to harvest the entirety of the quota each year. Therefore, although positive direct economic benefits may result from additional red grouper harvests, increased availability of allocation, and potential increases in IFQ share value, they would be constrained by the industry's capacity and tempered by negative price effects. It is possible that negative price effects from increased allocation and landings could actually result in a decrease in allocation transfer proceeds and ex-vessel revenues, respectively. As for IFQ share prices, it is expected that they would fluctuate in the short-term as allocation and ex-vessel markets re-stabilize and investors speculate on future market and stock conditions, as well as management measures. Finally, the higher quotas could result in increased congestion of fishing grounds, which in turn could have a minor impact on harvesting costs. This alternative was not selected because the Gulf of Mexico Fishery Management Council (Council) preferred to take a more conservative approach to setting the OFL, ABC and commercial and recreational ACLs and ACTs in order to account for scientific uncertainty in the stock assessment, specifically the below average red grouper recruitment since 2005, and to reduce the chances of negative economic effects to commercial vessels from a large influx of red grouper quota.

The third alternative to the proposed action would implement the constant catch OFL and ABC recommended by the SSC. Using the current sector allocation, the commercial and recreational ACLs would be set at 76% and 24% of the ABC, respectively. Under the second alternative, the commercial ACT would be set at 95% of the commercial ACL and the recreational ACT would be set at 92% of the recreational ACL. This would represent a 76% increase in the commercial quota from the status quo. This alternative would result in a higher commercial quota than the preferred alternative, but lower than the second alternative through 2017. After 2017, the constant catch commercial ACL and ACT under this alternative would be higher than both the preferred alternative and the second alternative. Once again, economic effects to commercial vessels under this alternative would depend on the capacity of the fleet, individual harvesters' profit maximization strategies, current management restrictions, and the effects of the quota increase on ex-vessel and IFQ allocation and share prices. As was the case with the second alternative, given the very substantial size of the quota increases under this alternative, and current management restrictions, it is not likely that the commercial fleet would be able to harvest the entirety of the quota each year. Therefore, although positive direct economic benefits may result from additional red grouper harvests, increased availability of allocation, and potential increases in IFQ share value, they would be constrained by the industry's capacity and tempered by negative price effects. As discussed earlier, these negative price effects could actually outweigh the economic benefits of increased allocation and landings and IFQ share prices would likely fluctuate in the short-term. There would also be an increased potential for fishing congestion and, in turn, increased harvesting costs. Because the commercial quota would be lower than under the second alternative but higher than under the preferred alternative, it would be expected to fall somewhere in between those alternatives in terms of potential landings and likelihood of negative price effects for 2016 and 2017. In the long-term, this alternative would result in the highest commercial quota and highest potential landings. Because there are insufficient data to estimate the total expected change in landings and revenue, it is not possible

to definitively state which alternative would be expected to result in the greatest economic benefits to the commercial sector. This alternative was not selected for the same reasons the Council did not select the second alternative.

CHAPTER 7. LIST OF AGENCIES AND PERSONS CONSULTED

PREPARERS (Interdisciplinary Planning Team)

Name	Expertise	Responsibility	Agency
John Froeschke	Fishery Biologist	Co-Team Lead – Amendment development, introduction,	GMFMC
Steven Atran	Biologist	Reviewer	GMFMC
Rich Malinowski	Biologist	Co-Team Lead – Amendment development, effects analysis, and cumulative effects	SERO
Michael Jepson	Economist	Reviewer	SERO
Assane Diagne	Economist	Economic Analysis, Regulatory Impact Review and Reviewer	GMFMC
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
David Dale	Biologist	EFH review	SERO
Jennifer Lee	Protected Resources	Protected species review	SERO
Meaghan Bryan	Biologist	Reviewer	SEFSC
David Records	Economist	Economic Analysis, Regulatory Flexibility Analysis , Reviewer	
Larry Perruso	Economist	Reviewer	SEFSC

LIST OF AGENCIES 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

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

Administrative Procedure Act

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

Coastal Zone Management Act

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

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

Data Quality Act

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

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

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

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. Section 1531 et seq.) requires federal agencies use their authorities to conserve endangered and threatened species. The ESA requires NMFS, when proposing an action for managed stocks that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service (USFWS) for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions may affect but are "not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, including a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or adversely modify designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives. NMFS, as part of the Secretarial review process, will make a determination regarding the potential impacts of the proposed actions.

