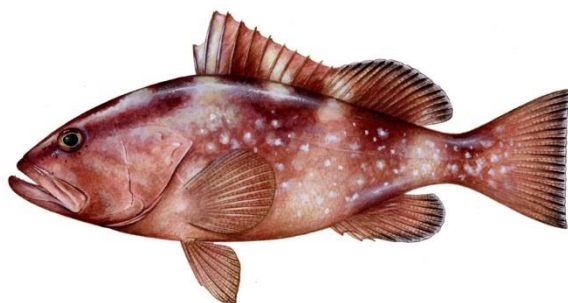


Modification of Gulf of Mexico Red Grouper Annual Catch Limits and Annual Catch Targets



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

including Environmental Assessment, Regulatory Impact Review,
and Regulatory Flexibility Act Analysis

April 2019



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ENVIRONMENTAL ASSESSMENT COVER SHEET

Name of Action

Framework Action to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico: Modification of Gulf of Mexico Red Grouper Annual Catch Limits and Annual Catch Targets including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis.

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
ALS	accumulated landings system
AM	accountability measure
APAIS	Access Point Angler Intercept Survey
Bi Op	Biological Opinion
CMP	coastal migratory pelagic
Council	Gulf of Mexico Fishery Management Council
CS	Consumer Surplus
DPS	Distinct Population Segment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFP	Exempted Fishing Permits
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered Species Act
F	Fishing Mortality Rate
FMP	Fishery Management Plan
FL	Fork Length
FWC	Florida Fish and Wildlife Conservation Commission
GMFMC	Gulf of Mexico Fishery Management Council
GPS	global positioning system
GSAD	Gulf and South Atlantic Dealer
Gulf	Gulf of Mexico
gw	gutted weight
HAPC	Habitat Areas of Particular Concern
IFQ	Individual Fishing Quota
IPCC	Intergovernmental Panel on Climate Change
LAPPs	Limited Access Privilege Programs
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSST	Minimum Stock Size Threshold
NMFS	National Marine Fisheries Service
NOR	Net Operating Revenue
NPDV	net present discounted value
OFL	overfishing limit
OY	Optimum Yield
PAH	Polycyclic Aromatic Hydrocarbons

PS	Producer Surplus
RFA	Regulatory Flexibility Act
RFFA	Reasonably Foreseeable Future Actions
RIR	Regulatory Impact Review
RQ	Regional Quotient
RS	red snapper
SEDAR	Southeast Data, Assessment, and Review process
SEFSC	Southeast Fisheries Science Center
SERO	NMFS Southeast Regional Office
SPR	Spawning Potential Ratio
SOI	Segment of Interest
SRHS	Southeast Region Headboat survey
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
SSRG	Social Science Research Group
TAC	Total Allowable Catch
TL	total length
TPWD	Texas Parks and Wildlife Department
USFWS	United States Fish and Wildlife Service
ww	whole weight

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CHAPTER 1. INTRODUCTION

1.1 Background

The stock status of Gulf of Mexico (Gulf) red grouper was last evaluated in the Southeast Data Assessment Review 42 stock assessment (SEDAR 42, 2015). The Gulf of Mexico Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) reviewed the assessment results at its January 2016 meeting, agreed with the determination that red grouper was not overfished or experiencing overfishing, and recommended increases in the overfishing limit (OFL) and the acceptable biological catch (ABC). The Council selected a constant catch yield stream (Table 1.1.1) for determining annual catch limits (ACLs) and annual catch targets (ACTs).

Table 1.1.1. SEDAR 42 yield projections for red grouper at a constant catch level, averaged over the 2016-2020 time series. OFL and ABC values are in millions of pounds (mp) gutted weight (gw).

Year	OFL (mp gw)	ABC (mp gw)
2015	8.10	7.93
2016-2020(+)	14.16	13.92

The OFL and ABC recommendations from the 2015 stock assessment were increases that exceeded observed harvest levels over the management history of this species (Table 1.1.2), and were largely driven by increases in estimates of historical discards. The increase in discard estimates effectively increased the estimate of stock productivity, leading to lower mortality estimates for a given harvest level. The projected yields from SEDAR 42 assumed recruitment levels equivalent to the long-term average; however, red grouper recruitment spikes are sporadic, and recent annual recruitment has been generally lower than that suggested by the long-term average (SEDAR 42 2015, NMFS 2018).

Current Management and Landings

The allocation between the commercial and recreational sector is 76% and 24%, respectively. For the commercial sector, red grouper harvest is managed under an individual fishing quota (IFQ) program with an 18-inch total length (TL) minimum size limit. Under the IFQ program, allocation is distributed annually on January 1 to IFQ shareholders with red grouper shares. The amount of allocation distributed is based on the annual quota and shares possessed by an entity (expressed as a percent of the quota). For more information on the IFQ program, see the National Marine Fisheries Service's (NMFS) Southeast Regional Office (SERO) webpage on limited access programs at <http://portal.southeast.fisheries.noaa.gov/cs/main.html>.

For the recreational sector, red grouper harvest is managed with season/area closures, a minimum size limit, and a bag limit. During the months of February and March, the possession

of red grouper caught in waters deeper than 20 fathoms (120 feet) is prohibited. This closure is to protect red grouper and other grouper species that are in spawning condition. Red grouper have a 20-inch TL recreational minimum size limit and are a part of the four-grouper aggregate recreational bag limit. However, only two of the fish in that aggregate bag limit can be red grouper.

Total landings of red grouper have ranged from 3.7 to 9.2 million pounds (mp) gutted weight (gw) between 2001 and 2017 (Table 1.1.2). The lowest landings (3.7 mp gw) occurred in 2010 and likely were associated with the *Deepwater Horizon* oil spill. The highest landings in this series occurred in 2004 at approximately 9.2 mp gw. In general, annual landings have been between 5 and 7 mp gw. Gutted weight of red grouper can be converted to whole weight by multiplying the gutted weight by 1.05 (SEDAR 42 2015).

Table 1.1.2. Red grouper landings for the recreational and commercial sectors in pounds gutted weight (gw) for the years 2001 through 2017.

Year	Recreational Sector	Commercial Sector	Overall Total
2001	1,562,768	5,802,442	7,365,210
2002	1,856,389	5,791,795	7,648,184
2003	1,337,719	4,832,294	6,170,013
2004	3,531,970	5,635,577	9,167,547
2005	1,471,283	5,380,603	6,851,886
2006	1,153,940	5,109,824	6,263,764
2007	1,038,837	3,650,777	4,689,614
2008	864,311	4,748,224	5,612,535
2009	830,746	3,698,227	4,528,973
2010	795,106	2,910,970	3,706,076
2011	603,662	4,783,668	5,387,330
2012	1,614,456	5,219,133	6,833,589
2013	2,571,531	4,599,001	7,170,532
2014	1,664,934	5,601,905	7,266,839
2015	1,926,641	4,798,007	6,724,648
2016	1,405,252	4,497,582	5,902,834
2017	828,292	3,328,271	4,156,563

Source: SERO ACL and Catch Share Programs databases (recreational: MRIP; commercial: ALS) as of November 14, 2018.

Southeast Fisheries Science Center (SEFSC) Interim Analysis, SSC ACL Recommendation, and Public Testimony at the October 2018 Council Meeting

A stock assessment for Gulf red grouper is in progress (SEDAR 61) but will not be completed until mid-2019. Because fishermen expressed some concern about the health of the stock, the Council requested that the SEFSC conduct an interim analysis for developing updated harvest

advice for 2019 (NMFS 2018). The interim analysis uses a harvest control rule (HCR) to adjust the catch advice based on an index of relative abundance. Specifically, the HCR compares where the stock seems to be now (observed index value) with where the stock should be (forecasted index value). The chosen HCR adjusts the ABC recommendation based on variation between projected and observed index values. The SEFSC recommended the fishery-independent National Marine Fisheries Service (NMFS) Bottom Longline (BLL) index for use in the HCR because of its widespread spatial coverage, consistent sampling design, and prevalence of red grouper in the survey.

The SEFSC interim analysis fixed the 2018 and 2019 ABC equal to the ABC in 2017 for generating catch advice below the ABC. Because the interim analysis required assumptions, it explored two different scenarios: 1) the variation between the projected and observed index; and 2) including and excluding the SEDAR 42 (2015) projection scenarios. The SSC favored the scenario that did not use the SEDAR 42 ABC projections and used a variation adjustment in which the interim catch advice was strongly driven by the NMFS BLL index deviations. The SSC considered this scenario to be realistic and conservative (with respect to the risk of overfishing) for the interim management advice as requested by the Council. The SSC did note they had concerns with selecting the adjustment factor, and with being limited to the NMFS BLL index.

The SSC concluded that the SEFSC's interim analysis was suitable for interim catch advice for the Council. However, the interim analysis has not been fully tested and assumptions had to be made regarding use of SEDAR 42 ABC projections, the choice of HCR, and the adjustment value. Thus, the SSC considered this method inappropriate to provide an ABC determination. However, the SSC found the analysis was sufficient to recommend an interim 2019 ACL of 4.6 mp gw. This recommendation from the SSC is not binding because it is for the ACL, and the setting of the ACL falls under the Council's purview. The Council may choose to set an ACL that is less than or equal to the current ABC (13.92 mp gw).

In 2017, landings were the second lowest in the time series presented in Table 1.1.2 at just over 4.1 mp gw. Some fishermen testified to the Council in 2018 that red grouper are harder to catch and they thought the current ABC of 13.92 mp gw is too high. They expressed concern the stock condition may be declining in light of an apparent lack of legal-size and larger individuals throughout the species' range on the West Florida shelf. In addition, the severe red tide conditions that occurred in summer and fall of 2014 and 2018 off the Florida west coast could have adversely affected the red grouper stock^{1,2}. A similar 2005 red tide event was shown to have depressed the red grouper spawning stock biomass in the SEDAR 12 update assessment (2009) and in SEDAR 42 (2015). It is not clear whether red tide event has affected the red grouper stock in 2018 or why harvests have been reduced in recent years; the SEDAR 61 red grouper stock assessment³ is presently underway and expected to be presented to the Council's SSC in the fall of 2019. Stakeholder observations indicate that the 2018 red tide event may have

¹ Florida Fish and Wildlife Conservation Red Tide Webpage: <http://myfwc.com/research/redtide/>

² Red Tide in Florida and Texas, National Ocean Service Webpage: <https://oceanservice.noaa.gov/news/redtide-florida/>

³ SEDAR 61 Gulf of Mexico Red Grouper: <http://sedarweb.org/sedar-61>

had a negative impact on red grouper, as documented in the 2018 “Something’s Fishy with Red Grouper Survey” conducted by the Council and presented during SEDAR 61.

Given all of this information, the Council requested staff to draft a framework action to adjust the red grouper total ACL. However, because the framework action cannot be completed until sometime in 2019, the Council also requested that NMFS implement an interim or emergency rule to establish a red grouper ACL of 4.6 mp gw or the 2017 total (commercial and recreational) landings, whichever is lower. NMFS is currently developing an emergency rule to set the 2019 sector ACLs and associated ACTs based on a stock ACL of 4.16 mp gw, which is equal to the 2017 landings.

Based on the Council request, NMFS withheld distribution of the amount of IFQ allocation equal to the amount of anticipated reduction of the commercial quota under the emergency rule. This was implemented through Amendment 36A (GMFMC 2017) and authorized under 50 CFR § 622.22(a)(4). However, if the rule implementing this reduction is not effective by June 1, 2019, NMFS must distribute the withheld IFQ allocation to the shareholders.

1.2 Purpose and Need

The purpose is to reduce the ACLs and ACTs for Gulf red grouper in response to recent information indicating the stock may be in decline, including the low commercial and recreational landings, environmental conditions, public testimony, and the interim analysis performed on Gulf red grouper.

The need is to revise ACLs and ACTs consistent with the best available science for Gulf red grouper, and to continue to achieve optimum yield consistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act.

1.3 History of Management

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

Amendments to the Reef Fish FMP

Amendment 1 was implemented in January 1990. It set a 20-inch total length (TL) minimum size limit on red grouper; 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; 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. Other fishermen fishing under a bag limit were limited to a single day limit; established a longline and buoy gear boundary at 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; limited trawl vessels to the recreational size and daily bag limits of reef fish; established fish trap permits, allowing 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; and established a commercial reef fish vessel permit.

A July 1991 regulatory amendment, implemented in November 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.

A November 1991 regulatory amendment, implemented in June 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 well above the Council's minimum target of 20%.

An August 1999 regulatory amendment, implemented in June 2000, prohibited commercial sale of 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.

Generic Sustainable Fisheries Act Amendment was partially approved and implemented in November 1999. This amendment set the MFMT for most reef fish stocks at a fishing mortality rate corresponding to 30% spawning potential ratio ($F_{30\% SPR}$).

Amendment 19, also known as Generic Essential Fish Habitat Amendment 2, was implemented in August 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.

Secretarial Amendment 1 was implemented in July 2004. It established a rebuilding plan with a 5.31 mp 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; and reduced the red grouper recreational bag limit to two fish per person per day.

An emergency rule, published in February 2005, established a series of trip limit reductions for the commercial grouper fishery in order to extend the commercial fishing season. The trip limit was initially set at 10,000 lbs gw. By August 1, if the fishery had landed more than 50% of

either the shallow-water or red grouper quotas, then a 7,500-lb gw trip limit would take effect; and if by October 1, if the fishery had landed more than 75% of either the shallow-water or red grouper quotas, then a 5,500-lb gw trip limit would take effect.

An interim rule, published in July 2005, established a temporary reduction in the red grouper recreational bag limit from two to one fish per person per day. The approved measure was subsequently extended through July 22, 2006.

An October 2005 regulatory amendment, implemented in January 2006, established a 6,000-pound gw aggregate deep-water grouper and shallow-water grouper trip limit for the commercial grouper sector.

A March 2006 regulatory amendment, implemented in July 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; and established an annual recreational closed season for red grouper from February 15 to March 15, beginning with the 2007 season.

Amendment 18A was implemented in September 2006. It 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 USCG 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 for the safe release of endangered sea turtles and smalltooth sawfish; 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 (implemented May 6, 2007).

Amendment 27 was implemented in February 2008. It addressed the use of non-stainless steel circle hooks when using natural baits to fish for Gulf reef fish, and required the use of venting tools and dehooking devices when participating in the commercial or recreational reef fish fisheries, effective June 1, 2008.

An emergency rule was implemented in May 2009, through October 2009, prohibiting the use of bottom longline gear to harvest reef fish east of 85°30' W longitude shoreward of 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.

Amendment 30B was implemented in May 2009. It set interim allocations of red grouper between recreational and commercial fisheries; made adjustments to the red grouper total allowable catches (TACs); established ACLs and accountability measures (AMs) for the commercial and recreational red grouper fisheries, and the 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; eliminated the end date for Madison-Swanson and Steamboat Lumps; 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.

A rule under the Endangered Species Act was implemented in October 2009 that prohibited bottom longlining for Gulf reef fish east of 85°30'W longitude (near Cape San Blas, Florida) shoreward of a line approximating the 35-fathom depth contour. It 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.

Amendment 29 was implemented in January 2010, and established an IFQ system for the commercial grouper and tilefish fisheries.

Amendment 31 was implemented in May 2010. It 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 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.

An emergency rule, implemented in May 2010, temporarily closed a portion of the Gulf exclusive economic zone (EEZ) to all fishing in response to the *Deepwater Horizon* oil spill. 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% 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.

An August 2010 regulatory amendment, implemented in January 2011, reduced TAC for red grouper from 7.57 mp gw to 5.68 mp gw, based on the projections from the 2009 red grouper update assessment. 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.

An interim rule was published in December 2010, suspending the use of red grouper multi-use IFQ allocation so it could not be used to harvest gag; and continuing the suspension of red grouper multi-use IFQ allocation from June 1, 2011, through November 27, 2011, and subsequently extended through June 12, 2012.

An August 2011 regulatory amendment, implemented in November 2011, increased the 2011 red grouper TAC to 6.88 mp gw with subsequent increases each year from 2012 to 2015; and increased the red grouper bag limit to four fish per person.

Generic ACL/AM Amendment, largely implemented in January 2012 with other elements implemented later in the same year, established in-season and post-season AMs for all stocks that did not already have such measures defined. The AM states that if an ACL is exceeded, in subsequent years an in-season AM will be implemented that will close all shallow-water grouper fishing when the ACL is reached or projected to be reached.

Amendment 32 was implemented in March 2012. It set the red grouper commercial ACL at 6.03 mp and the recreational ACL at 1.90 mp; modified grouper IFQ multi-use allocations; added an overage adjustment and in-season measures to the 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.

A December 2012 framework action, implemented in July 2013, eliminated the February 1 through March 31 recreational shallow-water grouper closed season shoreward of 20 fathoms (except for gag). However, the closed season remained in effect beyond 20 fathoms to protect spawning aggregations of gag and other species that spawn offshore during that time.

Amendment 38 was implemented in March 2013. It revised the post-season recreational AM to reduce 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.

A December 2014 framework action, implemented in May 2015, reduced the red grouper bag limit from four fish to two fish per person per day and eliminated the bag limit reduction AM in 50 CFR 622.41(e)(2)(ii).

A June 2016 framework action, implemented in October 2016, increased the catch limits for red grouper. The commercial ACL is 8.19 mp gw; the commercial quota is 7.78 mp gw; the recreational ACL is 2.58 mp gw; and the recreational ACT is 2.37 mp gw.

Amendment 36A provided the Regional Administrator the authority to withhold the amount of red snapper or grouper-tilefish allocation before distribution at the beginning of a year in which a commercial quota reduction is expected to occur. Withheld red snapper and grouper-tilefish annual allocation will be distributed to shareholders if the effective date of the final rule implementing the quota reduction has not occurred by June 1. The actions to return non-activated shares and withhold quota in the event of an anticipated quota decrease was implemented in July 2018. The advance notice of landing requirement was implemented in January 2019.

Amendment 44, implemented in December 2017, standardized the minimum stock size threshold (MSST) for certain reef fish species. The MSST determines whether a stock is considered overfished; if the biomass of the stock falls below MSST, then the stock is considered overfished. The MSST for gag, red grouper, red snapper, vermillion snapper, gray triggerfish, greater amberjack, and hogfish is equal to 50% of the biomass at maximum sustainable yield.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 – Modify the Gulf of Mexico (Gulf) Red Grouper Annual Catch Limits (ACL) and Annual Catch Targets (ACT)

Alternative 1: No Action. The red grouper ACLs and ACTs will remain at levels set for 2016 and subsequent years, as shown in the table below.

Year	OFL	ABC	Total ACL	Comm ACL	Rec ACL	Comm ACT/Quota	Rec ACT
2016+	14.16	13.92	10.77	8.19	2.58	7.78	2.38

* Values are in millions of pounds, gutted weight.

Alternative 2: Modify the red grouper ACLs and ACTs based on the recommendation of the Scientific and Statistical Committee, as determined from the interim analysis provided by the Southeast Fisheries Science Center. Allocations and the recreational ACT are applied as appropriate.

Year	OFL	ABC	Total ACL	Comm ACL	Rec ACL	Comm ACT/Quota	Rec ACT
2019+	14.16	13.92	4.60	3.50	1.10	3.32	1.02

* Values are in millions of pounds, gutted weight.

Preferred Alternative 3: Modify the red grouper ACLs and ACTs based on the combined landings from the 2017 fishing season. Allocations and the recreational ACT are applied as appropriate.

Year	OFL	ABC	Total ACL	Comm ACL	Rec ACL	Comm ACT/Quota	Rec ACT
2019+	14.16	13.92	4.15	3.16	1.00	3.00	0.92

* Values are in millions of pounds, gutted weight.

Discussion:

Action 1 proposes reducing the catch levels for 2019 and subsequent years for Gulf of Mexico (Gulf) red grouper. Red grouper landings in the Gulf have been below the current combined recreational and commercial annual catch limit (ACL) of 10.77 million pounds (mp) gutted weight (gw) since 2001, suggesting that this ACL (**Alternative 1**) may be too high to be sustained by the stock. Another stock assessment of Gulf red grouper is currently underway (SEDAR 61), and will be likely be completed by the fall of 2019.

The Gulf of Mexico Fishery Management Council's (Council) SSC reviewed an interim analysis on the disposition of the Gulf red grouper stock at its September 2018 meeting. This analysis

was prepared by the Southeast Fisheries Science Center (SEFSC) to provide updated harvest advice during intervals between stock assessments. The interim analysis, described in more detail in Section 1.1, used the fishery-independent National Marine Fisheries Service Bottom Longline (BLL) index as an indicator of the condition of the stock.

The SSC concluded that the interim analysis was informative and suitable for interim catch advice for the Council. Because the methodologies have not been fully tested, and assumptions had been made regarding the use of SEDAR 42 ABC projections, the choice of harvest control rules (HCR), and the adjustment value, the SSC considered this method inappropriate to provide an ABC determination. However, the SSC did think the analysis was sufficient to recommend an interim ACL of 4.60 mp gw.

Alternative 1 (No Action) would not modify the catch limits for Gulf red grouper from the status quo. The total ACL would be 10.77 mp gw, split between the recreational and commercial sectors at 2.58 (24%) and 8.19 (76%) mp gw, respectively. These sector-specific ACLs are reduced by 8% (recreational) and 5% (commercial) to reach the annual catch targets (ACT) of 2.38 and 7.78 mp gw, respectively. The recreational fishing season and the distribution of commercial individual fishing quota (IFQ) allocation are both based on the respective sector ACTs, which were derived through the application of the Council's ACL/ACT Control Rule. The ACL/ACT Control Rule considers the number of times, and the magnitude by which, the ACL has been exceeded in the three years prior to the present fishing year. **Alternative 1** would not address the concerns voiced by stakeholders regarding the condition of the Gulf red grouper stock.

Alternative 2 would reduce the catch limits for Gulf red grouper. The total ACL would be 4.60 mp gw, which is based on the interim analysis reviewed by the SSC. This ACL would be split between the recreational and commercial sectors at 1.10 (24%) and 3.50 (76%) mp gw, respectively. These sector-specific ACLs would be reduced by 8% (recreational) and 5% (commercial) to set the ACTs of 1.02 and 3.32 mp gw, respectively. The recreational fishing season and the distribution of commercial IFQ allocation would both be adjusted based on the respective sector ACTs. **Alternative 2** would amount to a reduction in the stock ACL from **Alternative 1** of approximately 57.3%, and is lower than the combined sector landings for red grouper for every year since 2001, with the exception of 2009, 2010 (area closures due to the *Deepwater Horizon* oil spill), and 2017 (see Table 1.1.3).

Preferred Alternative 3 would also reduce the catch limits for Gulf red grouper. The total ACL would be 4.15 mp gw, which is based on the reported landings from the 2017 fishing year (Table 1.1.2). This ACL would be lower than that proposed in **Alternative 2**, and would be split between the recreational and commercial sectors at 1.00 (24%) and 3.16 (76%) mp gw, respectively. These sector-specific ACLs would be reduced by 8% (recreational) and 5% (commercial) to reach the ACTs of 0.92 and 3.00 mp gw, respectively. Based on the resultant respective sector ACTs, the recreational fishing season would be closed when the recreational red grouper ACT is met or projected to be met; the commercial IFQ program would continue to operate as it presently does, albeit with a smaller amount of allocation (ACT) distributed for that sector. **Preferred Alternative 3** would amount to a reduction in the stock ACL from **Alternative 1** of approximately 61.4%, and is lower than the combined sector landings for red

grouper for every year since 2001, with the exception of 2010 (area closures due to the *Deepwater Horizon* oil spill; Table 1.1.3).

CHAPTER 3. AFFECTED ENVIRONMENT

The action considered in this framework action with environmental assessment would affect fishing for red grouper in the Gulf of Mexico (Gulf). Descriptions of the physical, biological, economic, social, and administrative environments were completed in the environmental impact statements for the following amendments to the Fishery Management Plan (FMP) for Reef Fish Resources in the Gulf of Mexico (Reef Fish FMP): Amendment 27/Shrimp Amendment 14 (GMFMC 2007), 30A (GMFMC 2008b), 30B (GMFMC 2008c), 32 (GMFMC 2011b), 40 (GMFMC 2014), 28 (GMFMC 2015), the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), and the Generic Annual Catch Limits/Accountability Measures (ACL/AM) Amendment (GMFMC 2011a). Below, information on each of these environments is summarized or updated, as appropriate.

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km²), 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 Fechtelm 2005). Gulf water temperatures range from 54° F to 84° F (12° C to 29° C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73° F through 83° F (23-28° C) including bays and bayous (Figure 3.1.1) between 1982 and 2009, according to satellite-derived measurements.⁴ In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

⁴ NODC 2012: <http://accession.nodc.noaa.gov/0072888>

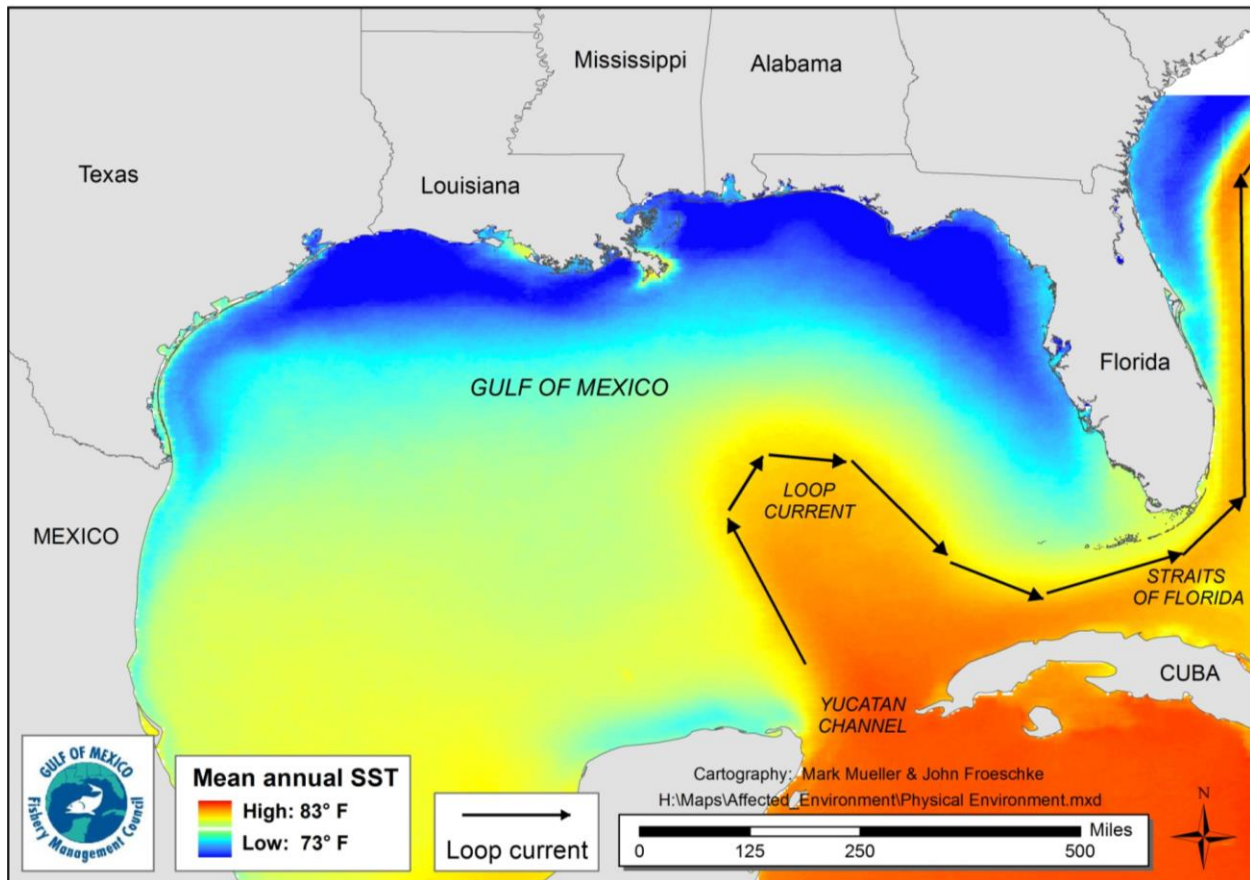


Figure 3.1.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (<http://accession.nodc.noaa.gov/0072888>).

The physical environment for Gulf reef fish, including red grouper, is also detailed in the Generic EFH Amendment, the Generic ACL/AM Amendment, and Reef Fish Amendment 40 (GMFMC 2004a; GMFMC 2011a; GMFMC 2014, respectively), and is incorporated by reference and further summarized below. In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. A planktonic larval stage lives in the water column and feeds on zooplankton and phytoplankton (GMFMC 2004a). Juvenile and adult reef fish are typically demersal and usually associated with bottom topographies on the continental shelf (less than 100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. For example, juvenile red grouper are common in estuaries and nearshore reefs on the west Florida shelf.

Detailed information pertaining to the Gulf area closures and marine reserves is provided in Amendment 32 (GMFMC 2011b). There are environmental sites of special interest that are discussed in the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a) that are relevant to red grouper management. These include the longline/buoy area closure, the Edges Marine Reserve, Tortugas North and South Marine Reserves, individual reef areas and bank

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

With respect to the National Register of Historic Places, there is one site listed in the Gulf. This is the wreck of the *U.S.S. Hatteras*, located in federal waters off Texas. Historical research indicates that over 2,000 ships have sunk on the Federal Outer Continental Shelf between 1625 and 1951; thousands more have sunk closer to shore in state waters during the same period. Only a handful of these have been scientifically excavated by archaeologists for the benefit of generations to come.⁵

Northern Gulf of Mexico Hypoxic Zone

Every summer in the northern Gulf, a large hypoxic zone forms. It is the result of allochthonous materials and runoff from agricultural lands by rivers to the Gulf, increasing nutrient inputs from the Mississippi River, and a seasonal layering of waters in the Gulf. The layering of the water is temperature and salinity dependent and prevents the mixing of higher oxygen content surface water with oxygen-poor bottom water. For 2018, the extent of the hypoxic area was estimated to be 2,720 square miles and fourth smallest area mapped since 1985.⁶ The hypoxic conditions in the northern Gulf directly affect less mobile benthic macroinvertebrates (e.g., polychaetes) by influencing density, species richness, and community composition (Baustian and Rabalais 2009). However, more mobile macroinvertebrates and demersal fishes (e.g., red grouper) are able to detect lower dissolved oxygen levels and move away from hypoxic conditions. Therefore, although not directly affected, these organisms are indirectly affected by limited prey availability and constrained available habitat (Baustian and Rabalais 2009; Craig 2012).

Greenhouse Gases

The Intergovernmental Panel on Climate Change (IPCC) has indicated greenhouse gas emissions are one of the most important drivers of recent changes in climate. Wilson et al. (2014) inventoried the sources of greenhouse gases in the Gulf from sources associated with oil platforms and those associated with other activities such as fishing. A summary of the results of the inventory are shown in Table 3.1.1 with respect to total emissions and from fishing. Commercial fishing and recreational vessels make up a small percentage of the total estimated greenhouse gas emissions from the Gulf (2.04% and 1.67%, respectively).

⁵ Further information can be found at <http://www.boem.gov/Environmental-Stewardship/Archaeology/Shipwrecks.aspx>.