On September 30, 2011, the Protected Resources Division released a biological opinion which, after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent Deepwater Horizon MC 252 oil release event in the northern Gulf of Mexico), effects of the proposed action, and cumulative effects concluded that the continued operation of the Gulf of Mexico reef fish fishery is also not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011).

On September 10, 2014, NMFS published a final rule listing as threatened 20 coral species under the Endangered Species Act. Four of the newly listed coral species are found in the Gulf of Mexico. NMFS concurs with the effects determination that the continued authorization of the

Gulf of Mexico Reef Fish Fishery Management Plan (Reef Fish FMP) is not likely to adversely affect the newly listed coral species. On September 10, 2014, NMFS published a final rule (79 FR 53852) listing as threatened 20 coral species under the Endangered Species Act. Four of the newly listed coral species are found in the Gulf of Mexico. In memos dated September 16, 2014, and October 7, 2014, NMFS determined that activities associated with the subject FMP will not adversely affect any of the newly listed coral species. In the October 7, 2014, memo NMFS also determined that although the September 10, 2014, Final Listing Rule provided some new information on the threats facing *Acropora*, none of the information suggested that the previous determinations were no longer valid.

Fish and Wildlife Coordination Act

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

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

National Historic Preservation Act

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

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

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea and marine otters, polar bears, manatees, and dugongs.

Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fishing activities, and studies of pinniped-fishing activity interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that places all U.S. commercial fishing activities into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishing activity. The categorization of a fishing activity in the List of Fisheries determines whether participants in that fishing activity may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703) protects migratory birds. The responsibilities of federal agencies to protect migratory birds are set forth in Executive Order 13186. The USFWS is the lead agency for migratory birds. The birds protected under this statute are many of our most common species, as well as birds listed as threatened or endangered. A memorandum of understanding (MOU) between NMFS and the USFWS, as required by Executive Order 13186 (66 FR 3853, January 17, 2001), is to promote the conservation of migratory bird populations. This MOU focuses on avoiding, or where impacts cannot be avoided, minimizing to the extent practicable, adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between NMFS and the USFWS by identifying general responsibilities of both agencies and specific areas of cooperation. Given NMFS' focus on marine resources and ecosystems, this MOU places an emphasis on seabirds, but does not exclude other taxonomic groups of migratory birds.

Typically, fishery management actions in the Gulf of Mexico are not likely to affect migratory birds. The proposed actions are not likely to change the way in which the fishery is prosecuted. Thus, no additional impacts are reasonably expected.

Paperwork Reduction Act

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

most types of fishing activity information from the public. None of the alternatives in this amendment are expected to create additional paperwork burdens.

Prime Farmlands Protection and Policy Act

The Farmland Protection and Policy Act of 1981 (7 U.S.C. 4201) was enacted to minimize the loss of prime farmland and unique farmlands as a result of federal actions by converting these lands to nonagricultural uses. It assures that federal programs are compatible with state and local governments, and private programs and policies to protect farmland.

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

National Wild and Scenic Rivers System

The National Wild and Scenic Rivers System of 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

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

North American Wetlands Conservation Act

The North American Wetlands Conservation Act of 1989 (Public Law 101-233) established a wetlands habitat program, administered by the USFWS, to protect and manage wetland habitats for migratory birds and other wetland wildlife in the United States, Mexico, and Canada.

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

Executive Orders (E.O.)

E.O. 12630: Takings

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

E.O. 12866: Regulatory Planning and Review

E.O. 12866: Regulatory Planning and Review, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society of proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Analysis. A regulation is significant if it 1) Has an annual effect on the economy of $100 million or more or adversely affects in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments and communities; 2) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; 3) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or 4) raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

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

This E.O. mandates that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions.

E.O. 12962: Recreational Fisheries

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

Resource Conservation Plan - to include a five-year agenda. Finally, the E.O. requires NMFS and the USFWS to develop a joint agency policy for administering the ESA.

E.O. 13089: Coral Reef Protection

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

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

E.O. 13132: Federalism

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

No Federalism issues were identified relative to the action to modify the management of the recreational harvest of red grouper. Therefore, consultation with state officials under Executive Order 12612 was not necessary. Consequently, consultation with state officials under Executive Order 12612 remains unnecessary.

E.O. 13158: Marine Protected Areas

This E.O. requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. There are several marine protected areas, HAPCs, and gear-restricted areas in the eastern and northwestern Gulf of Mexico. The existing areas are entirely within federal waters of the Gulf of Mexico. They do not affect any areas reserved by federal, state, territorial, tribal or local jurisdictions.

APPENDIX B. RECREATIONAL ACL/ACT CONTROL RULE

As of 02/18/2016

ACL/ACT Buffer Spreadsheet version 4.1 - April 2011

Red grouper
Recreational - 2015

sum of points	2.5		
max points	6.5		
Min. Buffer	0	min. buffer	User adjustable
Max Unw.Buff	19	max unwt. Buff	
Max Wtd Buff	25	max wtd. buffer	User adjustable

Buffer between ACLand ACT (or ABC and ACL) Unweighted 7

Weighted 8

Component	Element score	Element	Selection	Element result
Stock assemblage	0	This ACL/ACT is for a single stock.	x	0
	1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
Ability to Constrain Catch	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	1.5
	1	Catch limit has been exceeded 2 or more times in last 4 years		
		For the year with max. overage, add 0.5 pts. for every 10 percentage points (rounded up) above ACL	1.5	
		Not applicable (there is no catch limit)		
		Apply this component to recreational fisheries, not commercial or IFQ fisheries		
Precision of Landings Data Recreational	0	Method of absolute counting		1
	1	MRIP proportional standard error (PSE) <= 20	x	
	2	MRIP proportional standard error (PSE) > 20		
		Not applicable (will not be included in buffer calculation)		
		Apply this component to commercial fisheries or any fishery under an IFQ program		
Precision of Landings Data Commercial	0	Landings from IFQ program		not applicable
	1	Landings based on dealer reporting		
	2	Landings based on other		
		Not applicable (will not be included in buffer calculation)	x	
Timeliness	0	In-season accountability measures used or fishery is under an IFQ	x	0
	1	In-season accountability measures not used		

Sum 2.5

Weighting factor

	Element weight	Element	Selection	Weighting
Overfished status	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.1
	0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).	x	
	0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).		
	0.3	4. Stock is overfished, below MSST.		
	0.3	5. Status criterion is unknown.		

Year	Catch	ACL	Over/Under %	
2012	1,752,930	1,900,000	-8%	
2013	2,377,111	1,900,000	25%	
2014	1,600,475	1,900,000	-16%	
2015	1,781,130	1,900,000	-6%	preliminary

Greatest percentage overage = -15% = 1.5 points
ACL exceeded 1 times in last 4 years
Data Source SERO ACL Monitoring Website 18 February 2016

Year	PSE	
2012	14.6	
2013	15.3	
2014	13.1	
2015	13.8	preliminary
Average	14.2	Avg PSE > 20

Data Source MRIP Data Query Website 18 February 2016

APPENDIX C. COMMERCIAL ACL/ACT CONTROL RULE

As of 10/1/2015

ACL/ACT Buffer Spreadsheet version 4.1 - April 2011

Red grouper

Commercial - 2015/w 2014 lar

sum of points	0			Buffer between ACLand ACT (or ABC and ACL)	Unweighted 0
max points	5.0				Weighted **0**
Min. Buffer	**0**	**min. buffer**	User adjustable		
Max Unw.Buff	19	max unwt. Buff			
Max Wtd Buff	**25**	**max wtd. buffer**	User adjustable		

Component	Element score	Element	Selection	Element result
Stock assemblage	0	This ACL/ACT is for a single stock.	x	0
	1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
Ability to Constrain Catch	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	0
	1	Catch limit has been exceeded 2 or more times in last 4 years		
		For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL		
		Not applicable (there is no catch limit)		
		Apply this component to recreational fisheries, not commercial or IFQ fisheries		
	0	Method of absolute counting		not applicable
Precision of	1	MRIP proportional standard error (PSE) <= 20		
Landings Data	2	MRIP proportional standard error (PSE) > 20		
Recreational		Not applicable (will not be included in buffer calculation)	x	
		Apply this component to commercial fisheries or any fishery under an IFQ program		
Precision of	0	Landings from IFQ program	x	0
	1	Landings based on dealer reporting		
Landings Data	2	Landings based on other		
Commercial		Not applicable (will not be included in buffer calculation)		
Timeliness	0	In-season accountability measures used or fishery is under an IFQ	x	0
	1	In-season accountability measures not used		

Sum 0

Weighting factor

	Element weight	Element	Selection	Weighting
Overfished status	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.1
	0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).	x	
	0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).		
	0.3	4. Stock is overfished, below MSST.		
	0.3	5. Status criterion is unknown.		