⁶ <http://gulfhypoxia.net>

Table 3.1.1. Total Gulf greenhouse gas emissions estimates (tons per year [tpy]) from oil platform and non-oil platform sources, commercial fishing, and percent greenhouse gas emissions from commercial fishing vessels of the total emissions*. Data are for 2011 only.

Emission source	CO ₂	Greenhouse CH ₄	Gas N ₂ O	Total CO _{2e} **
Oil platform	5,940,330	225,667	98	11,611,272
Non-platform	14,017,962	1,999	2,646	14,856,307
Total	19,958,292	227,665	2,743	26,467,578
Commercial fishing	531,190	3	25	538,842
Recreational fishing	435,327	3	21	441,559
Percent commercial fishing	2.66%	>0.01%	0.91%	2.04%
Percent recreational fishing	2.18%	>0.01%	0.77%	1.67%

*Compiled from Tables 6-11, 6-12, and 6-13 in Wilson et al. (2014). **The CO₂ equivalent (CO_{2e}) emission estimates represent the number of tons of CO₂ emissions with the same global warming potential as one ton of another greenhouse gas (e.g., CH₄ and N₂O). Conversion factors to CO_{2e} are 21 for CH₄ and 310 for N₂O.

3.2 Description of the Biological Environment

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

3.2.1 Red Grouper

Red Grouper Life History and Biology

Larval red grouper are found in the plankton across the west-Florida shelf (SEDAR 42 2015). Juvenile red grouper are generally found in shallow waters around structures and patch reefs. When juveniles reach approximately 16 inches (40 cm), after they have become sexually mature, they move offshore (Moe 1969). Red grouper reach a maximum length and weight of 43 inches (110 cm total length) and 50.7 pounds. (23 kg) (Robins et al. 1986). Maximum age of red grouper in the Gulf of Mexico has been estimated at 29 years (SEDAR 42 2015). Clear determinations of size and age of maturity have been difficult for red grouper (Fitzhugh et al. 2006 and references cited therein). Fitzhugh et al. (2006) estimated the size and age at 50% maturity was 11 inches (27 cm fork length [FL]) and age 2. For SEDAR 42 (2015), the values were approximated at 11.5 inches (292 mm FL) and 2.8 years following the addition of samples collected from the West Florida Shelf by FL FWCC/FWRI (Lowerre-Barbieri et al. 2014). Previous estimates indicated that red grouper were 50% mature by 5 years of age and 15-20 inches total length (40-50 cm total length) (Moe 1969; Collins et al. 2002). Red grouper are protogynous hermaphrodites, transitioning from females to males at older ages, and form harems for spawning (Dormeier and Colin 1997). Age and size at sexual transition is approximately 10.5 years and 30 inches total length (76.5 cm total length) (Fitzhugh et al. 2006). Red grouper

spawn from February until mid-July with peak spawning occurring in the eastern Gulf of Mexico during March through May (Fitzhugh et al. 2006). Over the last 25-30 years, there has been little change in the sex ratio of red grouper, likely because they do not aggregate (Coleman et al. 1996).

Status of the Red Grouper Stock

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 the red grouper stock was neither overfished nor undergoing overfishing. The 2009 update stock assessment did suggest the stock had declined since 2005, much of which was attributed to an episodic mortality event in 2005 (most likely associated with red tide). In late 2010, the assessment was revised to incorporate new information on historical discards in the commercial sector 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. Therefore, 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 with 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 with harvesting the equilibrium optimum sustainable yield).

SEDAR 42 Assessment

In October 2015, the SEDAR 42 (2015) 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. 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 were available and used, but for 2015, the SSC recommended that the assessment group use landings estimates based on the current quotas and ACLs.

The SSC recommended 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. This value was 14.16 million pounds gutted weight (mp gw). The annual ABC for years 2016-2020 was computed as the 43rd percentile of the OFL PDF, which was 13.92 mp.

2018 Red Grouper Interim Analysis

The SEFSC conducted an interim analysis on red grouper to assist the Council in developing harvest advice for 2019 because red grouper is currently in between assessments (NMFS 2018). This analysis is described in more detail in Section 1.1. The interim analysis prepared by the SEFSC developed a harvest control rule (HCR), which uses an index from a fishery-independent

survey to compare where the stock seems to be now (observed index value) with where the stock should be (forecast index value). The chosen HCR adjusts the ABC recommendation based on variation between projected and observed index values. The SEFSC found that the fishery-independent bottom longline (BLL) index was the best index for use in the HCR.

The SSC reviewed the SEFSC's interim analysis at its October 2018 meeting and concluded it was suitable for interim catch advice. However, because the method had not been fully tested and required a number of assumptions, the SSC considered this method inappropriate to provide an ABC determination. The SSC did determine the analysis could support a recommendation that the Council reduce the 2019 ACL to 4.6 mp gw.

3.2.2 General Information on Reef Fish Species

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

Status of Reef Fish Stocks

The Reef Fish Fishery FMP currently encompasses 31 species (Table 3.2.2.1). Eleven other species were removed from the FMP in 2012 through the Generic ACL/AM Amendment (GMFMC 2011a).

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress⁷ on a quarterly basis utilizing the most current stock assessment information. Stock assessments and status determinations have been conducted and designated for 12 stocks and can be found on the Council⁸ and SEDAR⁹ websites. Of the 12 stocks for which stock assessments have been conducted, the most recent report of the 2018 Status of U.S. Fisheries classifies only one as overfished (greater amberjack), and two stocks as undergoing overfishing (greater amberjack and gray triggerfish).

For those species that are listed as not undergoing overfishing, that determination has been made based on the annual harvest remaining below the OFL. No other unassessed species are scheduled for a stock assessment at this time.

⁷ <https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates>

⁸ www.gulfcouncil.org

⁹ www.sedarweb.org

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

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

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

Bycatch

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

include fish that may be retained but not sold. Bycatch practicability analyses of the reef fish fishery have been conducted in many amendments. Specific to grouper species, these analyses were done in Amendments 30B, 31, 32, and 38 (GMFMC 2008c, GMFMC 2009, GMFMC 2011b, GMFMC 2012).

Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). A very brief summary of these two laws and more information is available on NMFS Office of Protected Resources website¹⁰. There are 21 ESA-listed species of marine mammals, sea turtles, fish, and corals that may occur in the EEZ of the Gulf. There are 91 stocks of marine mammals managed within the Southeast region plus the addition of the stocks such as North Atlantic right whales (NARWs), and humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA.

Of the four of the marine mammals (sperm, sei, fin, and Gulf of Mexico Bryde's) are protected under the MMPA, three are also listed as endangered under the ESA and may occur in the Gulf. 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 (81 FR 88639; December 8, 2016). Manatees, listed as threatened under the ESA, also occur in the Gulf and are the only marine mammal species in these areas managed by the U.S. Fish and Wildlife Service.

The gear used by the Gulf reef fish fishery is classified in the MMPA 2018 List of Fisheries as a Category III fishery (83 FR 5349). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Dolphins are the only species documented as interacting with the reef fish fishery. Bottlenose dolphins prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery. They are also a common predator around reef fish vessels, feeding on the discards. Marine Mammal Stock Assessment Reports and additional information are available on the NMFS Office of Protected Species website: <http://www.nmfs.noaa.gov/pr/sspecies/>.

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

¹⁰ <http://www.nmfs.noaa.gov/pr/laws/>

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

Recently, on January 22, 2018, NMFS published a final rule (83 FR 2916) listing the giant manta ray as threatened under the ESA. On January 30, 2018, NMFS published a final rule (83 FR 4153) listing the oceanic whitetip shark as threatened under the ESA. In a memorandum dated March 6, 2018, NMFS revised the request for reinitiation of consultation on the Reef Fish FMP to address the listings of the giant manta and oceanic whitetip. In that memorandum, NMFS also determined that allowing fishing under the Reef Fish FMP to continue during the re-initiation period will not jeopardize the continued existence of the giant manta ray or oceanic whitetip shark.

Climate Change

Climate change projections predict increases in sea-surface temperature and sea level; decreases in sea-ice cover; and changes in salinity, wave climate, and ocean circulation (IPCC).¹¹ These changes are likely to affect plankton biomass and fish larvae abundance that could adversely affect fish, marine mammals, seabirds, and ocean biodiversity. Kennedy et al. (2002) and Osgood (2008) have suggested global climate change could affect temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions, change precipitation patterns and cause a rise in sea level. This could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. The National Oceanic and Atmospheric Association (NOAA) Climate Change Web Portal¹² predicts the average sea surface temperature in the Gulf will increase by 1-3°C for 2010-2070 compared to the average over the years 1950-2010. For reef fishes, Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. The smooth puffer and common snook are examples of species for which there has

¹¹ <http://www.ipcc.ch/>

¹² <https://www.esrl.noaa.gov/psd/ipcc/>

been a distributional trend to the north in the Gulf. For other species such as red snapper and the dwarf sand perch, there has been a distributional trend towards deeper waters. For other fish species, such as the dwarf goatfish, there has been a distributional trend both to the north and to deeper waters. These changes in distributions have been hypothesized as a response to environmental factors, such as increases in temperature.

The distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Hollowed et al. (2013) provided a review of projected effects of climate change on the marine fisheries and dependent communities. Integrating the potential effects of climate change into the fisheries assessment is currently difficult due to the time scale differences (Hollowed et al. 2013). The fisheries stock assessments rarely project through a time span that would include detectable climate change effects.

Deepwater Horizon MC252 Oil Spill

General Impacts on Fishery Resources

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

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

In addition to the crude oil, over a million gallons of the dispersant, Corexit 9500A[®], was applied to the ocean surface and an additional hundreds of thousands of gallons of dispersant was pumped to the mile-deep wellhead (National Commission 2010). No large-scale applications of dispersants in deep water had been conducted until the *Deepwater Horizon* MC252 oil spill.

Thus, no data exist on the environmental fate of dispersants in deep water. The effect of oil, dispersants, and the combination of oil and dispersants on fishes of the Gulf remains an area of concern.

Red Tide

Red tide is a common name for harmful algal bloom (HABs) caused by species of dinoflagellates and other organisms that causes the water to appear to be red. Red tide blooms occur in the Gulf of Mexico almost every year, generally in late summer or early fall. They are most common off the central and southwestern coasts of Florida between Clearwater and Sanibel Island but may occur anywhere in the Gulf. More than 50 HAB species occur in the Gulf of Mexico, but one of the best-known species is *Karenia brevis*. This organism produces brevetoxins capable of killing fish, birds and other marine animals.¹³

The effects of red tide on fish stocks have been well established. In 2005, a severe red tide event occurred in the Gulf of Mexico along with an associated large decline in multiple abundance indices for red grouper, gag, and other species thought to be susceptible to mortality from red tide events. It is unknown whether mortality occurs via absorption of toxins across gill membranes (Abbott et al. 1975, Baden 1988), ingestion of toxic biota (Landsberg 2002), or from some indirect effect of red tide such as hypoxia (Walter et al. 2013).

Red tide mortality was incorporated into the most recent red grouper stock assessment (SEDAR 42 2015), and is being incorporated into the assessment presently underway (SEDAR 61). As of the time of this writing, a severe red tide event has been occurring off the southwest coast of Florida from Monroe County to Sarasota County that has persisted for more than 14 months and has moved progressively northward. During the period January 1, 2018, through October 31, 2018, Florida FWC has recorded two red grouper kills attributed to red tide (off Monroe and Sarasota Counties). Numerous other fish were killed but the species of grouper was not able to be easily identified.¹⁴

3.3 Description of the Economic Environment

3.3.1 Recreational Sector

Overview

The Gulf ranks first among the nation's regions in recreational fishing activity. From 2011 through 2015, an annual average of approximately 29% of the nation's anglers and 33% of angler trips were in the Gulf (Table 3.3.1.1). More recently, in 2017, Gulf residents plus visitors took nearly 57 million trips and caught almost 404 million fish (Fisheries of the United States (FUS) 2017). Among those commonly caught were reef fish.

¹³ Source: <http://myfwc.com/research/redtide/general/about/>

¹⁴ Source: <https://public.myfwc.com/FWRI/FishKillReport/SearchResults.aspx>

Table 3.3.1.1. Number of saltwater anglers and angler fishing trips in Gulf and nation and percent of nation's anglers and trips in Gulf, 2011-2015.

Year	Gulf Anglers (1,000s)	USA Anglers (1,000s)	Percent Gulf Anglers	Gulf Trips (1,000s)	USA Trips (1,000s)	Percent Gulf Trips
2011	3,048	10,434	29.21%	22,576	69,081	32.68%
2012	3,071	10,801	28.43%	23,172	69,580	33.30%
2013	3,373	10,692	31.55%	25,233	70,382	35.85%
2014	2,890	10,437	27.69%	21,056	67,529	31.18%
2015	2,512	8,942	28.09%	19,726	60,946	32.37%
Average	2,979	10,261	28.99%	22,353	67,504	33.08%

Source: Fisheries Economics of the United States (FEUS) 2015.

Resident and visiting anglers spend money. They purchase durable goods, such as fishing tackle, boats, boat trailers, and so on. They also make trip-related purchases, such as bait, ice and fuel. Infrequent anglers may get all they require for a fishing trip by paying a for-hire fishing business to take them on a trip. Those expenditures produce beneficial economic impacts, such as jobs and income. In 2015, for example, the 2.51 million Gulf anglers spent approximately \$1.42 billion on their 19.73 million fishing trips and another \$9.02 billion on durable fishing-related equipment (2015 FEUS). In West Florida, for example, expenditures for 13.42 million trips generated over 61 thousand jobs and \$2.62 billion in income benefits (Table 3.3.1.2).

Table 3.3.1.2. Number of angler trips and economic impacts (2015 \$) generated from those trips, 2015.

State	Trips (1,000s)	Jobs	Income (1,000s)	Sales (1,000s)	Value-Added (1,000s)
AL	2,324	13,888	\$532,226	\$1,244,884	\$888,904
West FL	13,425	61,278	\$2,620,297	\$6,947,889	\$4,184,808
LA	2,426	11,054	\$474,397	\$1,285,974	\$784,386
MS	1,551	5,511	\$217,633	\$656,407	\$354,185
TX	1,403	15,368	\$726,079	\$1,937,753	\$1,202,300

Source: FEUS 2015.

Reef Fish Fishery

Anglers commonly harvest reef fish. Those aboard their own or leased fishing vessels are not required to have a federal permit to harvest any species in the reef fish fishery from the Gulf EEZ. However, any business with a for-hire fishing vessel that takes anglers into the Gulf EEZ to harvest species in the fishery must have a charter/headboat permit for reef fish assigned to that vessel. See the Description of the Fishery for historical counts of the charter/headboat permit. The businesses with vessels that operate under the for-hire permit are participating in the charter fishing and party fishing boats industry (NAICS code 4872102). The U.S. Census Bureau conducts the Economic Census of the United States every five years, which surveys businesses with employees. Over the past four economic censuses, there was an average of 323 employee

establishments in the charter fishing and party fishing boats industry in the Gulf states (Table 3.3.1.3). These surveys can be used to estimate the average annual receipts for employer establishments in the industry, and the average establishment in the charter fishing and party fishing boats industry in any of the Gulf states had annual receipts less than \$600,000 in 2012 (Table 3.3.1.4).

Table 3.3.1.3. Number of employer establishments in NAICS code 4872012 (Charter Fishing and Party Fishing Boats Industry).

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

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

Table 3.3.1.4. Number of establishments, total receipts and average receipts establishments in NAICS code 4872012 in 2012.

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

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

Source: 2012 Economic Census of the United States.

Employee establishments in the charter fishing and party boats industry (NAICS 487210) are part of the broader scenic and sightseeing water transportation industry (NAICS code 487210), and they tend to represent the majority of employer establishments in the broader industry, except in Louisiana where there are more establishments in the excursion and sightseeing boats industry (NAICS code 4872011) (Table 3.3.1.5). Average receipts for establishments in the excursion and sightseeing boats industry tend to be higher than for establishments in the charter fishing and party fishing boats industry. In Texas, for example, the average receipts for an establishment in the excursion and sightseeing boats industry in 2012 was approximately 59% larger than for an establishment in the charter fishing and party fishing boats industry.

Table 3.3.1.5. Percentage of employer establishments in NAICS code 487210 that are in the charter fishing and party fishing boats industry.

State	1997	2002	2007	2012	Average
Alabama	77.8%	72.0%	75.9%	73.3%	74.7%
Florida	69.2%	66.0%	64.1%	58.6%	64.5%
Louisiana	33.3%	36.7%	48.0%	32.1%	37.5%
Mississippi	100.0%	80.0%	87.5%	84.6%	88.0%
Texas	70.6%	58.2%	47.4%	48.0%	56.0%
Total	67.5%	64.0%	62.5%	57.7%	62.9%

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

The U.S. Census surveys non-employer businesses as well; however, non-employer statistics are not publically available at the relevant 6 or 7-digit NAICS code level. Consequently, it is unknown how many non-employer establishments were in the charter fishing and party boat industry. In 2015, there were 1,528 non-employer establishments in the broader scenic and sightseeing transportation industry (NAICS code 487) in the Gulf, and most (approximately 81%) were individual (or sole) proprietorships (Table 3.3.1.6). Self-employed individuals are included in the individual proprietorship category. That figure, however, does represent the maximum number that would have been in the charter fishing and party boat industry at that time.

Table 3.3.1.6. Number of non-employer establishments by legal form in the scenic and sightseeing transportation industry (NAICS code 487), 2015.

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

Source: 2015 Non-Employer Statistics by Legal Form.

Red grouper is one of the species in the reef fish fishery, and the actions of this amendment concern fishing for red grouper only. Consequently, the remainder of this section focuses exclusively on recreational fishing for red grouper.

Additional information on recreational landings for other reef species or the fishery as a whole or be found in previous amendments, such as Amendment 29 (GMFMC 2008), Amendment 31 (GMFMC 2009), Amendment 32 (GMFMC 2011), Amendment 34 (GMFMC 2012), Amendment 38 (GMFMC 2012), and Framework Action (GMFMC 2015), and is incorporated herein by reference.

Red Grouper

With the MRIP Access Point Angler Intercept Survey (survey of anglers by the private boat, charter vessel and shore modes as they complete a trip), NMFS can estimate how many trips target red grouper, how many trips catch red grouper, how many are being caught, how many red grouper are kept, and other information. That survey is used to examine what happened to the number of angler trips by private/shore and charter boats modes that targeted red grouper during the 5-year period from 2013 through 2017.

From 2013 through 2017, an annual average of 46,038 angler trips in the charter mode targeted red grouper and they generated 287 jobs, approximately \$14.7 million in income and other beneficial impacts (2017\$) (Table 3.3.1.7). Similarly, the 211,939 angler trips in the combined private/shore mode that targeted the species generated 118 jobs, approximately \$5.6 million in income, approximately \$19.7 million in sales, and \$9.9 million in value-added impacts. Note that anglers often target multiple species during a trip. Consequently, the estimates likely reflect economic benefits from directed angler trips that target more than red grouper.

Table 3.3.1.7. Estimates of economic impacts from average number of angler trips that targeted red grouper, 2013-2017.

Mode	Trips	Jobs	Income (1,000s 2017\$)	Sales (1,000s 2017\$)	Value-Added (1,000s 2017\$)
Charter	46,038	287	\$14,732	\$42,619	\$22,835
Private/Shore	211,939	118	\$5,590	\$19,718	\$9,865

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS (2016).

Similar analysis of recreational effort is not possible for headboats because headboat trip data are not collected at the individual angler level, but instead at the vessel level, and target intent are not included, only species caught and landed.

3.3.2 Commercial Sector

Overview

From 2011 through 2015, commercial fishermen in the United States landed an annual average of approximately 9.68 billion pounds of finfish and shellfish and the Gulf Region (Gulf) accounted for 15.3% of that figure. Commercial landings in the Gulf accounted for an average of approximately 16.6% of those landings by dockside value (Table 3.3.2.1). In 2016, the nation's commercial fishermen landed approximately 9.62 billion pounds of finfish and shellfish with a dockside value of \$5.34 billion. Commercial fishermen in the Gulf accounted for 18.0% of those 2016 landings by weight and 16.9% by value.

Table 3.3.2.1. Commercial landings in the Gulf Region and U.S., 2011 – 2016.

Year	All Gulf Landings (lbs)	All U.S. Landings (lbs)	Percent Gulf	Gulf Dockside Value (Nominal)	U.S. Dockside Value (Nominal)	Percent Gulf
2011	1,792,550,312	9,903,528,358	18.1%	\$811,904,803	\$5,370,261,217	15.1%
2012	1,489,595,406	9,487,491,919	15.7%	\$784,868,796	\$5,158,416,939	15.2%
2013	1,346,243,804	9,755,748,177	13.8%	\$941,557,376	\$5,528,269,717	17.0%
2014	1,245,300,683	9,522,657,940	13.1%	\$1,059,776,151	\$5,531,974,536	19.2%
2015	1,553,245,334	9,755,486,827	15.9%	\$877,766,876	\$5,264,247,973	16.7%
Average	1,485,387,108	9,684,982,644	15.3%			16.6%
2016	1,735,765,297	9,621,764,619	18.0%	\$905,203,299	\$5,344,917,324	16.9%

Source: Fisheries Economics of the United States (FEUS) 2015 and NMFS Fisheries Statistics Division ALS for 2016 landings.

Commercial landings support jobs and generate other economic impacts. For example, all landings in West Florida in 2015 supported 10,257 jobs and created approximately \$994 million in sales impacts, \$263 million in income impacts, and \$403 million in value-added impacts (Table 3.3.2.2).

Table 3.3.2.2. Economic impacts (without imports) of all Gulf Region landings by state, 2015.

State	Jobs	Sales (1,000s 2015\$)	Income (1,000s 2015\$)	Value-Added (1,000s 2015\$)
AL	9,348	\$421,219	\$168,896	\$220,481
FL	10,257	\$994,047	\$262,855	\$403,399
LA	30,635	\$1,601,577	\$623,704	\$838,255
MS	9,485	\$464,680	\$185,834	\$239,474
TX	14,571	\$966,117	\$351,189	\$492,440

Source: FEUS 2015.

Reef Fish Fishery

As stated previously in the Description of the Fishery, any commercial fishing vessel that harvests any species in the reef fish fishery in the EEZ must have a Gulf reef fish permit, which is a limited access permit. A condition of the permit is that the vessel must report its landings. Dealers that purchase or receive reef fish caught from by these permitted vessels must have a Gulf and South Atlantic dealer permit.

Annual dockside revenue from all reported landings of species and species groups in the reef fish fishery increased from approximately \$41.7 million in 2011 to approximately \$61.3 million in 2015 (Table 3.3.2.3). Those reef fish landings by permitted vessels accounted for an average of 5.8% of the dockside revenue from all landings in the Gulf from 2011 through 2015. In 2016, landings of reef fish by federally permitted vessels accounted for 5.9% of dockside revenue from all landings in the Gulf.

Table 3.3.2.3. Comparison of dockside revenues (nominal) from reported reef fish (RF) landings by permitted vessels and from all finfish and shellfish landings by all vessels and percentage of all landings by reported landings of reef fish by permitted vessels, 2011-2016.

Year	Dockside Revenue from Reported RF Landings	Dockside Revenue from All Landings	Percent from Reported RF
2011	\$41,685,649	\$811,904,803	5.1%
2012	\$46,457,776	\$784,868,796	5.9%
2013	\$50,483,000	\$941,557,376	5.4%
2014	\$59,403,207	\$1,059,776,151	5.6%
2015	\$61,335,922	\$877,766,876	7.0%
Average			5.8%
2016	\$60,837,917	\$905,203,299	5.9%

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018) for landings of reef fish by permitted vessels, October 29, 2018; all landings by all vessels from ALS, S & T October 26, 2018.

Commercial landings of reef fish generate considerable economic impacts, such as jobs and income. In West Florida, for example, where approximately 65% of reported reef fish landings occurred in 2015, landings generated 1,737 jobs, \$43.2 million in income impacts, \$157.5 million in sales impacts, and \$65.3 million in value-added impacts (Table 3.3.2.4).

Table 3.3.2.4. Reported reef fish (RF) landings (weight and value) by permitted vessels and economic impacts of those landings, 2015.

State	RF Landings (lbs gw)	RF Dockside Revenue (2015 \$)	Jobs	Sales (1,000s 2015\$)	Income (1,000s 2015\$)	Value-Added (1,000s 2015\$)
AL	369,957	\$1,356,889	196	\$9,170	\$3,646	\$4,741
West FL	10,018,023	\$39,098,246	1,737	\$157,555	\$43,211	\$65,336
LA	2,036,785	\$8,461,057	547	\$26,826	\$10,868	\$14,438
MS	239,669	\$480,952	43	\$2,089	\$833	\$1,073
TX	2,620,082	\$11,938,778	688	\$40,732	\$16,857	\$22,725
Sub-total	15,284,516	\$61,335,922	3,532	\$254,109	\$82,686	\$118,037
All Other ¹	38,613	\$144,568	10	619	256	345
Total	15,323,129	\$61,480,490	3,542	\$254,728	\$82,942	\$118,382

1. Economic impacts of landings in areas outside the region are those to the nation.

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS (2016).

Landings of reef fish account for a substantial portion of permitted vessels' total annual revenues from all landings. From 2013 through 2017, an annual average of 81.3% of the vessels' total dockside revenue was from reef fish landings (Table 3.3.2.5).

Table 3.3.2.5. Nominal dockside revenues from reported landings of reef fish, jointly caught fish and species caught from other trips, and percentage of total dockside revenue from reef fish, 2013-2017.

Year	Revenue from RF	Revenue from Jointly Caught Species	Revenue from Non-RF Trips	Total Revenue	Percent RF
2013	\$50,819,511	\$1,289,541	\$8,906,202	\$53,682,415	83.3%
2014	\$59,684,277	\$1,442,107	\$13,673,150	\$62,985,878	79.8%
2015	\$61,710,100	\$1,265,673	\$12,978,641	\$64,407,004	81.2%
2016	\$61,334,086	\$1,177,660	\$13,513,008	\$64,427,685	80.7%
2017	\$54,582,891	\$1,036,579	\$11,426,085	\$57,213,912	81.4%
Average					81.3%

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), October 29, 2018.

Red grouper is one of the species in the reef fish fishery, and the actions of this amendment concern fishing for red grouper only. Consequently, the remainder of this section focuses exclusively on commercial fishing for red grouper and, especially, the federally permitted vessels that harvest red grouper. For more information about the economics of the vessels in the reef fish fishery, see Overstreet and Liese 2018).

Red Grouper

Red grouper is part of the Grouper-Tilefish (G-T) IFQ program that has been in place since January 1, 2010. Everyone who had a commercial Gulf of Mexico reef fish permit (valid or renewable) as of October 1, 2009, and who had grouper or tilefish landings reported under their permit during the qualifying time period of 1999 through 2004 received initial IFQ shares and allocation. As of October 1, 2009, 970 entities had the permit; however, only 908 of those entities had grouper or tilefish landings reported under their permit during the qualifying time and received initial IFQ shares and allocation.

Red grouper landings represent a substantial portion of dockside revenue from all landings of Gulf reef fish by all permitted vessels. From 2013 through 2017, red grouper IFQ landings represented, on average, approximately 31% of reported reef fish landings by value (nominal dockside revenue) (Table 3.3.2.6).

Table 3.3.2.6. Nominal dockside revenues from IFQ landings of red grouper and reported (logbook) landings of reef fish (RF) from all permitted vessels and percentage of dockside revenue from reported reef fish landings from red grouper, 2013-2017.

Year	Red Grouper Dockside Revenue	RF Dockside Revenue	Percent Red Grouper
2013	\$16,251,479	\$50,819,511	32.0%
2014	\$20,729,024	\$59,684,277	34.7%
2015	\$18,853,659	\$61,710,100	30.6%
2016	\$18,542,049	\$61,334,086	30.2%
2017	\$14,392,399	\$54,582,891	26.4%
Average			30.8%

Source: SERO LAPPS IFQ for red grouper revenue; SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), November 16, 2018 for reef fish revenue.

Annual dockside revenue from landings of red grouper ranged from approximately \$14.4 million to \$20.7 million. When adjusted for inflation (2017 \$), the range is from approximately \$14.4 million to \$21.6 million and the average vessel landed red grouper valued from \$38,278 to \$56,205 annually (Table 3.3.2.7).

Table 3.3.2.7. Dockside revenue (2017 \$) from red grouper landings, number of vessels that made those landings, and average dockside revenue from red grouper landings per vessel, 2013 – 2017.

Year	Red Grouper Revenue (2017 \$)	Number of Vessels	Average Red Grouper Revenue (2017 \$) per Vessel
2013	\$17,240,613	363	\$47,495
2014	\$21,582,786	384	\$56,205
2015	\$19,421,678	376	\$51,653
2016	\$18,894,402	380	\$49,722
2017	\$14,392,388	376	\$38,278
Average	\$18,306,374	376	\$48,671

Source: SERO LAPPS IFQ data.

Landings of red grouper generate economic impacts, such as jobs and income. From 2013 through 2017, average annual dockside revenue (2017\$) from all red grouper landed by permitted vessels was approximately \$17.12 million (Table 3.3.2.8). Those landings generated 2,444 jobs (full- and part-time) and approximately \$66.7 million in income and other economic impacts (Table 3.3.2.9).

Table 3.3.2.8. Real dockside revenue (2017\$) from red grouper landings, 2013-2017.

Year	Dockside Revenue from Red Grouper Landings (2017\$)
2013	\$17,240,613
2014	\$21,582,786
2015	\$19,421,678
2016	\$18,894,402
2017	\$14,392,399
Average 2013-17	\$18,306,376

Source: SERO LAPPS for nominal revenue and Bureau of Economic Analysis (BEA) for GDP implicit price deflator.

Table 3.3.2.9. Average annual economic impacts from red grouper landings, 2013-2017.

Average Annual Dockside Revenue from Red Grouper Landings (2017\$)	Jobs	Income (1,000s 2017\$)	Value-Added (1,000s 2017\$)	Sales (1,000s 2017\$)
\$18,306,376	2,444	\$66,668	\$94,194	\$181,541

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS 2016 and BEA for implicit price deflator.

Logbook landings of red grouper are used only for the following comparative purposes to illustrate differences in dockside revenue from red grouper by gear and by trip. The average vessel that uses bottom longline gear to harvest red grouper has considerably larger annual landings of and dockside revenue from red grouper than the average vessel that uses other gear (Table 3.3.2.10).

Table 3.3.2.10. Average annual dockside revenue (2017\$) from red grouper landings per vessel by gear, 2013-2017.

Year	Bottom LL	Bandit (Elec. H&L)	Hand H&L	Other
2013	\$320,301	\$116,081	\$28,286	\$12,973
2014	\$343,984	\$130,017	\$34,357	\$25,681
2015	\$326,156	\$132,213	\$36,710	\$24,474
2016	\$318,336	\$122,848	\$32,246	\$22,999
2017	\$239,911	\$112,567	\$29,890	\$15,016
Average	\$309,737	\$122,745	\$32,298	\$20,229

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), November 2018.

The average length of a trip made by a longline vessel that harvests red grouper is considerably longer than the average length of a trip by vessels that use other gears. From 2013 through 2017, the average bottom longline trip that harvested red grouper was 11 days long, whereas the average trips by electric hook-and-line and hand hook-and-line were 6 and 3 days long,

respectively. The average dockside revenue from red grouper per trip by a longline vessel is considerably larger than that for a vessel that used other gear to harvest red grouper (Table 3.3.2.11).

Table 3.3.2.11. Average dockside revenue (2017\$) from red grouper landings per trip by gear, 2013-2017.

Year	Bottom LL	H&L Hand	H&L Elec	Other
2013	\$19,681	\$1,308	\$2,208	\$717
2014	\$22,421	\$1,601	\$2,727	\$1,757
2015	\$19,025	\$2,023	\$2,582	\$1,248
2016	\$18,376	\$1,329	\$1,778	\$1,362
2017	\$14,937	\$1,301	\$1,667	\$793
Average 2013-17	\$18,888	\$1,512	\$2,192	\$1,175

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), November 16, 2018.

Additional economic information about red grouper and the G-T IFQ program can be found in the 2017 and 2016 Gulf of Mexico Grouper-Tilefish Individual Fishing Quota Annual Report and are incorporated by reference.

3.4 Description of the Social Environment

This framework action affects the commercial and recreational management of red grouper in the Gulf. This section provides the background for the proposed action that is evaluated in Chapter 4.

Commercial and recreational landings by state are discussed to provide information on the geographic distribution of fishing involvement. Descriptions of the top ranking communities by the number of commercial reef fish permits are included, along with descriptions of the top communities involved in commercial red grouper and overall commercial fishing engagement. Descriptions of the top ranking communities by the number of federal for-hire permits are included, along with top recreational fishing communities based on recreational engagement and reliance. Community level data are presented in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. Lastly, social vulnerability data are presented to assess the potential for environmental justice (EJ) concerns.

A description of the social environment for commercial and recreational sectors' harvest of red grouper is provided in GMFMC (2016b) and is incorporated herein by reference. This section includes detailed information on permits by state and community, and fishing communities' landings and engagement.

3.4.1 Commercial Fishing Communities

The majority of red grouper commercial landings are in the state of Florida. Over 95% of landings have occurred in Florida for the past seven years (Table 3.4.1.1). Landings have occurred in the other Gulf states but are nominal.

Table 3.4.1.1. Number of vessels with landings (lbs gw) of red grouper and those that landed red grouper in Florida, 2013 – 2017.

Year	Landed in Florida	All	Percent Vessels Landed in Florida
2013	356	363	98.1%
2014	371	384	96.6%
2015	369	376	98.1%
2016	361	380	95.0%
2017	368	376	97.9%
Average	365	376	97.1%

Source: 2016 and 2017 Gulf of Mexico GT-IFQ Annual Reports.

Red grouper is one species in a multispecies IFQ program established through Amendment 29 to the reef fish management plan (GMFMC 2008a) which means that commercial red grouper is required to be landed through IFQ dealers only. The commercial fishing community description is predicated on landings through those dealers that provides one perspective on the importance of the fishery within a community, such as community demographics and discussions of historic participation with the red grouper component of the reef fish fishery,

Gulf commercial reef fish permits are held by entities with mailing addresses in 233 communities, located in 14 states (SERO Permit Office, July 22, 2018). Communities with the most Gulf commercial reef fish permits are located in Florida and Texas (Table 3.4.1.2). The community with the most Gulf commercial reef fish permits is Panama City, Florida (approximately 8% of commercial reef fish permits, Table 3.4.1.2).

Table 3.4.1.2. Top ranking communities based on the number of Gulf commercial reef fish permits.

State	Community	Permits
FL	Panama City	67
FL	Key West	37
FL	St. Petersburg	27
FL	Largo	23
TX	Galveston	23
FL	Destin	21
FL	Seminole	19
FL	Cortez	18
FL	Pensacola	17
FL	Clearwater	15
FL	Tampa	14
FL	Miami	13
FL	Lecanto	12
FL	Steinhatchee	12
TX	Houston	12
FL	Apalachicola	11
FL	Fort Myers	11
FL	Naples	11

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

The descriptions of communities include information about the top communities based on a “regional quotient” (RQ) of commercial landings and value for red grouper. The RQ is the proportion of landings and value out of the total landings and value of that species for that region, and is a relative measure. These communities would be most likely to experience the effects of the proposed actions that could change the fishery and impact participants, associated businesses, and communities within the region. If a community is identified as a red grouper community based on the RQ, this does not necessarily mean that the community would experience significant impacts due to changes in the fishery as a different species or number of species may be more important to the local community and economy. Additional detailed information about communities with the highest RQs included here can be found on the SERO Community Snapshots website, which includes a ranking of important species landed within each community.¹⁵

¹⁵ http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

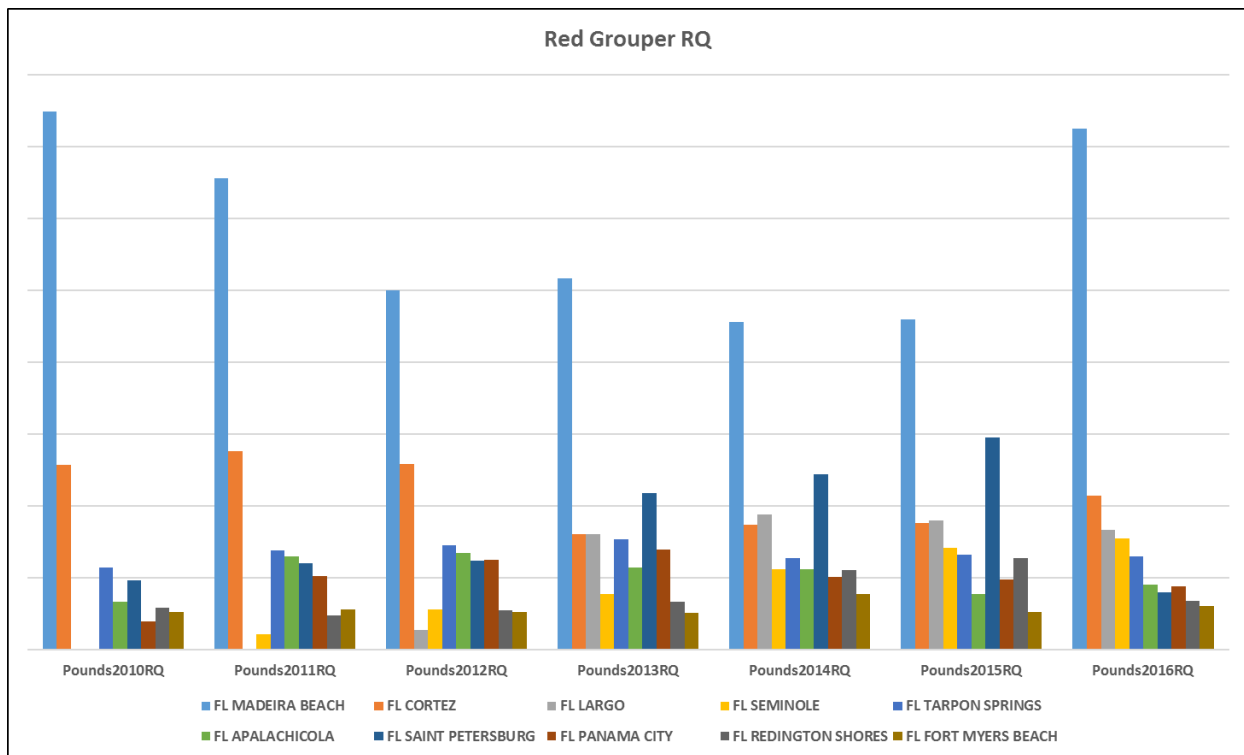


Figure 3.4.1.1. The top ten communities ranked by red grouper regional quotient 2010-2016 with 2016 as base year.

Source: ALS w/dealer addresses, NOAA Fisheries, NMFS, and SERO.

In Figure 3.4.1.1, the community regional quotient (RQ) for red grouper is illustrated for the years 2010-2016. The 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 2016 regional quotient. All of the top ten communities are in Florida as would be expected. As shown in Figure 3.4.1.2, many communities have seen a fluctuation in their RQ over the seven years represented, yet their ranking remains about the same for most. Madeira Beach remains the top community and has been throughout the recent history of the fishery, but has seen fluctuations in its RQ. The communities of St. Petersburg, Largo, and Seminole have seen their RQ rise recently with Seminole and Largo being recent additions to the top communities in terms of the RQ. Other communities have relatively stable RQ, although Cortez has seen some fluctuation in the intervening years. The fluctuations in RQ may represent vessel movement or other factors within a particular community that might have changed the harvest of red grouper in a particular year. It may be related to vessel downtime, lack of available IFQ for lease or a number of other issues. In some cases, it may be a change in business address, although the landing facility may have not. It is the trend of RQ that is likely more informative of what is happening in the community over time with regard to its dependence upon red grouper.

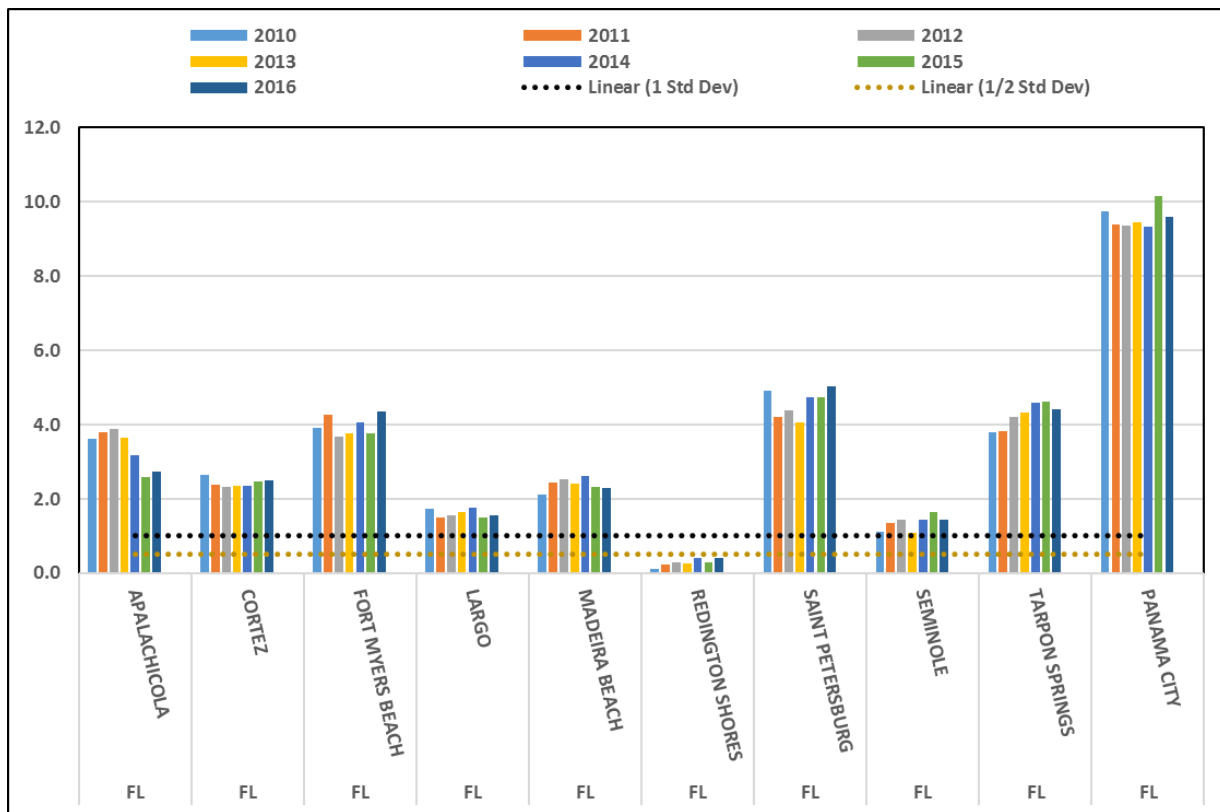


Figure 3.4.1.2. Commercial fishing engagement of the top ten communities for 2010-2016.
Source: SERO, Community Social Vulnerability Indicators Database 2016 (ACS 2010-2014).

The overall measure of a community's commercial fishing engagement for the top ten red grouper commercial fishing communities is depicted in Figure 3.4.1.2. Most communities in Figure 3.4.1.2 would be considered to be highly or moderately engaged in commercial fishing as all are above 1 and ½ standard deviation for all years represented, except for Redington Shores. Redington Shores has shown the least amount of engagement in commercial fishing overall, while all others are highly engaged.

3.4.2 Recreational Fishing Communities

Federal for-hire permits are held by those with mailing addresses in 364 communities, located in 23 states (SERO permit office, July 22, 2018). The communities with the most for-hire permits for reef fish are provided in Table 3.4.2.1.

Table 3.4.2.1. Top ranking communities based on the number of federal for-hire permits for Gulf reef fish, including historical captain permits, in descending order.

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

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

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

Landings for the private recreational sector are not available by species at the community level; therefore, it is not possible with available information to identify communities as dependent on recreational fishing for specific species as with the commercial sector. Because limited data are available concerning how recreational fishing communities are engaged and reliant on specific species, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013, Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as “recreational” by homeport and owners address and recreational infrastructure (number of boat ramps and fishing piers). Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted in Figure 3.4.2.1.

Figure 3.4.2.1 identifies the top Gulf communities with reef fish permits that are engaged and reliant upon recreational fishing in general that may rely on red grouper. Two thresholds of one

and one-half standard deviation above the mean were plotted to help determine a threshold for significance. All 10 included communities demonstrate high levels of recreational engagement, although this is not specific to fishing for red grouper. The communities of Destin and Orange Beach also show high levels of recreational reliance.

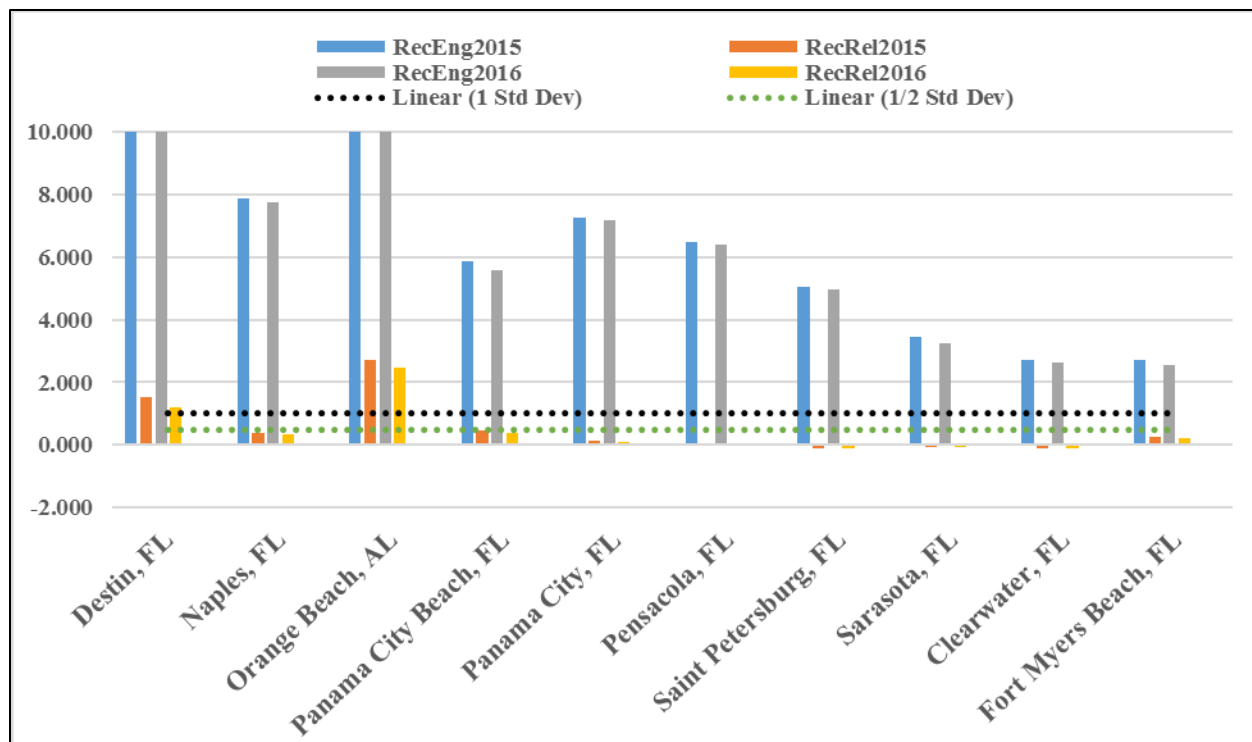


Figure 3.4.2.1. Top 10 recreational fishing communities' engagement and reliance.
Source: SERO, Community Social Vulnerability Indicators Database 2016 (ACS 2010-2014).

3.4.3 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, denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The focus of Executive Order 12898 is to consider “the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories...” This executive order is generally referred to as environmental justice (EJ).

Commercial and recreational anglers and associated industries could be impacted by the proposed action. However, information on the race and income status for groups at the different participation levels is not available. Although information is available concerning communities

overall status with regard to minorities and poverty (e.g., census data), such information is not available specific to fishermen and those involved in the industries and activities, themselves. To help assess whether any EJ concerns arise from the action in this framework action, a suite of indices were created to examine the social vulnerability of coastal communities. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the age of five, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figure 3.4.3.1 provides the social vulnerability index scores of the top recreational and commercial communities that have been identified as having some association with red grouper. Two communities exceed the threshold of one-half standard deviation above the mean for more than one index (Fort Myers Beach, Florida and Panama City, Florida). The community of Sarasota, Florida exceeds the threshold of ½ standard deviation for poverty, so does demonstrate some vulnerability. These communities would be the most likely to exhibit vulnerabilities to social or economic disruption due to regulatory change.

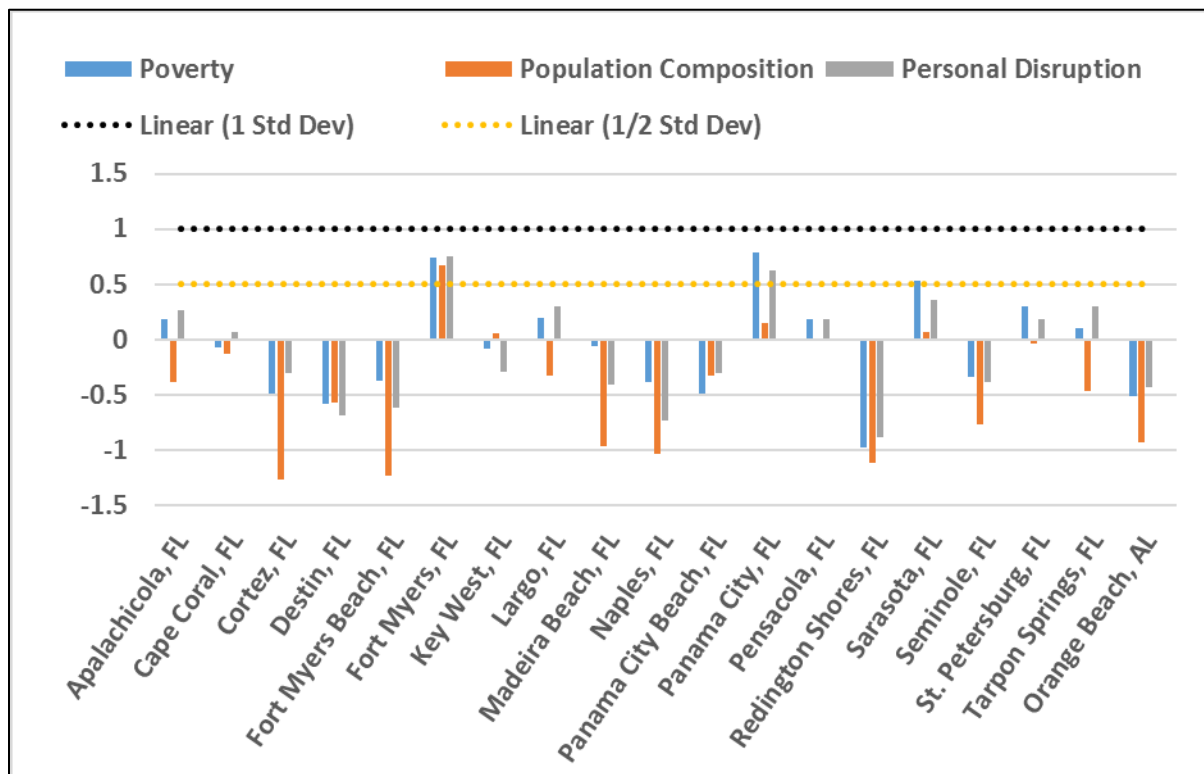


Figure 3.4.3.1. Social vulnerability indices for top commercial and recreational fishing communities associated with red grouper.

Source: SERO, Community Social Vulnerability Indicators Database 2016 (American Community Survey 2012-2016).

3.5 Description of the Administrative Environment

3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 *et seq.*), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the 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 Appendix C. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for fishery resources in federal waters of the Gulf. For reef fish, these waters extend 9 to 200 nautical miles offshore from the seaward boundaries of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline extending 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.

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 on their respective web pages (Table 3.5.2.1).

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

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

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1 – Modify the Gulf of Mexico (Gulf) Red Grouper Annual Catch Limits (ACL) and Annual Catch Targets (ACT)

4.1.1 Direct and Indirect Effects on the Physical Environment

Modifying the red grouper catch limits may affect the physical environment by modifying the level of harvest. Effects on the physical environment from fishing are associated with gear coming into contact with bottom. Different gear types have different levels of impact. Recreational red grouper fishing almost exclusively uses vertical line gear, most frequently rod-and-reel that can interact with and affect bottom habitat. Anchor damage is also associated with handline fishing vessels, particularly by the recreational sector where anglers may repeatedly visit well-marked fishing locations. Preferred fishing sites, like reefs, are targeted and revisited multiple times (Bohnsack 2000). In terms of commercial red grouper fishing, most vessels use handlines (mostly bandit rigs and electric reels, occasionally rod-and-reel) and bottom longlines. Effects from fishing on the physical environment are generally tied to fishing effort. The greater the fishing effort, the more gear interacts with the bottom.

Alternative 1 (No Action) would not change the current catch limits, and therefore would not result in change in effects to the physical environment. However, because the catch levels allowed under **Alternative 1** have not been reached, maintaining these catch levels could allow for greater effort in the future. **Alternative 2** and **Preferred Alternative 3** would decrease the catch limits and therefore decrease the amount of fishing activity, resulting in possible positive effects to the physical environment. However, any positive effects under **Alternative 2** or **Preferred Alternative 3** are expected to be minimal because no significant change in overall fishing effort is expected because the catch levels proposed in **Alternative 2** and **Preferred Alternative 3** are closer to recent landings (Table 1.1.3) compared to current ACLs (**Alternative 1**).

4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment

Alternative 1 (No Action) would maintain higher catch limits than those recommended by the Scientific and Statistical Committee (SSC), but would result in no change in direct effects to the red grouper stock. However, if there is a problem with the red grouper stock, **Alternative 1** may negatively affect the stock by allowing more harvest than is sustainable, given the stock's present condition. For 2019 and subsequent years, **Alternative 2** and **Preferred Alternative 3** would implement a lower harvest limit compared to **Alternative 1**. These lower limits would decrease the allowable removal of red grouper from the stock compared to **Alternative 1** by 6.170 million pounds (mp) gutted weight (gw) (**Alternative 2**) or 6.616 mp gw (**Preferred Alternative 3**). Thus, **Alternative 2** and **Preferred Alternative 3** would have a greater positive biological effect on the red grouper stock compared to **Alternative 1** through lower potential removals for 2019 and subsequent years. **Preferred Alternative 3** could have a greater positive impact to the red grouper stock than **Alternative 2**, since **Preferred Alternative 3** would lower the ACL more so

than **Alternative 2**. These positive effects may be trivial in the short-term because the harvest limits specified in **Alternative 2** and **Preferred Alternative 3** are consistent with the red grouper landings from 2017 (Table 1.1.3).

The relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict with any accuracy. It is possible that forage species and competitor species could increase or decrease in abundance in response to a decrease or increase in red grouper abundance. However, the relationships between red grouper and non-target species caught on trips where red grouper are directly targeted are not fully understood. Further, changes in the prosecution of the reef fish fishery are not expected from this action, so no additional effects to non-target species or protected resources (see Section 3.2) are anticipated.

4.1.3 Direct and Indirect Effects on the Economic Environment

Alternative 1 would maintain the red grouper ACLs and ACTs at current levels, with a total ACL of 10.77 mp gw, a commercial ACL of 8.19 mp gw, a commercial ACT of 7.78 mp gw, a recreational ACL of 2.58 mp gw, and a recreational ACT of 2.38 mp gw. **Alternative 2** considers decreasing the current total ACL to 4.600 mp gw. This would reduce the commercial ACL to 3.496 mp gw and the commercial ACT from to 3.321 mp gw. This would also reduce the recreational ACL to 1.104 mp gw and the recreational ACT to 1.016 mp gw. **Preferred Alternative 3** considers decreasing the current total ACL to 4.154 mp gw. This would reduce the commercial ACL to 3.157 mp gw and the commercial ACT to 2.999 mp gw. In addition, the recreational ACL would be reduced to 0.997 mp gw and the recreational ACT to 0.917 mp gw. The red grouper levels in **Preferred Alternative 3** are the same as those established by an emergency rule in 2019, and those same levels would then continue in 2020 and thereafter. The potential economic impacts of this action are calculated for both the commercial and recreational sectors.

For the commercial sector, the economic effects expected to result from the proposed change in ACT were estimated based on an average annual ex-vessel price per pound of red grouper harvested in the Gulf. From 2013 to 2017, the average ex-vessel price is estimated at \$4.01 per pound (2017 dollars using the GDP implicit price deflator) (2017 Gulf of Mexico Grouper-Tilefish Individual Fishing Quota (IFQ) Annual Report, SERO/LAPP-DM). This average price was converted to \$4.11 in October 2018 dollars using the Bureau of Labor Statistics Consumer Price Index Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm). In comparison to **Alternative 1**, the estimated annual change in the commercial sector ACT under **Alternative 2** would be -4.459 mp gw, which translates into an annual change in the commercial sector ex-vessel revenues of -\$18.326 million (2018 dollars). In comparison to **Alternative 1**, the estimated annual change in the commercial sector ACT under **Preferred Alternative 3** would be -4.781 mp gw, which translates into an annual change in the commercial sector ex-vessel revenues of -\$19.650 million (2018 dollars).

These estimates capture the annual potential maximum reduction in ex-vessel revenues from the commercial sector and assumes that the commercial sector harvests the entire allotted quota/ACT. However, the commercial sector fell short of their ACT/quota every year from

2013-2017. Taking an average of the commercial landings from 2013-2017 (Southeast Fisheries Science Center commercial ACL dataset (accessed 10/23/18) and IFQ database (accessed 11/7/18)) and comparing that to the proposed reduction in the commercial sector ACT may provide better estimates of the annual change in ex-vessel revenues. In this case, the average commercial landings from 2013-2017 is 4.565 mp gw, and the change in landings would be roughly -1.244 mp gw under **Alternative 2** and roughly -1.566 mp gw under **Preferred Alternative 3**. As a result, the associated annual change in ex-vessel revenues for the commercial sector would be roughly -\$5.113 million (2018 dollars) under **Alternative 2** and roughly -\$6.436 million (2018 dollars) under **Preferred Alternative 3**.

A reduction in red grouper harvests, if they materialize, could result in additional economic effects because of the potential effects on ex-vessel prices due to less red grouper on the markets. It is expected that a decrease in the availability of red grouper would result in an increase 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. If the ex-vessel price increases and that increase has little to no effect on the quantity demanded of red grouper by dealers, the dockside revenues from red grouper landings could increase. In economics, that is called inelastic demand. Conversely, if the ex-vessel price increases and that has a larger impact on quantity demanded by dealers, the dockside revenues from red grouper landings could decrease. That is what happens when demand is elastic. 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 for red grouper, the more elastic the demand and the more likely ex-vessel revenues would decrease as landings decrease.

The proposed decrease in commercial quota would substantially decrease the availability of annual IFQ allocation for sale. Holders of red grouper annual allocation would likely increase the price in response to the smaller 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 still expected to face increased prices and decreased availability of annual allocation. However, these potential burdens would be lessened by the impact of the foreseeable increase in the ex-vessel prices on their total ex-vessel revenues.

In addition, a reduction in the red grouper ACL and commercial quota would affect both the red grouper multi-use (RGM) allocation and the gag grouper multi-use (GGM) allocation. As outlined in 50 CFR §622.22 a(5)(i)(A) and 622.22 a (5)(ii)(A), a percentage of each shareholder's initial gag or red grouper allocation would be converted to multi-use allocation. Multi-use allocation is determined annually, based on formulas that take into consideration the gag and red grouper's ACL and commercial quota, and the status of each stock. If gag is under a rebuilding plan, there is no RGM, and likewise when red grouper is under a rebuilding plan there is no GGM.

$$RGM \text{ allocation} = 100 * \frac{(Gag \text{ ACL} - Gag \text{ commercial quota})}{Red \text{ grouper commercial quota}}$$

$$GGM \text{ allocation} = 100 * \frac{(Red \text{ grouper ACL} - Red \text{ grouper commercial quota})}{Gag \text{ commercial quota}}$$

The multi-use provision is to ensure that there may be allocation to use if either gag or red grouper are landed under the other's allocation. Red grouper multi-use allocation may be used to land either gag or red grouper under certain conditions. RGM allocation can only be transferred or used to land red grouper after the IFQ account holder's red grouper allocation has been landed or transferred. RGM allocation can only be transferred or used to land gag after all the IFQ account holder's gag and GGM allocation have been landed or transferred. Any reduction in the red grouper ACL and commercial quota would affect both RGM and GGM allocations. If the gag ACL and commercial quota remains similar to the past year, the red grouper ACL and commercial quota reductions would cause the percentage of RGM allocation to increase and the percentage of GGM allocation to decrease.

While previously noted that fishermen who purchase red grouper allocation may be expected to face increased prices, this also suggests that fishermen who purchase RGM or GGM allocation, regardless of use for gag or red grouper landings, may also be expected to face increased prices.

For the recreational sector, the expected economic effects of the proposed action were measured in changes in economic value, i.e., changes in consumer surplus (CS) for anglers. The expected change in CS is based on the estimated CS per red grouper and on the change in the number of red grouper harvested. Because the value of the CS per red grouper is not known, the proxy value used in this analysis is the CS value for an additional "grouper" (not specific to the species) kept on a trip, i.e., \$46.51 (Haab et al. 2012; values updated to 2018 dollars using the Bureau of Labor Statistics Consumer Price Index Inflation Calculator, https://www.bls.gov/data/inflation_calculator.htm). After converting the recreational ACL from gutted weight to whole weight by multiplying by 1.05 (SEFSC, 2018, personal communication), an estimate of the expected changes in the number of red grouper harvested was obtained by dividing the expected change in ACT by the estimated average weight of a red grouper, 6.51 lbs ww, from 2013-2017 (SEFSC SRHS data (March 2018); MRIP Intercept data available at: https://www.st.nmfs.noaa.gov/st1/recreational/MRIP_Survey_Data/).

It is estimated that the current recreational ACL of 2.58 mp gw allows for the recreational sector to land 416,129 red grouper. The proposed reduced ACL of 1.104 mp gw under **Alternative 2** would have an equivalent 178,065 red grouper annually, and that is a difference of 238,065 red grouper (or approximately 0.238 million). At an average CS of \$46.51 per red grouper, that reduction in red grouper would have an annual economic value of approximately \$11.072 million. The proposed reduced ACL of 0.997 mp gw under **Preferred Alternative 3** would have an equivalent 160,806 red grouper annually, and that is a difference of 255,323 red grouper (or approximately 0.255 million). At an average CS of \$46.51 per red grouper, that reduction in red grouper would have an annual economic value of approximately \$11.875 million. However, recreational landings have not reached or exceeded the ACL. From 2013 through 2017, an

annual average of approximately 1.677 mp gw (estimated 270,535 red grouper) were landed, and the range was from approximately 0.83 mp gw to 2.57 mp gw annually.

In comparison to **Alternative 1**, the recreational sector ACL under **Alternative 2** would decrease by 1.476 mp gw, which is equivalent to 1.550 mp ww, and the associated annual change in recreational sector economic value would be roughly -\$11.072 million (2018 dollars). In comparison to **Alternative 1**, the recreational sector ACL under **Preferred Alternative 3** would decrease by 1.583 mp gw, which is equivalent to 1.662 mp ww, and the associated annual change in recreational sector economic value would be roughly -\$11.875 million (2018 dollars). These estimates capture the potential reduction in CS for the recreational sector and assumes that the recreational sector has been harvesting the entire allotted ACL. From 2013-2017, the recreational sector exceeded the ACL in 2013 and 2015; the recreational landings in the other three years fell short of the ACL. Taking an average of the recreational landings from 2013-2017 and comparing that to the proposed reduction in the recreational sector ACL may provide better estimates of the change in CS. In this case, the average recreational landings would be 1.677 mp gw, and the change in annual landings under **Alternative 2** would be roughly -0.573 mp gw, which is equivalent to -0.602 mp ww. As a result, the associated annual change in recreational sector economic value would be roughly -\$4.301 million (2018 dollars). Under **Preferred Alternative 3**, the change in annual landings would be roughly -0.680 mp gw, which is equivalent to -0.714 mp ww. As a result, the associated annual change in recreational sector economic value would be roughly -\$5.103 million (2018 dollars).

The estimated changes in economic value in this section do not include any decreases in producer surplus or net operating revenue (NOR) that would accrue to a for-hire operator. In general, if the decrease in the red grouper ACL leads to less demand for charter and headboat services, then for-hire businesses would likely experience a decrease in producer surplus or NOR as fewer trips are booked. The NOR is based on charter angler trips, and since changes in trips resulting from a change in red grouper ACL cannot be estimated, the resulting change to the NOR cannot be estimated either. Although quantifying potential changes in producer surplus would result in larger total changes in economic values, the addition of producer surplus estimates to the changes in economic value provided would not affect the signage of the economic effects of the proposed ACL decrease.

4.1.4 Direct and Indirect Effects on the Social Environment

In the Gulf, most red grouper is landed by the commercial sector, which is assigned 76% of the quota, while 24% of the quota is designated for the recreational sector. Nearly all commercial landings of red grouper are in Florida (Table 3.5.1.1), suggesting that the effects from this action would primarily affect the commercial sector in Florida.

In general, negative social effects would be expected from reducing a stock's quota, while positive social effects would be expected from a quota increase. These effects would most likely be realized if a quota reduction resulted in a decrease in fishing opportunities, such as from the distribution of less IFQ allocation for the commercial sector, or an in-season closure for the recreational sector. The commercial sector's harvest of red grouper is managed under an IFQ program, and the harvest of the ACL is controlled by the amount of allocation distributed to

shareholders. For the recreational sector, there is an in-season accountability measure (AM) that would go into place in the year following an ACL overage. To date there has not been an in-season closure on red grouper because of this AM.

However, this action to reduce the red grouper ACL is being considered because of fishermen's observations and testimony to the Gulf of Mexico Fishery Management Council (Council) that the red grouper stock is not healthy enough for harvest under the current quotas. These observations are further supported by low landings relative to current quotas for both the commercial and recreational sectors. Table 4.1.4.1 provides commercial and recreational landings, ACLs, and percent of the ACL landed each year for the years 2012 through 2017. The red grouper ACL was increased dramatically (24%) in 2016. In 2015, the commercial sector harvested 80% of its ACL and the recreational sector harvested 101.4% of its ACL, however, following implementation of the ACL increase each sector landed just 55% of its ACL. The following year (2017), landings represented an even smaller percentage of each sector's ACL. Thus, the current ACLs are not a limiting factor on landings for either sector.

Table 4.1.4.1. Red grouper landings, ACLs, and percent of ACL landed for the commercial and recreational sectors in pounds gutted weight for the years 2012 through 2017.

Year	Commercial			Recreational		
	Landings	ACL	% of ACL landed	Landings	ACL	% of ACL landed
2012	5,219,133	6,030,000	86.6%	1,614,456	1,900,000	85.0%
2013	4,599,001	6,030,000	76.3%	2,571,531	1,900,000	135.3%
2014	5,601,905	6,030,000	92.9%	1,664,934	1,900,000	87.6%
2015	4,798,007	6,030,000	79.6%	1,926,641	1,900,000	101.4%
2016	4,497,582	8,190,000	54.9%	1,405,252	2,580,000	54.5%
2017	3,328,271	8,190,000	40.6%	828,292	2,580,000	32.1%

Source: NMFS-SERO ACL monitoring pages.

Additional effects would not be expected from **Alternative 1** and the current ACLs would remain in place. **Alternative 2** would reduce the commercial and recreational sector ACLs by 57%, respectively, and **Preferred Alternative 3** would reduce the sector ACLs by 61%. While negative effects would be expected from reducing catch limits to such an extent, landings in 2016 and 2017 have been well below the current ACLs of each sector. The 2017 landings for each sector were lower than the ACLs proposed for **Alternative 2**, and slightly greater than the ACLs proposed for **Preferred Alternative 3**. (In 2017, the commercial sector landed 3.33 mp gw. The commercial ACL would be 3.50 mp gw under **Alternative 2** and 3.16 mp gw under **Preferred Alternative 3**. In 2017, the recreational sector landed 0.83 mp gw. The recreational ACL would be 1.10 mp gw under **Alternative 2** and 1.00 mp gw under **Preferred Alternative 3**.)

Assuming that effort and landings in 2019 and future years are similar to 2017, minimal to no effects would be expected under **Alternative 2** compared to **Alternative 1**, as landings would likely remain below the new ACLs and these new ACLs would not be a limiting factor for landings by either sector. However, reducing the ACLs while not reducing fishing effort in another way (e.g., a season closure) would not address the issue reported by fishermen regarding

the health of the stock. If effort and landings in 2019 and future years are similar to 2017 and **Preferred Alternative 3** is selected, it is more likely for some negative effects to result through lost opportunities to land red grouper, as the catch levels would be set slightly lower than for **Alternative 2**. For either alternative, the in-season closure would not occur until the year following an ACL overage, meaning that any negative effects resulting from lost opportunities to land red grouper would be delayed.

4.1.5 Direct and Indirect Effects on the Administrative Environment

Setting catch levels is an administrative action and would have direct effects on the administrative environment through additional rulemaking. Specifically for red grouper, this includes setting fishing seasons, quota monitoring and enforcing fishing regulations. These activities already occur and would not constitute an additional impact or benefit. Indirect effects of setting ACLs and ACTs include actions required if the recreational sector ACL is exceeded. Although red grouper is not considered overfished at this time, further action adjusting fishing season duration or ACTs could result if the ACLs were regularly exceeded.

Other administrative duties such as quota monitoring or fishery enforcement would not be affected by any of the alternatives as these activities already occur and would not constitute an additional impact or benefit.

4.2 Cumulative Effects

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

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

2. *The impacts that are expected in that area from the proposed action* - The proposed action would modify the red grouper ACLs and ACTs. The environmental consequences of the proposed action are analyzed in detail in Section 4.1. Modifying the ACLs and ACTs should have very little effect on the physical and biological/ecological environment because the action is not expected to alter the manner in which the red grouper portion of the reef fish fishery is prosecuted and landings are already near the proposed ACLs (Sections 4.1.1 and 4.1.2). These actions would likely have minor direct and indirect on the social and economic environments in the near future (Sections 4.1.3 and 4.1.4). The reef fish fishery is a multispecies fishery where fishermen can target other species on a trip. Thus, changing fishing practices on one stock does not generally change overall fishing effort or fishing practices. The action is also not expected to adversely or beneficially significantly affect the administrative environment (Section 4.1.5).

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

Other Fishery related actions - The cumulative effects associated with modifying red grouper ACLs and ACTs were analyzed in the environmental impact statements (EISs) for Amendments 32 (GMFMC 2011b). In addition, cumulative effects relative to reef fish management have been analyzed in the EISs for Amendment 22 (GMFMC 2004b), Amendment 26 (GMFMC 2006), and Amendment 27/14 (GMFMC 2007), Amendment 29 (GMFMC 2008a), Amendment 30A (GMFMC 2008b), Amendment 30B (GMFMC 2008c), Amendment 31 (GMFMC 2009), Amendment 40 (GMFMC 2014), and Amendment 28 (GMFMC (2015)). These cumulative effects analyses are incorporated here by reference. Other pertinent actions are summarized in the history of management (Section 1.3). Currently, there are several present and RFFAs that are being considered by the Council for the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico or implemented by National Marine Fisheries Service (NMFS), which

could affect reef fish stocks. These include: a framework action to extend lower red grouper ACLs and ACTs (directly related to this action); Amendment 36B, which would further revise the red snapper and grouper-tilefish commercial (IFQ) programs; Amendment 48, which would establish status determination criteria for many reef fish stocks, including red grouper; Amendment 49, which would revise sea turtle release requirements; Amendment 50, which would establish state recreational management programs for red snapper; a generic amendment to modify charter vessel and headboat reporting requirements, and some actions to address red snapper allocation, the carryover of unharvested quota, and acceptable biological catch control rule. In addition, several framework actions are being developed to address red snapper, greater amberjack, and hogfish. Descriptions of these actions can be found on the Council's Web page at <http://gulfcouncil.org/>.

In addition, the Southeast Fisheries Science Center is currently working on SEDAR 61 (see <http://sedarweb.org/associated-projects-species/red-grouper>) that is assessing the red grouper stock. This assessment is due to be presented to the SSC in June 2019. It is likely this assessment would result in a RFFA to develop red grouper management measures in response to new information.

Non-fishery related actions - Actions affecting the reef fish fishery have been described in previous cumulative effect analyses (e.g., Amendment 40). Three important events include impacts of the *Deepwater Horizon* MC252 oil spill, the Northern Gulf Hypoxic Zone, and climate change (See Sections 3.1 and 3.2). Reef fish species are mobile and are able to avoid hypoxic conditions, so any effects from the Northern Gulf Hypoxic Zone on reef fish species are likely minimal regardless of this action, particularly red grouper that are found primarily on the west Florida Shelf. Impacts from the *Deepwater Horizon* MC252 oil spill are still being examined; however, as indicated in Section 3.2, the oil spill had some adverse effects on fish species. However, it is unlikely that the oil spill in conjunction with setting ACLs and ACTs would have any significant cumulative effect given the red grouper are not commonly found in the areas most affected by the oil spill. Because red grouper are primarily found in the eastern Gulf, oil and gas development are unlikely to affect this stock.

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

Red tide is a common occurrence in the Gulf, and when concentrations are high, can negatively affect fish populations. In 2005 and 2014, red tide events on the West Florida shelf may have

impacted gag and red grouper populations (Walter et al 2015). It has only been in the last 20 years that mortalities of higher vertebrates have been indisputably demonstrated to be due to acute red tide blooms and their brevetoxins (Landsberg et al. 2009). The extent of this event and possible effects of fish community structure has been described in Gannon et al. (2009). At this time, the adverse effects of red tide cannot be accurately predicted on the Gulf red grouper stock (Walter et al. 2015).

4. The impacts or expected impacts from these other actions - The cumulative effects from managing the reef fish fishery have been analyzed in other actions as listed in part three of this section. They include detailed analysis of the reef fish fishery, cumulative effects on non-target species, protected species, and habitats in the Gulf. In general, the effects of these actions are positive as they ultimately act to restore/maintain the stocks at a level that will allow the maximum benefits in yield and recreational fishing opportunities to be achieved. However, some short-term negative impacts on the fisheries' socioeconomic environment may occur due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized by using combinations of management measures that provide the least disruption to the fishery while holding harvest to sustainable levels.

5. The overall impact that can be expected if the individual impacts are allowed to accumulate: This action, combined with other past actions, present actions, and RFFAs, is not expected to have significant beneficial or adverse effects on the physical and biological/ecological environments because this action will only minimally affect current fishing practices (Sections 4.1.1 and 4.1.2). However, for the social and economic environments, short-term adverse effects, although minor, are likely and could result in economic losses to fishing communities (Sections 4.1.3 and 4.1.4). These short-term effects are expected to be compensated for by long-term management goals to maintain the stock at healthy levels. These effects are likely minimal as the proposed action, along with other past actions, present actions, and RFFAs, are not expected to alter the manner in which the fishery is prosecuted. Because it is unlikely there would be any changes in how the fishery is prosecuted, this action, combined with past actions, present actions, and RFFAs, is not expected to have significant adverse effects on public health or safety.

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

5.2 Problems and Objectives

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

5.3 Description of Fisheries

A description of the red grouper component of the Gulf reef fish fishery is provided in Reef Fish Amendments 38 (GMFMC 2012) and 44 (GMFMC 2017), and is incorporated herein by reference.

5.4 Impacts of Management Measures

5.4.1 Action 1: Modify Red Snapper Annual Catch Limits (ACL) and Recreational Annual Catch Targets (ACT)

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

Preferred Alternative 3 considers decreasing the current total ACL from 10.77 mp gw to 4.16 mp gw. This would reduce the commercial ACL from 8.19 mp gw to 3.16 mp gw and the commercial ACT from 7.78 mp gw to 3.00 mp gw. This would also reduce the recreational ACL from 2.58 mp gw to 1.00 mp gw and the recreational ACT from 2.37 mp gw to 0.92 mp gw. The potential economic impacts of this action are calculated for both the commercial and recreational sectors.

For the commercial sector, the economic effects expected to result from the proposed change in ACT were estimated based on an average annual ex-vessel price per pound of red grouper harvested in the Gulf. From 2013 to 2017, the average ex-vessel price is estimated at \$4.01 per pound (2017 dollars using the GDP implicit price deflator) (Gulf of Mexico 2017 Grouper-Tilefish IFQ Annual Report, SERO/LAPP-DM); this average was converted to approximately \$4.11 in October 2018 dollars using the Bureau of Labor Statistics Consumer Price Index Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm). The estimated changes in commercial landings and associated ex-vessel revenue for the proposed action are provided in Table 4.1.3.1.

These estimates capture the potential maximum reduction in ex-vessel revenues from the commercial sector and assumes that the commercial sector harvests the entire allotted quota/ACT. However, the commercial sector fell short of their ACT/quota every year from 2013-2017. Taking an average of the commercial landings from 2013-2017 (Southeast Fisheries Science Center commercial ACL dataset (accessed 10/23/18) and IFQ database (accessed 11/7/18)) and comparing that to the proposed reduction in the commercial sector ACT may provide better estimates of the change in ex-vessel revenues. In this case, the average commercial landings from 2013-2017 is 4.56 mp, and the change in landings would be roughly -1.565 million pounds under **Preferred Alternative 3**. As a result, the associated change in ex-vessel revenues for the commercial sector would be roughly -\$6.432 million (2018 dollars) under **Preferred Alternative 3**.

A reduction in red grouper harvests, if they materialize, could result in additional economic effects because of the potential effects on ex-vessel prices due to less red grouper on the markets.

The proposed decrease in commercial quota would substantially decrease the availability of annual allocation for sale.

For the recreational sector, the expected economic effects of the proposed action was measured in changes in economic value, i.e., changes in consumer surplus (CS) for anglers. The expected change in CS is based on the estimated CS per red grouper and on the change in the number of red grouper harvested. Because the value of the CS per red grouper is not known, the proxy value used in this analysis is the CS value for an additional “grouper” (not specific to the species) kept on a trip, i.e., \$46.51 (Haab et al. 2012; values updated to 2018 dollars using the Bureau of Labor Statistics Consumer Price Index Inflation Calculator, https://www.bls.gov/data/inflation_calculator.htm). After converting the recreational ACL from gutted weight to whole weight by multiplying by 1.05 (SEFSC, 2018, personal communication), an estimate of the expected changes in the number of red grouper harvested was obtained by dividing the expected change in ACT by the estimated average weight of a red grouper, 6.51 lbs ww, from 2013-2017 (SEFSC SRHS data (March 2018); MRIP Intercept data available at: https://www.st.nmfs.noaa.gov/st1/recreational/MRIP_Survey_Data/).

It is estimated that the current recreational ACL of 2.58 mp gw allows for the recreational sector to land 416,129 red grouper. The proposed reduced ACL of 1.00 mp gw under **Preferred Alternative 3** would have an equivalent 161,290 red grouper, and that is a difference of 254,839 red grouper (or approximately 0.255 million). At an average CS of \$46.51 per red grouper, that

reduction in red grouper would have an economic value of approximately \$11.853 million. However, recreational landings have not reached or exceeded the ACL. From 2013 through 2017, an annual average of approximately 1.68 mp gw (estimated 270,535 red grouper) were landed, and the range was from approximately 0.83 mp gw to 2.57 mp gw annually.

The proposed decrease in the recreational sector ACL and estimate of potential associated changes in economic values for the proposed action are provided in Table 4.1.3.2. Under **Preferred Alternative 3**, the recreational sector ACL would decrease by 1.580 mp gw, which is equivalent to 1.659 mp ww, and the associated change in recreational sector economic value would be roughly -\$11.853 million (2018 dollars). These estimates captures the potential reduction in CS for the recreational sector and assumes that the recreational sector has been harvesting the entire allotted ACL. From 2013-2017, the recreational sector exceeded the ACL in 2013 and 2015; the recreational landings in the other three years fell short of the ACL. Taking an average of the recreational landings from 2013-2017 and comparing that to the proposed reduction in the recreational sector ACL may provide better estimates of the change in CS. In this case, the average recreational landings would be 1.68 mp gw. Under **Preferred Alternative 3**, the change in landings would be roughly -0.677 mp gw, which is equivalent to -0.711 mp ww. As a result, the associated change in recreational sector economic value would be roughly -\$5.081 million (2018 dollars).

The estimated changes in economic value in this section do not include any decreases in producer surplus or net operating revenue (NOR) that would accrue to a for-hire operator.

5.5 Public and Private Costs of Regulations

Council costs of document preparation, meetings, public hearings, and information Dissemination	\$12,000
NOAA Fisheries administrative costs of document preparation, meetings and review	\$6,000
TOTAL	\$18,000

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. Council and NMFS administrative costs directly attributable to this amendment and the rulemaking process will be incurred prior to the effective date of the final rule implementing this amendment.

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is likely to result in: 1) an annual effect of \$100 million or more or adversely affect in a material way the

economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order (E.O.). Based on the information in Sections 5.4-5.5, the costs and benefits resulting from this regulatory action are not expected to meet or exceed the \$100 million threshold, and thus this action has been determined to not be economically significant for the purposes of E.O. 12866.

CHAPTER 6. REGULATORY FLEXIBILITY ANALYSIS

6.1 Introduction

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

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

6.2 Statement of the Need for, Objective of, and Legal Basis for the Proposed Action

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

6.3 Description and Estimate of the Number of Small Entities to which the Proposed Action would Apply

No federal rules have been identified that duplicate, overlap, or conflict with the proposed rule.

6.4 Description of the Projected Reporting, Record-keeping and Other Compliance Requirements of the Proposed Action

The rule concerns recreational and commercial fishing for red grouper in federal waters of the Gulf of Mexico. It directly effects both anglers (recreational fishers) and commercial fishing businesses that harvest red grouper in the Gulf EEZ and shareholders of the commercial red grouper annual quota in 2020 and years thereafter.

Anglers are not considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from for-hire fishing, private or leased vessels. Therefore, neither estimates of the number of anglers nor the impacts on them are required or provided in this analysis.

Any business that operates a commercial fishing vessel that harvests red grouper in the Gulf EEZ must have a valid Gulf reef fish permit attached to that vessel and the vessel permit must be linked to an IFQ account. Sufficient allocation of red grouper must be in the vessel's account prior to landing red grouper. Upon completion of a landing transaction, the system deducts the allocation from the vessel account. IFQ accounts can be opened and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive annual allocation from other IFQ participants.

As of November 27, 2018, 505 entities had a share of the red grouper quota. Thirty-five of the entities were affiliated with at least one other entity with a share. It is estimated that 444 unique businesses presently hold all of the red grouper shares. The maximum total shares that a business and its affiliates can legally hold is 4.331882% of the quota, and the current quota is 7,780,000 lbs gw.

From 2013 through 2017, an annual average of 376 permitted vessels had IFQ landings of red grouper and approximately 97% of them made their landings in Florida (Table 6.1). Some of the vessels have the same owners. An estimated 330 businesses own the average number of vessels that land red grouper annually. All of these businesses operate in the commercial fishing industry (NAICS code 11411), but some also in related industries, such as fish and seafood merchant wholesalers (NAICS code 424460) and fish and seafood (retail) markets (NAICS code 445220). However, all of the businesses are expected to operate primarily in the commercial fishing industry.

Table 6.1. Number of permitted vessels with IFQ landings of red grouper, 2013 – 2017.

Year	Number of Vessels	Number of FL Vessels
2013	363	356
2014	384	371
2015	376	369
2016	380	361
2017	376	368
Average	376	365

Source: NMFS SERO Gulf of Mexico G-T IFQ Annual Report 2017.

For RFA purposes only, NMFS has established a small business size standard for businesses, including their affiliated operations, whose primary industry is commercial fishing (see 50 CFR 200.2). A business primarily engaged in commercial fishing 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 \$11 million for all its affiliated operations worldwide.

Logbook data do not provide the official statistics for vessels with IFQ landings of red grouper. However, that data is used to generate preliminary estimates of the annual dockside revenues of vessels that land red grouper, which are used in turn to estimate the number of small businesses that would be directly affected by the proposed action.

Annual dockside revenues per vessel that land red grouper vary considerably. The average vessel that used bottom longline gear to harvest red grouper from 2013 through 2017 had average total annual revenue of \$309,737 (2018 \$), whereas the average total annual revenue for vessels that used other gears to harvest red grouper were considerably lower (Table 6.2).

Table 6.2. Average annual revenue (2018 \$) per vessel for vessels that reported landing red grouper, 2013 – 2017.

Year	Bottom LL	Bandit (Elec. H&L)	Hand H&L	Other
2013	\$320,301	\$116,081	\$28,286	\$12,973
2014	\$343,984	\$130,017	\$34,357	\$25,681
2015	\$326,156	\$132,213	\$36,710	\$24,474
2016	\$318,336	\$122,848	\$32,246	\$22,999
2017	\$239,911	\$112,567	\$29,890	\$15,016
Average	\$309,737	\$122,745	\$32,298	\$20,229

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 7, 2018), November 2018.

A preliminary examination of annual dockside revenues of vessels owned by the above businesses indicates the total annual revenue of each business to be less than \$11 million. Consequently, all of the businesses directly affected by the proposed action are identified as small.

6.5 Identification of All Relevant Federal Rules, which may Duplicate, Overlap or Conflict with the Proposed Action

The proposed rule (Action 1, Preferred Alternative 3) would change the red grouper commercial ACL and ACT in 2020 and years thereafter. Specifically, the ACL would be reduced from 8.19 million lbs gw to 3.16 million lbs gw, and the ACT (quota) would be reduced from 7.78 million lbs gw to 3.00 million lbs gw. That is a quota reduction of 4.78 million lbs gw, which is a 61.44% decrease.

Red grouper shares are a percentage of the quota, while allocation refers to the actual poundage that is possessed, landed, or transferred during a given calendar year. At the beginning of each year, allocation is distributed to a red grouper shareholder account, and the amount allocated to an account is based on the share percentage of the annual quota held by a shareholder.

Consequently, as a result of this action, each shareholder would receive 61.44% less allocation for their share (percentage) of the annual quota.

The maximum loss of commercial landings would be 4.78 million lbs gw. At an average dockside price of \$4.11 per lb gw, the maximum annual loss of total revenue would be approximately \$19.65 million (2018 \$). However, annual commercial landings of red grouper have been less than the quota. During the 5-year period from 2013 through 2017 annual IFQ landings ranged from approximately 3.33 million lbs gw to 5.60 million lbs gw (Table 6.3). As shown in the table, annual IFQ landings generally declined, while the quota increased.

Table 6.3. Annual IFQ landings of and quota for red grouper, 2013 – 2017.

Year	RG Landings (lbs gw)	Quota
2013	4,599,001	5,530,000
2014	5,601,905	5,630,000
2015	4,798,007	5,720,000
2016	4,497,582	7,780,000
2017	3,328,271	7,780,000
Average	4,564,953	

Source: GMFMC_CommercialACL_Summary110618.

Average annual landings total 4.56 million lbs gw. If annual landings in 2020 and years thereafter are consistent with that average, Action 1 would reduce annual commercial landings by 1,564,953 lbs gw and associated dockside revenue by approximately \$6.43 million; a 34.3% decrease. The average annual loss across 330 small businesses would be \$19,491, and across 376 vessels, it would be \$17,106. However, as described previously, not all vessels or small businesses are the same.

From 2013 through 2017, vessels that used bottom longline gear landed 65.6% of reported annual landings (Table 6.4). If that percentage of reported annual landings applies to vessels and small businesses that use bottom longline gear to harvest red grouper, they would experience the largest combined loss: approximately \$4.21 million annually.

Table 6.4. Average percentage of red grouper landings by gear and expected total loss per gear, 2013 – 2017.

Gear	Average Percentage of Landings	Less Lbs	Less Revenue (2018 \$)
Bottom Longline	65.5%	1,025,044	\$4,212,932
Bandit (Elec. H&L)	21.5%	336,465	\$1,382,871
Hand Hook-and-Line	11.0%	172,145	\$707,515
Other	2.0%	31,299	\$128,639
Total	100.0%	1,564,953	\$6,431,958

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), November 2018, for average percentage of landings by gear.

From 2013 through 2017, approximately 12.9% of the vessels that landed red grouper used bottom longline gear (Table 6.5). If the numbers of vessels that land red grouper in 2020 and beyond were consistent with the percentages of vessels by gear during that 5-year period, the average vessel would experience a loss of total annual revenue ranging from 7.3% to 28.0% (Table 6.5).

Table 6.5. Average percentage and estimates of number of vessels and average annual loss per vessel by gear, 2013 – 2017.

Gear	Percentage of Vessels	Number of Vessels	Average Loss per Vessel	Average Revenue per Vessel	Loss as Percentage of Average Total Revenue
Bottom Longline	12.9%	49	\$86,857	\$309,737	28.0%
Bandit (Elec. H&L)	41.0%	154	\$8,970	\$122,745	7.3%
Hand Hook-and-Line	35.1%	132	\$5,361	\$32,298	16.6%
Other	11.1%	42	\$3,079	\$20,229	15.2%
Total	100.0%	376			

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (October 2018), November 2018, for percentage of vessels.

The above figures presume that the average dockside price of red grouper stays at its estimated 2018 level (\$4.11); however, it is expected that the decrease in the supply of red grouper would likely increase its dockside price, which would reduce the adverse impact. Nonetheless, it would remain significant.

6.6 Significance of Economic Impacts on a Substantial Number of Small Entities

As summarized in Table 6.5, the proposed rule would have a significant economic impact on the average annual 330 commercial fishing businesses and their combined 376 federally permitted fishing vessels that harvest red grouper from the Gulf of Mexico.

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

There are two non-selected alternatives to the proposed rule. First, is the no-action alternative, which would keep the commercial quota at 7.78 million lbs gw and would have no direct adverse or beneficial economic impact. The second non-selected alternative would reduce the commercial quota to 3.32 million lbs gw and would have a smaller adverse economic impact than the selected alternative (Table 6.6). The no-action alternative would have long-term costs to small businesses because it would allow for declining status of the stock. The second non-selected alternative would have a long-term benefit to small businesses because it would improve

the stock; however, that long-term benefit may not be as large as it would be under the selected alternative.

Table 6.6. Comparison of alternatives.

Alternative	Total Combined Losses to Small Businesses
Selected	\$6,431,958
First Non-Selected (No-Action)	\$0
Second Non-Selected	\$5,116,758

CHAPTER 7. AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED

The following have been or will be consulted:

National Marine Fisheries Service

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

NOAA General Counsel

Environmental Protection Agency

United States Coast Guard

Texas Parks and Wildlife Department

Alabama Department of Conservation and Natural Resources/Marine Resources Division

Louisiana Department of Wildlife and Fisheries

Mississippi Department of Marine Resources

Florida Fish and Wildlife Conservation Commission

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

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APPENDIX A: PUBLIC COMMENTS RECEIVED

APPENDIX B: 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 (FMP) in federal waters of the exclusive economic zone. However, management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making include the Endangered Species Act (Section 3.2.3), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Section 3.4). Other applicable laws are summarized below.

Administrative Procedure Act

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

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 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 Magnuson-Stevens 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.

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 on listed on, or eligible for listing on, the National Register of Historic Places and aims to minimize damage to such places.

Historical research indicates that over 2,000 ships have sunk on the Federal Outer Continental Shelf between 1625 and 1951; thousands more have sunk closer to shore in state waters during the same period. Only a handful of these have been scientifically excavated by archaeologists for the benefit of generations to come. Further information can be found at <http://www.boem.gov/Environmental-Stewardship/Archaeology/Shipwrecks.aspx>

The proposed action does not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places nor is it expected to cause loss or destruction of significant scientific, cultural, or historical resources. In the Gulf of Mexico (Gulf), the *U.S.S. Hatteras*, located in federal waters off Texas, is listed in the National Register of Historic Places. Fishing activity already occurs near this site, but the proposed action would have no additional adverse impacts on listed historic resources, nor would they alter any regulations intended to protect them.

Executive Orders (E.O.)

E.O. 12630: Takings

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

E.O. 12962: Recreational Fisheries

This E.O. requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it establishes a seven-member National Recreational Fisheries Coordination Council (NRFCC) responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The NRFCC also is responsible for developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the E.O. requires NMFS and the United States Fish and Wildlife Service 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. 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 greater amberjack. 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. The existing areas are entirely within federal waters of the Gulf. They do not affect any areas reserved by federal, state, territorial, tribal or local jurisdictions.

GMFMC. 2005. Final Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp, Red Drum, Reef Fish, Coastal migratory pelagics in the Gulf of Mexico and South Atlantic, Stone crab, Spiny Lobster, and Coral and Coral Reefs of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida. 104 pp.

http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf