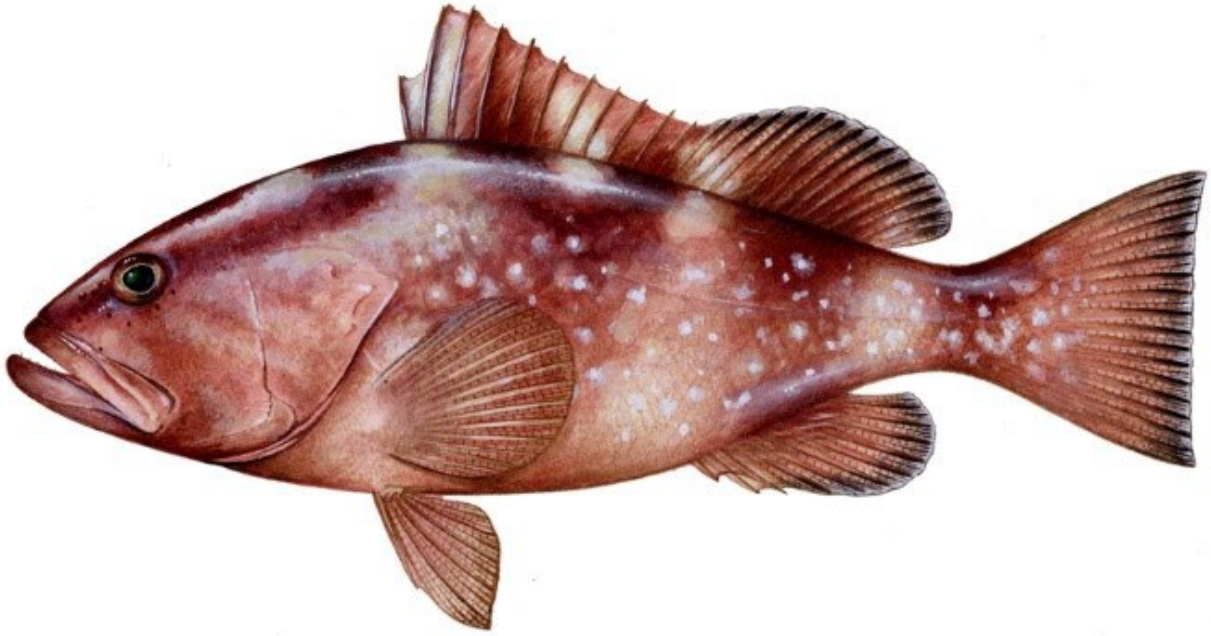
Amendment 62: Modifications to Gulf Red Grouper Management Measures



Amendment to the Fishery Management Plan for Reef Fish Resources in the Gulf

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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 measures
APAIS	Access Point Angler Intercept Survey
BiOp	biological opinion
CFpA	net cash flow per angler
CHTS	Coastal Household Telephone Survey
CS	consumer surplus
Council	Gulf Council
Councils	Gulf and South Atlantic Fishery Management Councils
DPS	distinct population segments
E.O.	Executive Order
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	Essential Fish Habitat
EIS	economic impact statement
ESA	Endangered Species Act
FES	Fishing Effort Survey
FHS	for-hire survey
FL	fork length
FMP	Fishery Management Plan
FMSY	maximum sustainable yield
FWC	Florida Fish and Wildlife Conservation Commission
GDP	gross domestic product
GFMC	Gulf Fishery Management Council
GMFMC	Gulf of Mexico Fishery Management Council
GRFS	Gulf Reef Fish Survey
GSAD	Gulf and South Atlantic Dealers
GT	grouper-tilefish
Gulf	Gulf of America (Formerly Gulf of Mexico)
HAPC	habitat areas of particular concern
IFQ	individual fishing quota
LA Creel	Louisiana Department of Wildlife and Fisheries' recreational creel survey
LAPP	Limited Access Privilege Program
LQ	local quotient
MFMT	maximum fishing mortality threshold

MMPA	Marine Mammals Protection Act
MRFSS	Marine Recreational Fishery Statistics Survey
MRIP	Marine Recreational Information Program
MSST	minimum stock size threshold
MSY	maximum sustainable yield
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OST	Office of Science and Technology
Other SWG	Other Shallow-water Grouper complex
PS	producer surplus
RG	red grouper
RQ	regional quotient
Reef Fish FMP	Fishery Management Plan for the Reef Fish Resources in the Gulf
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SPR	spawning potential ratio
SRFS	State Reef Fish Survey
SRHS	Southeast Regional Headboat Survey
SSB	spawning stock biomass
SSC	Scientific and Statistical Committee
SSRG	Social Scientists Research Group
SWG	shallow-water grouper
Secretary	Secretary of Commerce
South Atlantic Council	South Atlantic Fishery Management Council
TAC	total allowable catch
TL	total length
TNR	trip net revenue
TPWD	Texas Parks and Wildlife Department
USCG	United States Coast Guard
VMS	vessel monitoring system
WTP	willingness-to-pay
gw	gutted weight
mp	million pounds
ww	whole weight

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CHAPTER 1. INTRODUCTION

1.1 Background

Amendment 62 to the Fishery Management Plan for the Reef Fish Resources of the Gulf (Reef Fish FMP) is being developed by the Gulf Council (Council) to address the results of the Southeast Data, Assessment, and Review (SEDAR) 88 (2025) stock assessment for Gulf of America (Gulf) red grouper and subsequent overfishing limit (OFL) and acceptable biological catch (ABC) recommendations from the Council's Scientific and Statistical Committee (SSC). Amendment 62 considers revising the red grouper allocation between the commercial and recreational sectors, the OFL, ABC, the total and sector annual catch limits (ACL), and sector annual catch targets (ACT). In addition, Amendment 62 considers eliminating the shallow-water grouper (SWG) February-March recreational closure in federal waters seaward of the 20-fathom boundary.

Recent Gulf Red Grouper Stock Assessments

A stock assessment was recently completed for red grouper (SEDAR 88) and reviewed by the SSC. Based on its review of the assessment, the SSC determined that the stock was not overfished or undergoing overfishing and recommended increases to the OFL and ABC relative to the current harvest limits. The stock assessment results indicated an increase in the red grouper stock size relative to the previous assessment. The primary driver of this outcome was the increase in the estimated natural mortality of red grouper relative to the previous stock assessment. In SEDAR 88, the estimate for natural mortality (M) was updated using Hamel and Cope 2022[1] and increased (from 0.14 to 0.186) based on the estimated maximum age of 29 years. The modification of M resulted in an overall increase in spawning output, fraction of the unfished population estimate, and age-0 recruits relative to SEDAR 61. Management changes implemented in 2022 (GMFMC 2021) lowered catch levels and favorable recruitment in recent years likely also contributed to increased harvest limits in the current stock assessment. At its February 2025 meeting, the SSC concluded that the SEDAR 88 stock assessment base model, using an F_{MSY} proxy of $F_{40\%SPR}$, was consistent with the best scientific information available and suitable for informing fisheries management. The SSC acknowledged that red grouper exhibits a variety of biological considerations that need to be accounted for when recommending catch advice. For example, it undergoes ontogenetic spatial shifts from nearshore shallow habitats to offshore deep-water habitats; large females transition to male based on environmental and social cues that are not completely understood; and its propensity to create unique habitats in the benthic substrate and territorial behavior may generate a carrying capacity issue that limits available space for other red grouper. It is also unclear if this density-dependent compensatory recruitment response is released during red tide events, which may explain the stock's overall resilience to these episodic mortality events. Ultimately, the SSC determined that accounting for the complex life history of red grouper was most imperative when recommending the OFL. The SSC discussed catch advice recommendations and focused on whether the proposed increases in

[1] https://www.sciencedirect.com/science/article/abs/pii/S0165783622002545

certain scenarios would be sustainable long-term, with focus on the life history characterization of red grouper. The SSC expressed concern that the model may be overcompensating for some model adjustment or combination of inputs, but also considered that output as a realized reflection of stock resilience to episodic mortality. The SSC recalled its past history of using the MSY proxy of $F_{40\%SPR}$ for hermaphroditic groupers like gag, scamp and yellowmouth grouper, and yellowedge grouper. Given that history of decision-making, the SSC concluded that an $F_{40\%SPR}$ as the proxy for F_{MSY} was appropriate. The SSC set the Gulf red grouper OFL and ABC using $F_{40\%SPR}$ based on the SEDAR 88 base model projections and a constant catch scenario for the fishing years 2027 – 2029. The OFL was set at 11.28 million pounds gutted weight (mp gw), and the ABC at 8.78 mp gw. A summary of the Florida State Reef Fish Survey (SRFS) Run estimates relative to status determination criteria is shown in Table 1.1.1.

At its April 2025 meeting, the Council requested an emergency rule on social and economic grounds be initiated by NMFS to increase red grouper catch limits, based on the results of the SEDAR 88 stock assessment, beginning in the 2025 fishing season. In the catch projections reviewed by the SSC in February 2025, the 2025 and 2026 fishing years were modeled as interim years and informed by estimates of landings from previous years. To meet the needs of this request, the SSC met in May 2025 to review updated projections, which now begin in 2025 instead of 2027. The SSC reviewed revised projections and recommended a revised OFL equal to 10.64 mp gw and an ABC equal to 8.28 mp gw. This OFL and ABC are the basis for the action alternatives in this amendment.

Table 1.1.1. Summary of stock status determination benchmarks and reference points for the Gulf red grouper stock assessment using an F_{MSY} proxy of $F_{40\%SPR}$ and recreational landings in SRFS. Spawning stock biomass (SSB) is in relative number of eggs.

Criteria	Definition	Value
Base M	Target M for fully selected ages in the Lorenzen (2000) scaling	0.186
Steepness	Steepness of the Beverton-Holt stock-recruit relationship	0.661
Unfished Recruitment (R0)	Unfished recruitment (1,000s)	44,927
Generation Time	Fecundity-weighted mean age	9.78
Unfished SSB (SSB_0)	Unfished spawning stock biomass (Relative number of eggs)	1,618,300
	Mortality Rate Criteria	
$F_{MSYproxy}$	Equilibrium F that achieves SPR40%	0.156
MFMT	$F_{MSYproxy}$	0.156
$F_{Current}$	Geometric mean of the last 3 years of the assessment (F2020-2022)	0.073
$F_{Current}$/MFMT	Current stock status based on MFMT	0.473
	Biomass Criteria	
$SSB_{MSYproxy}$	Equilibrium SSB at $F_{SPR40\%}$	504,435
MSST	0.5 * $SSB_{SPR40\%}$	252,218
$SSB_{Current}$	SSB in 2022	660,063
$SSB_{Current}/SSB_{FMSY\ proxy}$	Current stock status based on $SSB_{SPR40\%}$ (Equilibrium)	1.31
$SSB_{Current}$/MSST	Current stock status based on MSST	2.62
$SSB_{Current}/SSB0$	SSB ratio in 2022	0.41

Current Management and Landings

Recent landings of red grouper are shown in Table 1.1.2. Landings are shown by sector, with recreational landings shown in Marine Recreational Information Program Fishing Effort Survey (MRIP-FES) units,[2] and SRFS units. Both MRIP-FES units and SRFS units are provided, as the current sector allocations are based on historical landings in MRIP-FES units, and the Council is currently considering modifying sector allocations based on historical landings in SRFS units. The SEDAR 88 stock assessment used SRFS recreational data in the stock assessment and is the basis of catch limit recommendations in this document.

The SRFS and MRIP-FES informed catch estimates differ in how landings data in southwest Florida (i.e., Area D in the Western Keys [Figure 1.1.1.]) are attributed. Under the MRIP-FES program, this area is combined with Area E (Figure 1.1.1) and these landings have historically been attributed to the South Atlantic Council's jurisdiction. Under the SRFS program, Areas D

[2] Although MRIP-CHTS, MRIP-FES, and Florida SRFS generate estimates measured in pounds of fish, these estimates are not directly comparable, as described above. The references to "MRIP-CHTS units," "MRIP-FES units," and "SRFS units" signify that the estimates use different scales.

and E are split to provide additional geographic resolution and the landings in Area D are not attributed to the Gulf. Headboat landings in Area D have historically been attributed to the Gulf and this practice continues. Likewise, the federal charter for-hire landings in this area will continue to be combined with Area E and attributed to the South Atlantic Council's jurisdiction. A summary of this information is provided in Table 1.1.3.

Commercial red grouper landings have ranged from about 2.04 (2019) to 7.27 (1989) mp gw between 1986 and 2021. Commercial landings since implementation of the individual fishing quota (IFQ) program peeked at 5.6 mp gw in 2014, and landing have decreased since. Recreational landings (in MRIP-FES) peaked at nearly 8.0 mp gw in 2004 and have been in the range of 1.0 to 3.0 mp gw since 2014. Importantly, no recreational shore mode landings are included for red grouper in either the SEDAR 88 stock assessment or the landings in Table 1.1.2, because red grouper are rarely landed from shore.

Table 1.1.2. Commercial and recreational landings (in SRFS and MRIP-FES) for red grouper in pounds gutted weight (gw). Note: SRFS estimates prior to 2015 were calibrated to MRIP-FES.

Year	Commercial	MRIP-FES	SRFS
1986	6,285,679	3,348,897	2,315,259
1987	6,623,879	2,495,130	1,718,827
1988	4,608,010	4,652,818	3,094,220
1989	7,448,163	7,632,792	4,995,344
1990	4,761,530	3,565,320	2,480,918
1991	5,053,153	3,755,576	2,513,832
1992	4,441,443	6,046,978	4,098,128
1993	6,303,122	4,057,934	2,670,678
1994	4,865,022	3,827,267	2,576,400
1995	4,641,651	3,496,544	2,459,489
1996	4,324,410	910,313	673,218
1997	4,665,224	1,142,958	792,785
1998	3,702,575	1,513,890	1,046,353
1999	5,796,389	3,428,553	2,294,324
2000	5,684,097	4,242,231	3,019,957
2001	5,717,869	2,435,456	1,687,590
2002	5,759,433	3,172,348	2,131,719
2003	4,816,186	2,201,496	1,517,625
2004	5,634,787	7,983,239	5,310,661
2005	5,376,768	3,081,979	2,181,098
2006	4,980,916	2,655,065	1,799,940
2007	3,582,409	2,031,867	1,359,322
2008	4,710,801	1,604,398	1,144,493
2009	3,691,124	1,600,063	1,102,783
2010	2,910,970	1,963,762	1,381,781
2011	4,783,668	1,534,113	1,081,370
2012	5,219,133	4,131,722	2,877,227
2013	4,599,001	4,990,302	3,503,521
2014	5,601,144	5,368,575	3,657,396
2015	4,797,159	3,790,614	2,620,244
2016	4,497,582	2,632,907	1,420,093
2017	3,328,271	1,692,513	933,013
2018	2,363,280	2,053,526	1,199,450
2019	2,037,046	1,638,076	1,108,513
2020	2,368,322	2,078,904	1,891,552
2021	2,950,691	2,293,964	2,642,036
2022	2,428,938	2,792,851	1,610,295
2023	2,498,024	2,525,326	1,557,718
2024	2,527,545	2,267,459	1,201,860

Source: Commercial landings from SEFSC Commercial ACL Data (March 2025) and SERO Catch Share Database (March 2025); recreational landings from SEFSC Recreational MRIP-FES ACL File, FWC SRFS (September 2025) and SEDAR 88 WP-17, SRFS Calibrated Time Series.

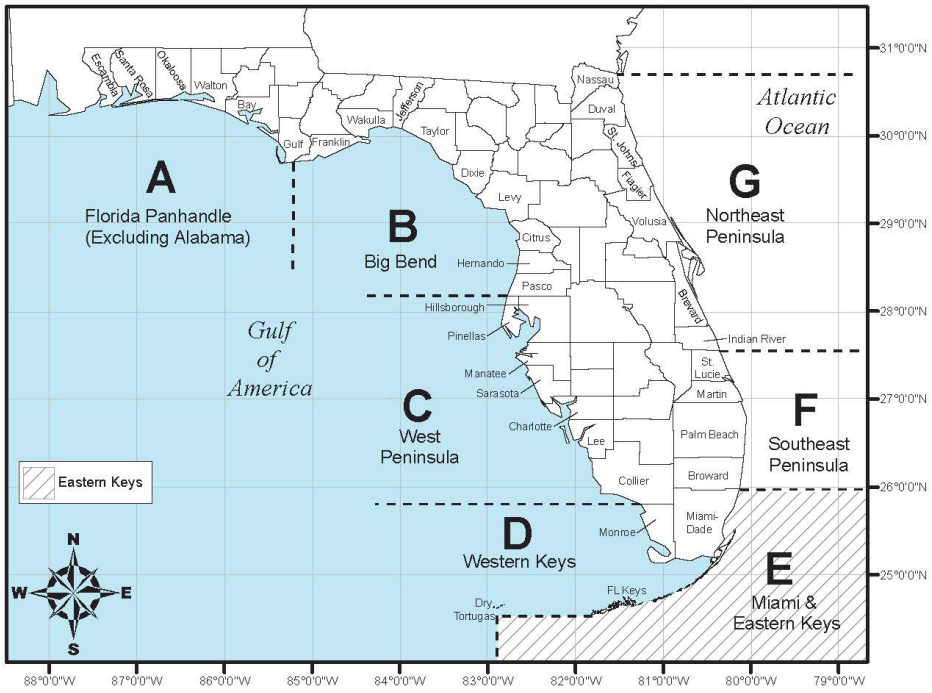

Figure 1.1.1. Map of survey areas used by Florida's SRFS program used to survey the offshore private recreational component of red grouper catch and effort.

Table 1.1.3. A description of how the recreational landings from southwest Florida (i.e., Area D) are attributed to the Gulf and South Atlantic Councils.

Mode	Survey	Council
Offshore private vessel	SRFS	Gulf
Federal charter for-hire	MRIP	South Atlantic
Headboat	SRHS	Gulf

Red Grouper Sector Allocations

The current allocation between the commercial and recreational sector is 59.3% and 40.7% and most recently modified by Amendment 53 to the Reef Fish FMP that was completed in 2021 (GMFMC 2021). For grouper species in aggregate, an initial allocation between the commercial and recreational sectors was established in 1990 through Amendment 1 to the Reef Fish FMP (GMFMC 1989). The amendment specified a framework procedure for setting the total allowable catch (TAC) to allow for annual management changes. A part of that specification was to establish species' allocations, which were based on the percentage of total landings during the reference period of 1979-1987. For grouper in aggregate, the commercial sector landed 65% and the recreational sector landed 35% over the reference period.

Noting that allocation procedures should be regularly reviewed, the Council examined the red grouper allocation in 2007. Because grouper was not identified to the species level in commercial landings until 1986, the new red grouper allocation was based on the percentage of average red grouper landings from 1986 through 2005. This resulted in a 76% commercial: 24%

recreational allocation, which was set through the final rule for Amendment 30B to the Reef Fish FMP (GMFMC 2008). This was considered an interim allocation that would be in effect until the Council could implement a separate amendment to allocate grouper resources between recreational and commercial sectors. The Council established the Ad Hoc Allocation Committee composed of Council members to assist in drafting an allocation policy that would streamline future allocation decisions. The Council's allocation policy was adopted in early 2009 and provided principles, guidelines, and suggested methods for allocating fisheries resources between or within sectors.[3] In February 2012, the National Marine Fisheries Service (NMFS) released a technical memorandum on the principles and practice of allocating fishery harvests, which provides additional guidance to the Council (Plummer et al. 2012). Additionally, NMFS and the Council Coordination Committee released further guidance through an Allocation Review Policy (01-119)[4] and two procedural directives (01-119-01 and 01-119-02[5]) in 2016. These documents were developed to provide relevant information for allocation decision-making as well as what factors should be considered. In April 2019, the Council selected time-based criteria as its primary allocation review trigger bolstered by general monitoring of indicators for reallocation justification through the Council's general deliberative process including public input channels as a secondary trigger.[6] In addition, the policy notes that the Council may initiate supplementary allocation reviews at any time; for example, when new information, e.g., data recalibration, is made available.

The review of the recreational and commercial allocations of red grouper has a time interval of seven years and was originally scheduled for April of 2026. However, in response to a change in recreational data used in SEDAR 61, the Council conducted an allocation review through the development of Amendment 53 to the Reef Fish FMP (GMFMC 2021), which allocated 59.3% of the stock ACL to the commercial sector, and 40.7% of the stock ACL to the recreational sector. This allocation was based on the same years used to specify the allocation in Amendment 30B to the Reef Fish FMP (GMFMC 2008) but with the updated recreational landings estimates.

In 2024, the Council revised its allocation review time triggers, setting the red grouper review for 2029.[7] However, the results of a new stock assessment, SEDAR 88, are now available. As explained in more detail below, SEDAR 88 uses new recreational data. Therefore, the Council has determined that it is appropriate to conduct another allocation review through the development of this amendment.

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[3] The Council's allocation policy is located at https://gulfcouncil.org/uploads/2025/02/GMFMC-SOPPs-Fishery-Allocation-Policy.pdf.
[4] Allocation Review Policy 01-119 is located at https://media.fisheries.noaa.gov/dam-migration/01-119.pdf
[5] Procedural Directive 01-119-01 is located at https://gulfcouncil.org/uploads/2025/02/Allocation-Trigger-01-119-01.pdf; Procedural Directive 01-119-02 is located at https://gulfcouncil.org/uploads/2025/02/Allocation-Factors-01-119-02.pdf.
[6] Initial letter is located at https://gulfcouncil.org/uploads/2025/02/Allocation-Review-Policy.pdf.
[7] This updated schedule is located at https://gulfcouncil.org/uploads/2025/02/7178-Updated-Allocation-Review-Schedule.pdf

Commercial Sector

Commercial harvest of red grouper has been managed under an IFQ program since 2010 (GMFMC 2008). Anyone commercially fishing for red grouper must possess a commercial reef fish permit and red grouper allocation under the IFQ program. IFQ allocation is determined at the beginning of each calendar year by multiplying a shareholder's IFQ red grouper share (represented as a percentage of the total commercial quota) times the commercial quota for red grouper. IFQ allocation may be transferred among eligible IFQ participants. The IFQ allocation may be increased during a calendar year but may not be decreased as allocation is initially distributed. The commercial ACT, or quota, is set at 5% below the ACL. The difference between the commercial ACL and quota allows for multi-use allocation, as described below. The IFQ program acts as the accountability measure (AM) for the commercial red grouper portion of the reef fish fishery.

Red grouper multi-use allocation

At the time the commercial quota for red grouper is distributed to IFQ shareholders, a percentage of each shareholder's initial red grouper allocation is converted to red grouper multi-use allocation. This percentage is by a formula based on the red grouper and gag ACLs and quotas each year (See Section 2.1). Red grouper multi-use allocation may be used to possess, land, or sell either red grouper or gag under certain conditions. Red grouper multi-use allocation can only be used to possess, land, or sell red grouper after an IFQ account holder's (shareholder or associated vessel accounts) red grouper allocation has been landed and sold, or transferred; and to possess, land, or sell gag, only after both gag and gag multi-use allocation have been landed and sold, or transferred from all the IFQ account holder's accounts. However, if gag is under a rebuilding plan, the percentage of red grouper multi-use allocation is equal to zero. Gag is currently under a rebuilding plan, and thus red grouper multi-use allocation is currently set to zero.

Gag multi-use Allocation

At the time the commercial quota for gag is distributed to IFQ shareholders, a percentage of each shareholder's initial gag allocation is converted to gag multi-use allocation. This percentage is determined by a formula based on the gag and red grouper ACLs and quotas in a given year (See Section 2.1). Gag multi-use allocation may be used to possess, land, or sell either gag or red grouper under certain conditions. Gag multi-use allocation can only be used to possess, land, or sell gag after an IFQ account holder's (shareholder or associated vessel accounts) gag allocation has been landed and sold, or transferred; and to possess, land, or sell red grouper, only after both red grouper and red grouper multi-use allocation have been landed and sold, or transferred from all the IFQ account holder's accounts. However, if red grouper is under a rebuilding plan, the percentage of gag multi-use allocation is equal to zero. Based on the results of the SEDAR 88 stock assessment, landing red grouper would be permissible in the gag multi-use allocation share category.

Recreational Sector

Both in-season and post-season AMs apply to harvest by the recreational sector. The in-season AM for red grouper requires NMFS to close the recreational sector when red grouper landings reach or are projected to reach the recreational ACL. If landings exceed the red grouper ACL in a fishing year, the post-season AM requires NMFS to shorten the duration of the following fishing year by the amount necessary to ensure landings do not exceed the ACT, unless NMFS determines that managing to the ACT in the following year is unnecessary. If red grouper is overfished and landings exceed the sector ACL, the ACL and ACT must be reduced in the following year by the amount of the previous year's overage.

Since 2010, the recreational sector season triggered the in-season closure AM due to a NMFS projection that the recreational ACL was reached or was projected to be reached (2014, 2015, 2021, 2022, 2023, 2024). In four of those years, the recreational ACL was still exceeded, resulting in implementation of the post-season AM in the following year (2021, 2022, 2023, 2024[8]) to shorten the red grouper season as required.

In addition, recreational harvest of red grouper is prohibited seaward of the 20-fathom depth contour in the Gulf from February 1 through March 31 each year[9]. This time area closure was developed in Amendment 30B to the Reef Fish FMP (GMFMC 2008) and implemented in 2009 as a conservation measure for SWG species (gag, red, black, scamp, yellowfin, and yellowmouth groupers) during the spring spawning season. However, after 2025, only red grouper is expected to remain open to recreational harvest during this period. Gag is already subject to a season closure that opens September 1 and closes when the allowable harvest has been met. The remaining species are managed under the Other SWG complex. The Council recently transmitted a framework action (GFMC 2025) to modify management measures for the Other SWG complex including the establishment of a recreational fixed closed season that prohibits recreational harvest from January 1 through June 30. The Council has received public input that 20-fathom closure has limited conservation benefit and imposes a burden on recreational anglers. As a result, Council is considering eliminating this time-area closure in this document.

Florida Gulf Reef Fish Survey (GRFS)/State Reef Fish Survey (SRFS)

In 2015, the State of Florida formally created GRFS to monitor private angling landings and discards of red snapper, red grouper, and several other species harvested in state and federal waters in the Gulf. In 2020, that survey was expanded statewide and renamed SRFS, and additional species were added.[10] SRFS was created to be compatible with MRIP-CHTS; however, calibrated historical landings for SRFS are somewhat larger for the recreational sector than that estimated by MRIP-CHTS, but lower than estimated by MRIP-FES. SRFS reports

[8] Although a closure was triggered for the 2025 fishing year due to an overage of the recreational ACL in 2024, NMFS implemented an emergency rule (90 FR 37804) that obviated the need for this closure.
[9] This closure occurs in the portion of the Gulf EEZ seaward of coordinates defined in the Federal regulations at paragraph (d) of § 622.34, Seasonal and area closures designed to protect Gulf reef fish.
[10] https://myfwc.com/research/saltwater/fishstats/srfs/program/

landings and discards monthly in numbers, with a conversion to weight based on that used by MRIP. SRFS uses a combination of dockside intercepts from SRFS and APAIS to estimate catch-per-unit-effort from private recreational vessels. To obtain complete estimates of recreational catch for stock assessment, SRFS private recreational landings and discard estimates have to be combined with recreational shore and charter for-hire catch informed by MRIP-FES, as well as headboat catch informed by the Southeast Region Headboat Survey (SRHS). Thus, when "SRFS" is referred to further in this document with respect to management of the red grouper stock and SEDAR 88, it encompasses all of these sources of data combined. SRFS/GRFS has only been running since 2015, so the time series of private recreational landings/discards used in SEDAR 88 and in this report are MRIP-FES landings/discards converted to SRFS currency based on a ratio calculated using overlapping years of the two surveys (2015-2019) (Cross et al. 2020).

1.2 Purpose and Need

The purpose of this action is to modify the catch limits and sector allocations of Gulf red grouper based on the SEDAR 88 stock assessment and through use of private recreational landings data from Florida's State Reef Fish Survey, and to consider eliminating the recreational closed season for SWG in federal waters seaward of the 20-fathom boundary.

The need for this action is to consider new stock assessment advice and Florida State Reef Fish Survey landings data that allow increases in catch limits and fair and equitable modifications in allocations, thereby providing economic benefits to the commercial Gulf red grouper sector and additional fishing opportunities to the recreational Gulf red grouper sector. Due to the healthy state of the red grouper stock and other ongoing management changes to SWG species, the seasonal closure for the recreational sector has limited conservation value and can be eliminated to alleviate overly burdensome restrictions on recreational anglers.

1.3 History of Management

The following summary describes management actions that affect the management of red grouper in the Reef Fish FMP. More information on the Reef Fish FMP can be obtained from the Council.[11] A history of red grouper management through 2019 is presented in Reef Fish Amendment 53.[12]

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 ww commercial quota for grouper, with the commercial quota divided into a 9.2 mp ww shallow-water grouper quota and a 1.8 mp ww deep-water grouper quota; and defined shallow-water grouper as black grouper, gag, red grouper, Nassau grouper, yellowfin grouper, yellowmouth grouper, rock hind, red hind, speckled hind, and scamp; and defined deep-water grouper as misty

[11] http://www.gulfcouncil.org/fishery_management_plans/index.php.
[12] https://gulfcouncil.org/wp-content/uploads/B-5d-RF-AM-53-Red-Grouper_6_16_2021.pdf

grouper, snowy grouper, warsaw grouper, and yellowedge grouper. The amendment also allowed a two-day possession limit for charter vessels and headboats on trips that extended beyond 24 hours, provided the vessel has two licensed operators aboard as required by the United States Coast Guard (USCG), and each passenger can provide a receipt to verify the length of the trip. In addition, the amendment limited fishermen fishing under a bag limit 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 limited the retention of reef fish captured incidentally in other longline operations (e.g., shark) 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; limited retention of reef fish caught in entangling nets for other fisheries 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 (GMFMC 1989).

Amendment 30B was implemented in May 2009. It set an interim allocation of red grouper between the recreational and commercial sectors; made adjustments to the red grouper total allowable catch (TAC); established ACLs and AMs for the commercial and recreational red grouper sectors and the commercial aggregate shallow-water grouper fishery; adjusted recreational grouper bag limits and seasons, including a recreational closed season for shallow-water grouper from February 1 through March 31; 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 marine protected areas; 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 (GMFMC 2008a).

Amendment 29 was implemented in January 2010 and established an IFQ program for the commercial harvest of grouper and tilefish species in the reef fish fishery (GMFMC 2008b).

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 (GMFMC 2011a).

Amendment 32 was implemented in March 2012. It set the red grouper commercial ACL at 6.03 mp gw and the recreational ACL at 1.90 mp gw; 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 (GMFMC 2011b).

A **December 2012 framework action**, implemented in 2013, modified the February 1 through March 31 recreational closed season on shallow-water grouper in federal waters to eliminate the closure in federal waters shoreward of the 20 fathom boundary.

An **emergency rule**, implemented in May 2019, reduced the red grouper commercial and recreational ACLs and ACTs consistent with a stock ACL of 4.16 mp gw, to provide a temporary reduction in harvest levels while a framework action was developed to reduce catch limits on a long-term basis. The commercial ACL is 3.16 mp gw; the commercial quota is 3.00 mp gw. The recreational ACL is 1.00 mp gw; the recreational ACT is 0.92 mp gw (NMFS 2019).

An **April 2019 framework action**, implemented in October 2019, reduced the catch limits for red grouper consistent with the May 2019 emergency rule (GMFMC 2019).

Amendment 53 modified the commercial and recreational sector allocations of red grouper to 59.3% and 40.7%, respectively, based on landings from 1986-2005 in MRIP-FES units. It will also set the OFL at 4.66 mp gw, the ABC at 4.26 mp gw, and the total ACL at 4.26 mp gw. The commercial ACL will be 2.53 mp gw; the recreational ACL will be 1.73 mp gw. The commercial ACL/ACT buffer will be retained at 5%; the recreational ACL/ACT buffer will increase from 8% to 9%. The commercial ACT will be 2.40 mp gw; the recreational ACT will be 1.57 mp gw (GMFMC 2021).

A **November 2021 framework action**, implemented in August 2022, increased red grouper catch limits based on a new mean weight adjustment methodology for recreationally caught grouper. The new OFL was set at 5.99 mp gw, the ABC at 4.96 mp gw, the stock ACL at 4.96 mp gw, the commercial ACL/ACT at 2.94/2.79 mp gw, and the recreational ACL/ACT at 2.02/1.84 mp gw.

An **emergency rule**, implemented in August 2025, increased the red grouper OFL to 10.64 mp gw, ABC to 8.28 mp gw, and the stock ACL to 7.45 mp gw, which is 90% of the ABC. The commercial ACL and quota are 4.42 mp gw and 4.20 mp gw, respectively, and the commercial ACL and ACT are 3.03 mp gw and 2.76 mp gw, respectively. This allows for a temporary increase in harvest levels while an amendment is developed to increase catch limits on a long-term basis (NOAA 2025).

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1: Modification of Gulf of America (Gulf) Red Grouper Overfishing Limit (OFL), Acceptable Biological Catch (ABC), and Total Annual Catch Limit (ACL)

Alternative 1: No Action. Maintain the current maximum sustainable yield (MSY) proxy, OFL, ABC, and total ACL for red grouper. The MSY proxy for red grouper is the yield when fishing at a 30% spawning potential ratio ($F_{30\%SPR}$). The total ACL is set equal to the ABC. The OFL, ABC, and total ACL in millions of pounds (mp) gutted weight (gw) are calculated using, in part, recreational landings data from the Marine Recreational Information Program's Fishing Effort Survey (MRIP-FES), and are as follows:

OFL (MRIP-FES)	5.99 mp gw
ABC (MRIP-FES)	4.96 mp gw
Total ACL (MRIP-FES)	4.96 mp gw

Alternative 2: Revise the MSY proxy and catch limits for red grouper based on the results of Southeast Data, Assessment, and Review (SEDAR) 88, and recommendations of the Gulf Council's Scientific and Statistical Committee (SSC) using a three-year constant-catch scenario. The OFL and ABC for red grouper would be set based on an MSY proxy of the yield when fishing at $F_{40\%SPR}$, and the yield when fishing at 75% of the F_{MSY} proxy, respectively. The OFL and ABC are derived, in part, using the State of Florida's State Reef Fish Survey (SRFS) data for private recreational vessels. The total ACL is set equal to the ABC. The OFL, ABC, and total ACL in mp gw are as follows:

OFL	10.64 mp gw
ABC	8.28 mp gw
Total ACL	8.28 mp gw

Preferred Alternative 3: Revise the MSY proxy and catch limits for red grouper based on the results of SEDAR 88, and recommendations of the Gulf Council's SSC using a three-year constant-catch scenario. The OFL and ABC for red grouper would be set based on an MSY proxy of the yield when fishing at $F_{40\%SPR}$, and the yield when fishing at 75% of the F_{MSY} proxy, respectively. The OFL and ABC are derived, in part, using SRFS data for private recreational vessels. The total ACL is set at 80% of the ABC in 2026, 90% of the ABC in 2027, and 100% of the ABC in 2028 and subsequent years. The OFL, ABC, and total ACL in mp gw are as follows:

OFL	10.64 mp gw
ABC	8.28 mp gw
Total ACL (in 2026)	6.62 mp gw
Total ACL (in 2027)	7.45 mp gw
Total ACL (in 2028+)	8.28 mp gw

Note: *Alternative 1 is not a viable alternative because the catch limits were set using MRIP-FES recreational data, and SRFS recreational data are recognized as consistent with the best scientific information available for red grouper.*

Discussion:

Gulf red grouper was assessed in SEDAR 88 (2025), using data through 2022, and was estimated to be healthy as of that terminal year of data after review by the SSC. The SSC evaluated the red grouper stock assessment and found the analyses to be consistent with the best scientific information available at its February 2025 meeting. At its May 2025 meeting, the SSC recommended that the OFL and ABC for red grouper for 2027 – 2029 and subsequent years at 10.64 mp gw and 8.28 mp gw, respectively. As part of its discussions, the SSC evaluated the MSY proxy for red grouper, considerate of its life history characteristics. Red grouper is a protogynous hermaphrodite, in that it is born female and can change sex to male later in life. Consistent with the guidance provided by Harford et al. (2019), especially for species which change sex, and considerate of red grouper's historically demonstrated vulnerability to red tide mortality (SEDAR 88 2025), the SSC recommended a revision to the MSY proxy for red grouper. The current proxy value is the yield when fishing at $F_{30\%SPR}$, which based on the aforementioned guidance, the SSC thought could result in too high a likelihood of overharvest when combined with other factors like hermaphroditism and episodic red tide mortality. To better ensure the continued biological health of the fishery, the SSC recommended increasing the proxy used to the yield when fishing at $F_{40\%SPR}$, which would be expected to result in a more robust spawning stock biomass over time.

Alternative 1 (No Action) would maintain the current MSY proxy of $F_{30\%SPR}$, which corresponds to the current OFL of 5.99 mp gw and ABC if 4.96 mp gw as established in the November 2021 Framework Action under the Fishery Management Plan for the Reef Fish Resources of the Gulf (Reef Fish FMP; GMFMC 2022). These current catch limits were informed by the 2021 Interim Analysis for red grouper and used MRIP-FES data for private recreational vessel landings. The Council is responsible for determining the MSY proxy to be used in calculating catch limits; however, **Alternative 1** is not a viable alternative because it is not based on the best scientific information available.

Alternative 2 would modify the MSY proxy to be the yield when fishing at $F_{40\%SPR}$ and increases the OFL and ABC to 10.64 and 8.28 mp gw, respectively, for 2027 – 2029 and subsequent years. Like **Alternative 1**, **Alternative 2** sets the total ACL equal to the ABC as approved by the SSC at its May 2025 meeting, which is consistent with Council practice for healthy fish stocks. Further, catch limits under **Alternative 2** are informed by SRFS data for private recreational vessels, as opposed to MRIP-FES data in **Alternative 1**. SRFS data were found to be more precise and a better representation of catch and effort for this recreational fleet for red grouper during the SSC's review of SEDAR 88.

Preferred Alternative 3 would also modify the MSY proxy to be the yield when fishing at $F_{40\%SPR}$ and increase the OFL and ABC to 10.64 mp gw and 8.28 mp gw relative to **Alternative 1**. However, **Preferred Alternative 3** provides a more conservative approach to management compared to **Alternative 2**, as the total ACL would be set at a percentage of the ABC which

would start at 80% in 2026 and increase by 10% each year until it reaches 100% of the ABC in 2028. **Preferred Alternative 3** was proposed to provide a more conservative option given the large increase in catch limits that were indicated as sustainable under SEDAR 88 compared to **Alternative 1**, especially given concern from some Council members and members of the public at the April 2025 Council meeting about the sustainability of the SEDAR 88 indicated harvest limits. Substantial increases to allowable and realized catch are expected for red grouper by updating catch limits to use SRFS recreational data under **Alternative 2** and **Preferred Alternative 3**, compared to **Alternative 1**.

Alternative 2 would result in the highest increase in catch limits through 2027, as the "phased-in" approach used in **Preferred Alternative 3** would start with a lower ACL, and gradually increase that until it equals the ACL in **Alternative 2** and the ABC in 2028. Because management of red grouper is done by sector, the sector-specific effects of **Alternative 2** and **Preferred Alternative 3** are more appropriately addressed with sector allocations and sector ACLs and ACTs in Section 2.2.

2.2 Action 2: Modification of Gulf Red Grouper Sector Allocations and Sector ACLs

Alternative 1: No Action. As established in Amendment 53 to the Reef Fish FMP (GMFMC 2022), the commercial sector would be allocated 59.3% of the total ACL; the recreational sector would be allocated 40.7% of the total ACL. These sector allocations of the total ACL are based on the average landings using FES-adjusted MRIP-FES data during the years 1986 through 2005, based on the Southeast Fisheries Science Center (SEFSC) ACL monitoring datasets. The commercial buffer between the ACL and ACT (quota) is 5%; the recreational buffer is 9%.

Preferred Alternative 2: Revise the sector allocations of the total ACL between the recreational and commercial sectors as the average landings using SRFS data during the years 1986 through 2005. The allocations for red grouper are 68.2% commercial and 31.8% recreational. The commercial buffer between the ACL and ACT is 5%; the recreational buffer is 9%.

Alternative 3: Revise the sector allocations of the total ACL between the recreational and commercial sectors as the average landings using SRFS data during the years 1986 through 2009. The allocations for red grouper are 69.2% commercial and 30.8% recreational. The commercial buffer between the ACL and ACT is 5%; the recreational buffer is 9%.

Alternative 4: Revise the sector allocations of the total ACL between the recreational and commercial sectors as the average landings using SRFS data during the years 1986 through 2024, excluding 2020. The allocations for red grouper are 68.0% commercial and 32.0% recreational. The commercial buffer between the ACL and ACT is 5%; the recreational buffer is 9%.

Discussion:

Alternative 1 (No Action) would maintain the sector allocations established in Amendment 53 (GMFMC 2021), with commercial and recreational allocation of the red grouper stock ACL divided 59.3% and 40.7%, respectively, as apportioned using MRIP-FES data from the reference period. **Alternative 1** maintains the same reference period of landings (1986 – 2005) as in the initial interim allocation established in Reef Fish Amendment 30B (GMFMC 2008) and Amendment 53 (GMFMC 2021). Reef Fish Amendment 53 modified the interim allocation based on the use of MRIP-FES informed recreational data that increased estimates of historical recreational landings and thus, increased the 24% recreational interim allocation to 40.7% in Reef Fish Amendment 53 (GMFMC 2021). Likewise, the use of MRIP-FES also increased the estimates of future recreational catch and effort thus, the intent of this allocation change was to maintain historical fishing practices noting that maintaining the 76% commercial and 24% recreational allocation with the use of a new recreational data collection system would result in a de facto reallocation to the commercial sector (GMFMC 2021). The change to the SRFS in this action informed recreational data would result in a similar pattern albeit, in the opposite direction. Red grouper recreational landings and effort estimates from SRFS are lower than those produced by MRIP-FES. Thus, continuing with the current allocation without accounting for the decrease in estimated catch and effort associated with the change to SRFS from MRIP-

FES would result in a de facto reallocation to the recreational component. The action alternatives consider increases to the commercial allocation and a reduction in the recreational allocation to balance the changes with differing catch estimates between SRFS and MRIP-FES. Consistent with previous allocation considerations by the Council, alternatives also consider various reference periods to inform landings and the resulting allocations.

Alternatives 1, **3**, **4,** and **Preferred Alternative 2** include a 9% buffer between the recreational ACL and ACT which was calculated using the Council's ACL/ACT Control Rule following SEDAR 61 in 2019; the 5% buffer between the commercial ACL and ACT was set to account for the gag multi-use allocation of the IFQ program. The 9% buffer is reasonable in that recent recreational overages are expected to be mitigated by the use of more precise data to monitor recreational landings and a substantial increase in the recreational ACL. The recreational season duration is also expected to increase relative to recent years which should increase the precision of the landings estimates (shorter seasons provide more variable and often less precise estimates of catch and effort).

Preferred Alternative 2 and **Alternatives 3-4** reflect recreational landings estimated using SRFS landings data. **Preferred Alternative 2** would base the commercial and recreational sector allocations of red grouper on landings from the same timeframe as used in setting current allocations through Amendment 53 (GMFMC 2022) but would use SRFS landings data. The resulting allocations are 68.2% commercial, 31.8% recreational. Both **Alternative 1** and **Preferred Alternative 2** would base the commercial and recreational sector allocations on the same timeframe as used in Amendment 30B (GMFMC 2008) and Amendment 53 (GMFMC 2022).

Alternative 3 would base the commercial and recreational sector allocations on landings from the timeframe 1986 through 2009 (Table 2.1.2), ending the time series upon implementation of the commercial grouper-tilefish individual fishing quota (IFQ) program in 2010, which includes management of red grouper (GMFMC 2008b). The resulting allocations are 69.2% commercial and 30.8% recreational. The commercial IFQ program was implemented and effectively rationalized effort and limited commercial harvest to its ACL. The recreational sector by its nature, is more variable both in the estimation of the landings and the effectiveness of the various seasons, size, and bag limits used to constrain harvest. **Alternative 3** does not include post-IFQ implementation years, as a result of these potential biases. However, by not including these post-IFQ implementation years, **Alternative 3** may not capture more recent dynamics of the reef fish fishery such as increased participation by the recreational sector over time. As a result, **Alternative 3** results in the smallest proportional allocation to the recreational sector of all the alternatives considered.

In contrast, the recreational sector could exceed its ACL because when a closure is triggered, it may not be possible to close the fishing season before the ACL is met and recreational monitoring data are less precise and more variable than commercial monitoring data. An overage of the recreational ACL has occurred seven times since the inception of the IFQ program in 2010 despite early season closures in each of those years.

Alternative 4 would base the commercial and recreational allocations on landings from the timeframe 1986 through 2024, excluding 2020. The resulting allocations are 68.0% commercial and 32.0% recreational. **Alternative 4** incorporates the longest time period of landings currently available (Table 1.1.2) while omitting 2020 from consideration as the fishery dynamics for both sectors were likely affected by the Covid-19 pandemic. **Alternative 4** may better capture the recent dynamics of the fishery than **Preferred Alternative 2** and **Alternatives 1** and **3**; however, the potential bias from recreational harvest exceeding its ACL six times since 2010 could affect the resulting sector allocation calculations. The various time series under consideration in **Preferred Alternative 2** and **Alternatives 1** and **3**, which use SRFS landings data, have relatively small differences in sector allocations (at most, 1.2%).

The resulting sector ACLs, commercial quotas and recreational ACTs for the alternatives in Action 2, when paired with Action 1 Preferred Alternative 2, are shown in Table 2.2.1. The resulting total ACLs, sector ACLs, commercial quotas and recreational ACTs, when paired with Action 1 Preferred Alternative 3, are shown in Table 2.2.2.

Table 2.2.1. Total ACL, Sector ACLs, Commercial Quotas and Recreational ACTs Resulting from Action 1 Alternative 2.

	Total ACL (mp gw)	**Commercial ACL/Quota (mp gw)**	**Rec ACL/ACT (mp gw)**
Alt 1	8.28	4.91/4.66	3.37/3.07
Preferred Alt 2	8.28	5.65/5.36	2.63/2.40
Alt 3	8.28	5.73/5.44	2.55/2.32
Alt 4	8.28	5.63/5.35	2.65/2.41

Table 2.2.2. Total ACLs, Sector ACLs, Commercial Quotas, and Recreational ACTs resulting from Action 1 Preferred Alternative 3.

	Total ACL (mp gw)	Commercial ACL/Quota (mp gw)	Rec ACL/ACT (mp gw)
2026 (80% of ABC)			
Alt 1	6.62	3.93/3.73	2.69/2.45
Preferred Alt 2	6.62	4.51/4.29	2.11/1.92
Alt 3	6.62	4.58/4.35	2.04/1.86
Alt 4	6.62	4.50/4.28	2.12/1.93
2027 (90% of ABC)			
Alt 1	7.45	4.42/4.20	3.03/2.76
Preferred Alt 2	7.45	5.08/4.83	2.37/2.16
Alt 3	7.45	5.16/4.90	2.29/2.09
Alt 4	7.45	5.07/4.81	2.38/2.17
2028 (ABC = ACL)			
Alt 1	8.28	4.91/4.66	3.37/3.07
Preferred Alt 2	8.28	5.65/5.36	2.63/2.40
Alt 3	8.28	5.73/5.44	2.55/2.32
Alt 4	8.28	5.63/5.35	2.65/2.41

The recreational AM for red grouper requires NMFS to project the recreational harvest for each year. If the recreational harvest is expected to reach the recreational ACL before the end of the year, NMFS will close the recreational sector when the recreational ACL is met. NMFS developed an analysis of the projected season lengths for each combination of alternatives in Action 1 and 2. Overall, the lower the recreational ACL, the more likely an early season closure will be required. This could result either from the total ACL selected in Action 1 and/or the allocation selected in Action 2. The results for each combination of viable alternatives are presented in Table 2.2.3, and additional information is available in Appendix A. Alternative 1 in Action 1 is not viable and thus, not considered part of the analysis. Alternative 2 in Action 1 would set the total ACL equal to 8.28 mp gw and is not anticipated to require early season closure for any of the allocation alternatives in Action 2. Preferred Alternative 3 in Action 1 would increase the total ACL by 10% each year from 2026 through 2028 and is not anticipated to require early season closure for any of the allocation alternatives in Action 2.

Table 2.2.3. Projected Gulf recreational (rec) closure dates based on resulting ACLs (mp gw) from combinations of Action 1 and Action 2 alternatives.

Action 1 Alt	Action 2 Alt	Rec ACL (mp gw)	Projected Closure
Action 1 Alt 2	**Alt 1**	3.37	No Closure
	Preferred Alt 2	2.63	No Closure
	Alt 3	2.55	No Closure
	Alt 4	2.65	No Closure
Action 1 Preferred Alt 3	**2026 (80% of ABC)**		
	Alt 1	2.69	No Closure
	Preferred Alt 2	2.11	No Closure
	Alt 3	2.04	No Closure
	Alt 4	2.12	No Closure
	2027 (90% of ABC)		
	Alt 1	3.03	No Closure
	Preferred Alt 2	2.37	No Closure
	Alt 3	2.29	No Closure
	Alt 4	2.38	No Closure
	2028 (ABC = ACL)		
	Alt 1	3.37	No Closure
	Preferred Alt 2	2.63	No Closure
	Alt 3	2.55	No Closure
	Alt 4	2.65	No Closure

2.3 Action 3: Modification of the February-March Recreational Shallow-Water Grouper (SWG) Closure

Alternative 1: No Action. Retain the February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary.

Preferred Alternative 2: Eliminate the February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary.

Discussion:

Alternative 1 would retain the February 1 through March 31 recreational closed season in federal waters seaward of the 20-fathom boundary for all six SWG species (black grouper, red grouper, gag, yellowfin grouper, scamp, and yellowmouth grouper). The recreational closed season was initially established in all federal waters in a framework action (GMFMC 2006) and then modified in another framework action which eliminated the recreational closed season in federal waters shoreward of the 20-fathom boundary (GMFMC 2012).

Preferred Alternative 2 would eliminate the February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary. The Council's Reef Fish Advisory Panel recommended the removal of this recreational time-area closure during its April 2024 meeting. The 20-fathom closure is intended to provide additional protection during the spawning season for SWG species by limiting harvest in deeper waters. However, this fishing effort may be redirected into inshore waters where the average size of fish is smaller and more interactions with undersize fish occur. This could lead to additional fishing effort (and discards) necessary to harvest the bag limit, thereby potentially reducing, or eliminating the conservation benefit of this seasonal area closure.

The recreational season for gag would currently be unaffected by **Preferred Alternative 2** as Amendment 56 to the Reef Fish FMP (GMFMC 2023) modified the start date for the gag recreational season to open September 1. The recreational season for black grouper, scamp, yellowmouth grouper, and yellowfin grouper would also be unaffected in the future as a recent framework action (GFMC 2025) proposes establishing a recreational fixed closed season for the Other SWG complex as January 1 through June 30 each year (season open July 1 through December 31). However, should the recreational fixed closed seasons for gag, black grouper, scamp, yellowmouth grouper, and yellowfin grouper be subsequently modified, the elimination of the recreational closed season for SWG in federal waters seaward of the 20-fathom boundary would affect those species. The recreational season for red grouper would be affected by **Preferred Alternative 2**, as red grouper has no other recreational fixed closed season. However, the most recent stock assessment indicates red grouper are not overfished or undergoing overfishing at this time.

During the June 2024 Council meeting, some Council members noted that removal of the 20-fathom recreational closed season could increase landings of red grouper such that the season may be shortened at the end of the year. Potential impacts regarding a seasonal closure based on the removal of the 20-fathom closure are difficult to estimate as depth related information for

recreational harvest is not available or imprecise. For **Preferred Alternative 2,** a reasonable assumption is that catch rates are unlikely to substantially change for red grouper relative to **Alternative 1** and that the other SWG species are expected to remain unaffected.

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Description of the Physical Environment

General Description of the Physical Environment

The physical environment for Gulf of America (Gulf) reef fish is detailed in the Environmental Impact Statement (EIS) for the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), Generic EFH Amendment 3 (GMFMC 2005), and the Generic Annual Catch Limit/Accountability Measure (ACL/AM) Amendment (GMFMC 2011a), which are hereby incorporated by reference and summarized below.

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1).

Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73º F through 83º F (23-28º C), including bays and bayous (Figure 3.1.1), between 1982 and 2009, according to satellite-derived measurements (NODC 2011).[13] In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

[13] http://accession.nodc.noaa.gov/0072888

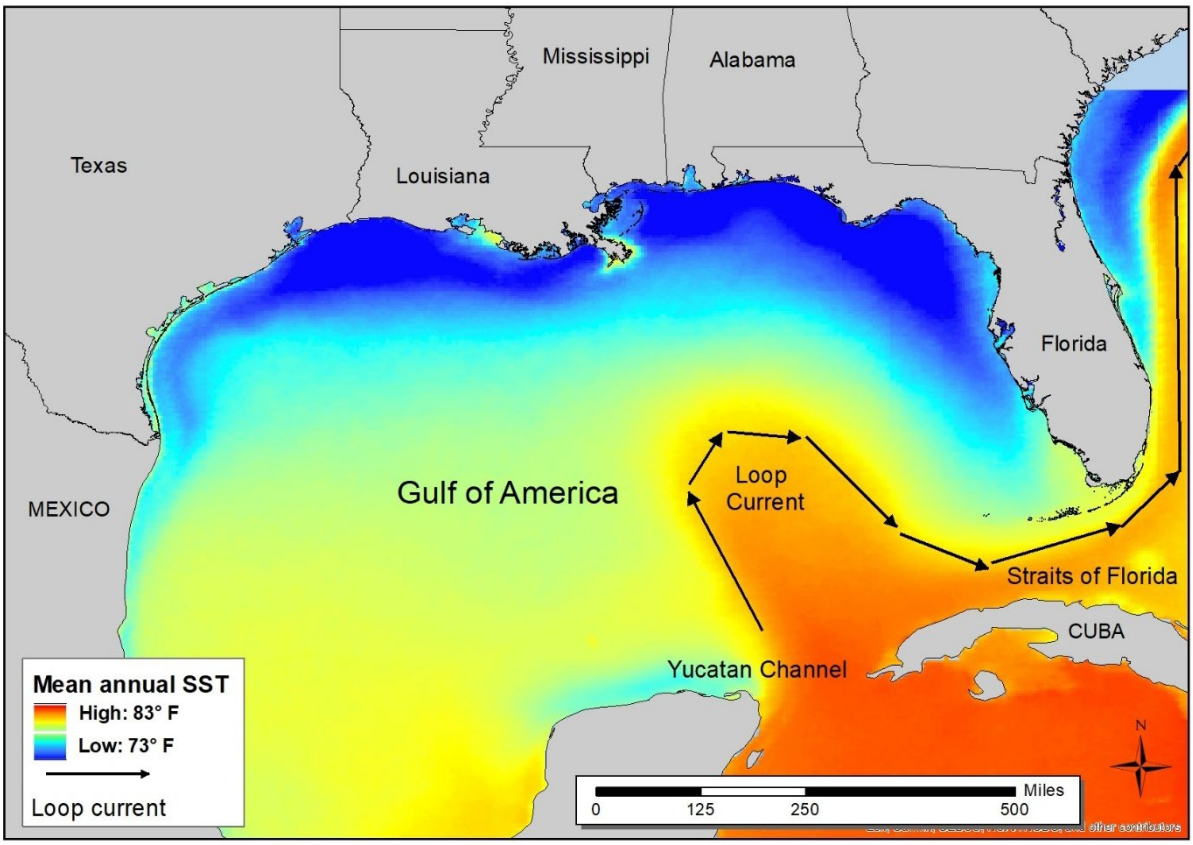

Figure 3.1.1. Mean annual sea surface temperature derived from the Advanced Very High-Resolution Radiometer Pathfinder Version 5 sea surface temperature data set.[14]

General Description of the Reef Fish Physical Environment

In general, reef fish are widely distributed in the Gulf, occupying both pelagic and benthic habitats during their life cycle. They generally have a planktonic larval stage that 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, some juvenile snapper (e.g., mutton, gray, red, dog, lane, and yellowtail snappers) and grouper (e.g., goliath, red, gag, and yellowfin groupers) are associated with inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems.

[14] http://pathfinder.nodc.noaa.gov

Habitat Areas of Particular Concern (HAPC) and Environmental Sites of Special Interest

Detailed information pertaining to HAPCs is provided in Generic Amendment 3 (GMFMC 2005) and Amendment 9 to the Fishery Management Plan for the Coral and Coral Reefs of the Gulf, U.S. Waters (GMFMC 2018). Detailed information pertaining to the Gulf area closures and marine reserves is provided in Amendment 32 to the Fishery Management Plan for the Reef Fish Resources in the Gulf (Reef Fish FMP; GMFMC 2011b). There are environmental sites of special interest that are discussed in the Generic EFH Amendment (GMFMC 2004a) that are relevant to Reef Fish management. These documents are hereby incorporated by reference.

Northern Gulf Hypoxic Zone

A large hypoxic zone forms every summer in the northern Gulf. It is the result of allochthonous materials and runoff from agricultural lands resulting in increasing nutrient inputs to multiple rivers. These tributaries feed into the Mississippi River, which disperses to the Gulf, and creates a temperature and salinity dependent layering of waters. The nutrient rich fresh waters from the Mississippi create seasonal, large algal blooms at the surface that eventually die, sink to the bottom, and decompose. This creates the oxygen-poor, hypoxic, bottom water layer unless front or storm events occur, which allow for mixing of the layers (Rabalais and Turner 2019). Mapping of the hypoxic zone began in 1985. For 2021, the extent of the hypoxic area was 6,334 square miles, almost triple what it was in 2020 (2,116 square miles), but still less than the extent of the 2017 hypoxic area (8,776 square miles). The changes in hypoxic area can be attributed to changing amounts of river discharge and its associated nutrient load and storm events. The major factor for the reduced size in 2020 was the active storm season with Hurricane Hanna passing right over the zone, allowing for mixing of the waters. The 2021 hypoxic area was higher than the 5-year hypoxic area average (5,408 square miles) and much larger than the 1,930 square mile goal set by the Interagency Mississippi River and Gulf of America Hypoxia Task Force to be reached by 2035.[15] The hypoxic conditions in the northern Gulf directly impact less mobile benthic macroinvertebrates (e.g., polychaetes) by influencing density, species richness, and community composition (Baustian and Rabalais 2009; Breitburg et al. 2018). More mobile macroinvertebrates and demersal fishes are able to detect lower dissolved oxygen levels and move away from hypoxic conditions. Thus, these organisms are indirectly affected by limited prey availability and constrained available habitat (Baustian and Rabalais 2009; Craig 2012).

Environmental Variability

Projections predict increases in sea-surface temperature and sea level; decreases in sea-ice cover; and changes in salinity, wave climate, and ocean circulation (Intergovernmental Panel on Climate Change). These changes are likely to affect plankton biomass and fish larvae abundance that could adversely impact fish, marine mammals, seabirds, and ocean biodiversity. Kennedy et al. (2002) and Osgood (2008) have suggested global climate variation 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

[15] http://gulfhypoxia.net

and cause a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. The National Oceanic and Atmospheric Association (NOAA) Climate Web Portal predicts the average sea surface temperature in the Gulf will increase by approximately 2ºC for 2006-2100 compared to the average sea surface temperature from 1956-2005.

3.2 Description of the Biological/Ecological Environment

The biological environment of the Gulf, including for red grouper, is described in detail in the Generic EFH Amendment (GMFMC 2004a), Generic ACL/AM Amendment (GMFMC 2011a), Reef Fish Amendments 30B (GMFMC 2008a) and 32 (GMFMC 2011b), and in Reef Fish Amendment 53 (GMFMC 2021), and is incorporated here by reference and further summarized below.

Red Grouper Biology

Larval red grouper is found in the plankton across the west-Florida shelf (SEDAR 42 2015). Red grouper juveniles are generally found in shallow waters around structures and patch reefs. When juveniles reach approximately 16 inches (40 cm) total length (TL), and after they become sexually mature, they move offshore (Moe 1969). Red grouper can reach a maximum length and weight of 43 inches (110 cm TL) and 50.7 pounds (lbs) (23 kg) (Robins et al. 1986). Maximum age of red grouper in the Gulf has been estimated at 29 years (SEDAR 61 2019). Clear determinations of size and age at 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 which 50% of females were sexually mature at 11 inches (279 mm fork length [FL]) and approximately 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 the Florida Fish and Wildlife Conservation Commission (FWC)/Fish and Wildlife Research Institute (FWRI) (Lowerre-Barbieri et al. 2014); however, the inclusion of 2014-2017 data led to a slightly younger age of 2.2 years in SEDAR 61 (2019). These values were retained in SEDAR 88 (2024)

Red grouper spawns from February until mid-July, with peak spawning occurring in the eastern Gulf during March through May (Fitzhugh et al. 2006). Red grouper is a protogynous hermaphrodite, transitioning from female to male at older ages (7-14 years), and forms harems for spawning (Domeier and Colin 1997). Age and size at sexual transition is approximately 10.5 years and 30 inches TL (76.5 cm TL) (Fitzhugh et al. 2006). Size and age at sexual transition was re-estimated for both SEDAR 42 (2015) and SEDAR 61 (2019) at 11.2 and 11.4 years and 707- and 708-mm TL, respectively. Over the last 25-30 years, there has been little change in the sex ratio of red grouper (Lowerre-Barbieri et al 2014), likely because they do not aggregate (Coleman et al. 1996). Red grouper is also known as a "habitat engineer" because it creates and maintains excavations in the bottom substrate. These excavations also support other species that use them for food and shelter (Coleman et al 2010).

Red grouper is susceptible to red tide as outlined in Chagaris and Sinnickson (2018) and Coleman and Koenig (2010). Chagaris and Sinnickson (2018) found the percent of total biomass

of red grouper killed by red tides has been relatively low since 2002 with the exception of the severe red tide bloom that occurred in 2005 (note that this manuscript did not include the 2017-2018 red tide event). These studies suggest that in general, severe red tide blooms occur at specific locations, not over the whole area where red grouper is found.

Status of the Stock

See Chapter 1.1: Background, for more information. In summary, the Scientific and Statistical Committee, based on its review of SEDAR 88, indicated that the stock was not overfished or undergoing overfishing and recommended increases to the OFL and ABC relative to the current harvest limits. The stock assessment results indicated an increase in the red grouper stock size relative to the previous assessment; the primary driver of this outcome was the increase in the estimated natural mortality of red grouper relative to the previous stock assessment.

Bycatch

Many of the reef fish species co-occur with each other and can be incidentally caught when fishermen target certain species. In some cases, these fish may be discarded for regulatory reasons and thus are considered bycatch. Bycatch practicability analyses have been completed for red snapper (GMFMC 2004c, GMFMC 2007, GMFMC 2014a, GMFMC 2015a), grouper (GMFMC 2008a, GMFMC 2001, GMFMC 2011b, GMFMC 2011c, GMFMC 2012b; and red grouper specifically in GMFMC 2021), vermilion snapper (GMFMC 2004d, GMFMC 2017d), greater amberjack (GMFMC 2008c, GMFMC 2012c, GMFMC 2015b), gray triggerfish (GMFMC 2012d), and hogfish (GMFMC 2016b). These analyses examined the effects of fishing on these species. In general, these analyses have found that reducing bycatch provides biological benefits to managed species, as well as benefits to the fishery through less waste, higher yields, and less forgone yield. However, in some cases, actions are approved that can increase bycatch through regulatory discards, such as increased minimum sizes and closed seasons. Under these circumstances, there is some biological benefit to the managed species that outweigh any increases in discards from the action.

The main benefits of reducing grouper bycatch are: 1) less waste and 2) increased yield in the directed fishery. Reducing discards and discard mortality rates would result in less forgone yield. Increasing ACLs in the commercial sector is expected to increase discards due to the greater number of regulatory discards (such as discard of undersized fish) that is expected to occur with the increased fishing effort associated with the higher commercial quota. The effects of increasing the recreational quota on the scope of bycatch is less clear. This is because the recreational season is projected to remain open for the entire year due to the increased catch limits, which would eliminate regulatory discards that have occurred in recent years after closure of the recreation fishing season due to harvesting the quota. However, because recreational effort is also expected to increase due to the lack of a closed season, it is also expected that other regulatory discards (again, such as discards of undersized fish) would increase with the increased catch limits. In any case, although the effects of the increasing catch limits are unclear for the recreational sector, there is expected to be a slight increase in bycatch overall due to increased regulatory discards across both sectors. This is especially true for smaller fish (less than the legal size limit), since they are more likely to be discarded. Legal size fish would be less likely

to be discarded under the increased catch limits because there would be no requirement to release them at any time of the year due to a season closure. There are likely to be positive social and economic effects to the commercial sector, stemming largely from the expected increase in income that is likely if the subject action is implemented. This may be partially mitigated in the commercial sector by decreases in market prices due to greater availability of red grouper. The Council will have to weigh the drawbacks of increasing bycatch against the positive social and economic effects that the fishermen would face.

Protected Species and Protected Species Bycatch

The National Marine Fisheries Services manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). A brief summary of these two laws and more information is available on NMFS Office of Protected Resources website.[16] ESA-listed species or Distinct Population Segments (DPS) of marine mammals, sea turtles, fish, and corals occur in the exclusive economic zone (EEZ) of the Gulf. There are numerous stocks of marine mammals managed within the Southeast region. All marine mammals in U.S. waters are protected under the MMPA.

The five whale species that may be present in the Gulf (blue, sperm, sei, fin, and Rice's[17]) are listed as endangered under the ESA. Rice's whales are the only resident baleen whales in the Gulf. Manatees, listed as threatened under the ESA, also occur in the Gulf and are the only marine mammal species in this area managed by the U.S. Fish and Wildlife Service.

Sea turtles, fish, and corals that are listed as threatened or endangered under the ESA occur in the Gulf. These include the following: five species of sea turtles (Kemp's ridley, loggerhead (Northwest Atlantic Ocean DPS), green, 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. Critical habitat has been proposed in the Gulf for the North Atlantic DPS of green sea turtles.

The most recent biological opinion (BiOp) for the fishery management plan (FMP) was completed on September 30, 2011. The BiOp determined the operation 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 are not likely to adversely affect

[16] https://www.fisheries.noaa.gov/about/office-protected-resources

[17] The Rice's whale (*Balaenoptera ricei*) was previously classified as the Gulf Bryde's whale but was later identified as morphologically and genetically distinct from other whales under the Bryde's whale complex, warranting classification as a new species of baleen whale living in the Gulf.

critical habitat for the Northwest Atlantic Ocean loggerhead sea turtle DPS and four species of corals (lobed star, mountainous star, boulder star, and rough cactus).

On April 6, 2016, NMFS and the U.S. Fish and Wildlife Service published a final rule (81 FR 20057) removing the range-wide and breeding population ESA-listings of the green sea turtle and listing eight DPSs as threatened and three DPSs as endangered. The North Atlantic DPS of green sea turtle occurs in the Gulf and is listed as threatened. In addition, on June 29, 2016, NMFS published a final rule (81 FR 42268) listing Nassau grouper as threatened under the ESA. NMFS has reinitiated consultation on the FMP to address these listings. In a memorandum dated September 29, 2016, NMFS determined that fishing under the Reef Fish FMP during the re-initiation period is not likely to jeopardize the continued existence of the North Atlantic DPS of green sea turtles or Nassau grouper.[18]

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 re-initiation 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 fishing under the Reef Fish FMP during the extended re-initiation period will not jeopardize the continued existence of the giant manta ray, oceanic whitetip shark, Nassau grouper, or the North Atlantic and South Atlantic DPSs of green sea turtles.

NMFS published a final rule on April 15, 2019, listing the Gulf Bryde's whale (now Rice's whale, see footnote 14 above) as endangered. In a memorandum dated June 20, 2019, NMFS revised the re-initiation request to include the Gulf Bryde's whale (Rice's whale) and determined that fishing under the Reef Fish FMP during the re-initiation period will not jeopardize the continued existence of any of the newly listed species discussed above.[19]

There is no information to indicate marine mammals and birds rely on red grouper for food, and they are not generally caught by fishermen harvesting red grouper. The primary gear in the Gulf Reef Fish fishery used to harvest red grouper is hook-and-line and bottom longlines. These gear types are classified in the proposed 2025 Marine Mammal Protection Act List of Fisheries as a Category III fishery (89 FR 77789; September 24, 2024), meaning the annual mortality and serious injury of a marine mammal resulting from the 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. Additionally, there is no evidence that the red grouper portion of the reef fish fishery as a whole is adversely affecting seabirds. Dolphins are the only species documented as

[18] The memo also addressed the South Atlantic DPS of green sea turtle because at that time, NMFS thought that individuals from that DPS would be found in the Gulf based on a study that found that approximately 5% of the turtles sampled off the Atlantic coast of Florida came from the South Atlantic DPS. However, with additional research, NMFS has determined that South Atlantic juveniles are not likely to be occurring in U.S. mainland coastal waters in anything more than negligible numbers.

[19] The official change to the name has no effect on NMFS's conclusion that the activities associated with the Reef Fish FMP will not jeopardize the continued existence of the species during the revised reinitiation period.

interacting with the reef fish fishery. Bottlenose dolphin prey upon bait, catch, and/or discarded fish from the reef fish fishery.

3.3 Description of the Economic Environment

3.3.1 Commercial Sector

Any fishing vessel that harvests and sells any of the reef fish species managed under the Reef Fish FMP from the Gulf EEZ must have a valid Gulf reef fish permit. As of July 8, 2021, there were 825 limited access valid or renewable reef fish permits (SERO Permits Database, May 2022). Note more recent permit information is currently unavailable. To harvest red grouper, a vessel permit must also be linked to an individual fishing quota (IFQ) account and possess sufficient allocation for this species. IFQ accounts can be opened and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive red grouper allocation from other IFQ participants. On average from 2020 through 2024, there were 671 IFQ accounts that held red grouper allocation and 68% of those held red grouper shares (NMFS 2024b).

Although many fishing businesses only own one permitted vessel, some hold or own multiple permits and vessels. Detailed discussions on the business composition of IFQ participants are provided in the description of the economic environment sections of the 2019 Red Grouper Framework Action to modify Annual Catch Limits and Annual Catch Targets (GMFMC 2019), as well as Amendment 53 (GMFMC 2021b) and are incorporated herein by reference.

Commercial harvest of reef fish in the EEZ may only be sold to dealers with a federal dealer permit. As of December 21, 2021, there were 341 entities with a federal Gulf and South Atlantic Dealers (GSAD) permit (J. Dudley, NMFS SERO, pers. comm. 2022). In order to purchase IFQ species, including RG, dealers are also required to have a Gulf IFQ dealer endorsement. As of July 22, 2022, there were 166 eligible IFQ dealers; however, the total number of dealers can vary over the course of the year and from year to year

Vessels, Landings, and Dockside Revenue

The information in Table 3.3.1.1 describes the landings and revenue for vessels that harvested red grouper each year from 2020 through 2024, including their revenue from other IFQ species, Gulf non-IFQ fisheries, and South Atlantic fisheries. From 2020 to 2024, the number of Gulf red grouper vessels fluctuated but showed an overall decline. Vessel participation decreased by 8% from 2020 to 2021 and continued to decline by about 5% in 2022. While there was an increase of around 5% in 2023, vessel participation in the commercial Gulf red grouper fishery declined again by 1% in 2024.

Revenue from landings of Gulf red grouper increased by 15% from 2020 to 2021, but declined by 7% in 2022. Revenue from landings of Gulf red grouper increased 11% in 2023 and recently decreased by less than 1% in 2024. Revenue from landings of other IFQ species by Gulf red grouper vessels increased by 16% in 2021 declined by 17% in 2023, and further by 18% in 2024, indicting a steady decline in recent years of revenue from landings of other IFQ species.

Revenue from Gulf non-IFQ species decreased by 4% in 2021 and slightly further in 2022. Revenue from Gulf non-IFQ species increased by 18% in 2023, followed by a decline of over 16% in 2024. Thus, revenue from Gulf non-IFQ species fluctuated overall on average during this timeframe. Revenue from South Atlantic species showed large fluctuations from year-to-year changes. Revenue from South Atlantic species ex-vessel increased by 136% from 2020 to 2021 and further by 74% in 2022. However, revenue from South Atlantic species declined by over 50% in 2023 then increased by 68% in 2024. Average total ex-vessel revenue per vessel increased by a 23% from 2020 to 2021, and by 2% again in 2022. However, average total ex-vessel revenue per vessel has declined since, with consecutive declines of approximately 9% in 2023 and 10% in 2024. Although not shown in the table, the maximum annual value of all landings by a single Gulf red grouper vessel from 2020 through 2023 was approximately $1.24 million (2024 dollars[20]) in 2022.

Table 3.3.1.1. Landings and revenue statistics for vessels harvesting red grouper species (2024 dollars).

Year	# of Vessels	Red grouper landings in pounds (lbs) gutted weight (gw)	Red grouper ex-vessel revenue	Other IFQ species ex-vessel revenue	Gulf Non-IFQ species ex-vessel revenue	South Atlantic all species ex-vessel revenue	Average ex-vessel revenue per vessel
2020	351	2,259,579	$13,571,298	$23,367,265	$5,525,958	$206,040	$121,569
2021	323	2,640,318	$15,535,713	$27,092,660	$5,323,849	$486,164	$149,964
2022	306	2,270,991	$14,479,587	$26,326,506	$5,297,679	$843,496	$153,422
2023	320	2,497,118	$16,012,728	$21,835,892	$6,248,546	$416,004	$139,104
2024	318	2,527,088	$15,893,495	$17,883,189	$5,225,094	$696,518	$124,837
Average	**324**	**2,439,019**	**$15,098,564**	**$23,301,102**	**$5,524,225**	**$529,644**	**$137,779**

Source: NMFS SERO IFQ database (accessed 5/1/2024) and Southeast Fisheries Science Center (SEFSC) Socioeconomic Panel (January 2025 version).

IFQ Share Transfer, IFQ Allocation Transfer, and Ex-vessel Prices

Price information is important for evaluating the performance of a catch share program. Theoretically, allocation prices should reflect the expected annual profit from harvesting one unit of quota; whereas, share prices should reflect the net present value of the expected profit from harvesting one unit of quota in the long-run. Dockside or ex-vessel price is the price the vessel receives at the first sale of harvest. Average share transfer[21] prices increased from 2021 through

[20] Dollar values have been adjusted for inflation using the U.S. Bureau of Economic Analysis Gross domestic product implicit price deflator series (A191RD3A086NBEA). Accessed 07/15/2025.

[21] Share transfer price refers to the price paid to purchase a share percentage that equates to one pound of red grouper allocation at the time the transfer occurs (NMFS 2024a).

2023, with a notable increase from 2021 to 2022. Allocation transfer prices increased as well generally, but ex-vessels prices fluctuated from year to year (Table 3.3.1.2). The average ex-vessel price increased by less than a percent on average over this period; the average allocation transfer price increased by 41%; and the average share price increased by 38%.

Table 3.3.1.2. Average red grouper share transfer, allocation transfer, and ex-vessel prices per pound-gutted weight in 2024 dollars.

Year	Share Transfer	Allocation Transfer	Ex-Vessel
2020	$7.33	$0.56	$6.04
2021	$7.28	$0.74	$5.95
2022	$19.83	$1.71	$6.37
2023	$18.72	$1.82	$6.44
2024	$15.94	$1.71	$6.30
Average	**$13.82**	**$1.31**	**$6.22**

Source: NMFS (2024b)

Liese (2023) provides estimates of economic returns such as annual vessel-level estimates of costs (as a percentage of revenue) and net revenue from operations for vessels for vessels that harvested red grouper during 2020-2024[22]. Estimates of producer surplus (PS) can be calculated from the cost information contained in Liese (2023) in conjunction with estimates of annual revenue from the SERO IFQ database and the SEFSC Social Science Research Group (SSRG) Socioeconomic Panel. PS is total annual revenue minus variable costs, including the costs for fuel, other supplies, and hired crew, as well as the opportunity cost of an owner's time as captain. Net revenue from operations, which most closely represents economic profits to the owner(s), is total annual revenue minus variable and fixed costs, including the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, and overhead, as well as the opportunity cost of an owner's time as captain and the vessel's depreciation. According to Liese (2023), PS for commercial vessels that harvested Gulf red grouper was approximately 47.6% of their annual gross revenue, on average, from 2014 through 2018. Net revenue from operations was 28.1% of their annual gross revenue, on average, during this period. Applying these percentages to the results provided in Table 3.3.1.1 would result in an estimated per vessel average annual PS of $ $65,583 (2024 dollars) and an average annual net revenue from operations of $38,716 per year. Liese (2023) also provides annual trip-level estimates of costs (as a percentage of trip revenue) and trip net revenue for vessels that harvested snappers and groupers in the South Atlantic. According to Liese (2023), labor, including both hired and owner's time, consumed 37.1% of trip revenue and fuel and supplies consumed 19.5%, leaving a trip net revenue margin of 43.4%, on average, from 2014 through 2018.

[22] This report is available at: https://repository.library.noaa.gov/view/noaa/56480.

Dealers

The information in Table 3.3.1.3 illustrates the purchasing activities of dealers that bought red grouper landed from vessels during 2019 through 2023. Like vessels, dealer participation in the red grouper IFQ program is fluid, and not all dealers purchased red grouper in each year during this time. On average, from 2019 through 2023, IFQ purchases comprised 41% of all purchases made by these dealers, with red grouper species, in particular, accounting for 13% of total purchases. The average annual value of total purchases by these dealers trended upwards during the period (Table 3.3.1.3). Although not shown in the table, the maximum annual value of all purchases made by a single dealer from 2019 through 2023 was approximately $16.1 million (2024 dollars) in 2022.

Table 3.3.1.3. Purchase statistics for dealers that bought red grouper (2024 dollars).

Year	Number of Dealers	Red Grouper Purchases	Other IFQ Purchases	Gulf Non-IFQ Purchases	South Atlantic Purchases	Average total purchases per dealer
2019	112	$12,635,315	$38,923,714	$51,132,385	$29,573,859	$1,180,940
2020	109	$14,479,333	$37,329,463	$45,098,954	$26,329,719	$1,130,619
2021	112	$17,665,781	$38,240,120	$54,536,090	$29,905,762	$1,253,105
2022	104	$15,489,319	$39,298,028	$58,039,095	$31,007,318	$1,383,017
2023	99	$16,080,594	$38,540,746	$51,615,135	$27,185,135	$1,347,693
Average	107	$16,497,062	$34,408,182	$46,704,766	$25,762,119	$1,130,739

Source: SEFSC Fishing Communities Web Query Tool (Version Feb 11, 2025 Years: 2014-2023).

Imports

Imports of foreign seafood products compete within the domestic seafood market, and in the U.S., imports dominate many segments of that market. Imports also tend to be price setters (products that are able to set prices in a market, due to the influence of having a majority of market share). Seafood imports can have downstream effects on the local fish market. At the harvest level, imports can affect ex-vessel prices fishermen receive for landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. Imports that directly compete with domestic reef fish, including RG, are described in this section.

Groupers

According to NMFS' foreign trade data,[23] grouper are not exported. Imports of fresh and frozen grouper products, which also directly compete with domestic harvest of Gulf reef fish species, are described in this section. As shown in Table 3.3.1.4, imports of fresh grouper products peaked in 2023. Total value of fresh grouper imports has been increasing in recent years and averaged $63.0 million (2024 dollars) annually. The average price per pound (lb) product weight

[23] https://www.fisheries.noaa.gov/foss/

(pw) for fresh grouper products was $5.91 from 2020-2024. Although not shown in the table, these products primarily originated from Mexico, Brazil, and Panama from 2020-2024.

Table 3.3.1.4. Annual pounds and value of fresh grouper imports 2020-2024.

Year	Total Pounds (lbs.)	Total Value	Price per Pound ($/lbs.)
2020	10,449,994	$46,394,887	$4.43
2021	12,246,904	$65,449,667	$5.34
2022	11,700,388	$66,946,463	$5.72
2023	12,628,176	$68,236,890	$5.41
2024	11,995,196	$68,346,048	$5.70
Average	**11,804,132**	**$63,074,791**	**$5.32**

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

As shown in Table 3.3.1.5, imports of frozen grouper products peaked at 2.2 million lb pw in 2021 and have been declining since. Total revenue from frozen grouper increased sharply from $1.7 to $5.8 million from 2020 to 2021, but also declined nearly as sharply in 2022 to $2.9 million. The average price per lb pw for frozen grouper products was $2.30 from 2020-2024. Although not shown in the table, imports of frozen grouper products primarily originated in Brazil, Suriname, and Indonesia from 2020-2024.

Table 3.3.1.5. Annual pounds and value of frozen grouper imports and share of imports by country, 2020-2024.

Year	Total Pounds (lbs.)	Total Value	Price per Pound ($/lbs.)
2020	814,426	$1,718,333	$2.10
2021	2,190,003	$5,818,759	$2.66
2022	1,339,501	$2,942,717	$2.20
2023	1,154,097	$2,676,394	$2.31
2024	1,097,656	$2,459,846	$2.24
Average	**1,319,137**	**$3,123,210**	**$2.30**

Source: NOAA Foreign Trade Query Tool, accessed 08/18/24.

Snappers

Imports of fresh and frozen snapper products, which directly compete with domestic harvest of Gulf reef fish species are described in this section. As shown in Table 3.3.1.6, imports of fresh snapper products were 32.3 million lb pw in 2020. They peaked at 36.0 million lb pw in 2021. Total revenue from snapper imports increased to a five-year high of $169 million in 2021 (2024

dollars). The average price per pound for fresh snapper products was $4.48 from 2020-2024 and prices varied over this period. Although not shown in the table, imports of fresh snapper products primarily originated in Mexico, Nicaragua, or Panama from 2020-2024.

Table 3.3.1.6. Annual pounds and value of fresh snapper imports and share of imports by country, 2020-2024. All monetary estimates are in 2024$.

Year	Total Pounds (lbs.)	Total Value	Price per Pound ($/lbs.)
2020	32,394,316	$129,401,869	$3.99
2021	35,969,857	$169,002,918	$4.70
2022	32,180,318	$150,937,686	$4.69
2023	32,108,363	$142,592,355	$4.44
2024	30,474,645	$139,494,605	$4.58
Average	**32,625,500**	**$146,285,887**	**$4.48**

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

As shown in Table 3.3.1.7, total revenue from imports of frozen snapper increased from $55.2 million (2024 dollars) in 2020 to a five-year high of $75.7 million in 2021 (2024 dollars) followed by a 40% decrease through 2023. The average price per pound for frozen snapper products was $3.86, with a notable decrease from 2022 to 2023. Although not shown in the table, imports of frozen snapper product primarily originated in Brazil or Suriname, from 2020-2024.

Table 3.3.1.7 Annual pounds and value of frozen snapper imports and share of imports by country, 2020-2024.

Year	Total Pounds (lbs.)	Total Value	Price per Pound ($/lbs.)
2020	15,873,809	$55,208,728	$3.48
2021	18,224,848	$75,715,262	$4.15
2022	16,941,442	$70,812,484	$4.18
2023	11,701,409	$42,501,474	$3.64
2024	14,836,601	$57,206,691	$3.86
Average	**15,515,622**	**$60,288,928**	**$3.86**

Source: NOAA Foreign Trade Query Tool, accessed 10/20/24.

Business Activity

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as grouper purchased at a local fish market and served during restaurant visits.

These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis that only shows how economic impacts may be distributed through regional markets. It should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

Economic impact models can be used to determine the sources of the impacts. Each impact can be broken down into direct, indirect, and induced economic impacts. "Direct" economic impacts are the results of the money initially spent in the study area (e.g., country, region, state, or community) by the fishery or industry being studied. This includes money spent to pay for labor, supplies, raw materials, and operating expenses. The direct economic impacts from the initial spending create additional activity in the local economy, i.e., "indirect" economic impacts. Indirect economic impacts are the results of business-to-business transactions indirectly caused by the direct impacts. For example, businesses initially benefiting from the direct impacts will subsequently increase spending at other local businesses. The indirect economic impact is a measure of this increase in business-to-business activity, excluding the initial round of spending which is included in the estimate of direct impacts. "Induced" economic impacts are the results of increased personal income caused by the direct and indirect economic impacts. For example, businesses experiencing increased revenue from the direct and indirect impacts will subsequently increase spending on labor by hiring more employees, increasing work hours, raising salaries/wage rates, etc. In turn, households will increase spending at local businesses. The induced impact is a measure of this increase in household-to-business activity.

Estimates of the U.S. average annual business activity associated with the commercial harvest of all Gulf reef fish species were derived using the model developed for and applied in NMFS (2024a)[24] and are provided in Table 3.3.1.8. Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of red grouper IFQ species from 2020 through 2024. This business activity is characterized as jobs (full- and part-time equivalents), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

The results provided here should be interpreted with caution. The results are based on average relationships developed through the analysis of many fishing operations that harvest many different species.

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

Table 3.3.1.8. Average annual business activity (2020 through 2024) associated with the commercial harvest of red grouper species in the Gulf. All monetary estimates are in thousands of 2024 dollars.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	284	44	58	387
Income impacts	$8,152	$1,513	$3,660	$13,325
Total value-added impacts	$8,689	$5,449	$6,262	$20,400
Output Impacts	$15,099	$12,284	$12,156	$39,539
Primary dealers/processors	Direct	Indirect	Induced	Total
Employment impacts	59	24	41	124
Income impacts	$2,660	$2,451	$2,318	$7,429
Total value-added impacts	$2,835	$3,128	$4,365	$10,328
Output impacts	$8,561	$6,448	$8,532	$23,541
Secondary wholesalers/ distributors	Direct	Indirect	Induced	Total
Employment impacts	27	6	27	60
Income impacts	$1,585	$471	$1,667	$3,722
Total value-added impacts	$1,689	$790	$2,847	$5,326
Output impacts	$4,244	$1,547	$5,536	$11,328
Grocers	Direct	Indirect	Induced	Total
Employment impacts	118	13	26	157
Income impacts	$3,260	$1,083	$1,636	$5,979
Total value-added impacts	$3,474	$1,745	$2,770	$7,989
Output impacts	$5,571	$2,834	$5,438	$13,843
Restaurants	Direct	Indirect	Induced	Total
Employment impacts	733	49	120	901
Income impacts	$13,075	$3,966	$7,490	$24,530
Total value-added impacts	$13,938	$7,088	$12,619	$33,645
Output impacts	$25,485	$11,092	$24,901	$61,479
Harvesters and seafood industry	Direct	Indirect	Induced	Total
Employment impacts	1221	136	272	1629
Income impacts	$28,731	$9,485	$16,770	$54,986
Total value-added impacts	$30,626	$18,201	$28,862	$77,689
Output impacts	$58,960	$34,207	$56,563	$149,730

3.3.2 Recreational Sector

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

Angler Effort

Recreational effort derived from the MRIP database can be characterized in terms of the number of angler trips as follows:

- Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.

- Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.

- Total recreational trips - The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

Other measures of effort are possible, such as directed trips (the number of individual angler trips that either targeted or caught a particular species). Estimates of target or catch effort for individual species and additional years, as well as other measures of directed effort, are available via NMFS' MRIP query tool.[25]

Tables 3.3.2.1 and 3.3.2.2 describe the recreational target and catch trips for Gulf red grouper from 2020 through 2024. There were no recorded target or catch trips in Texas for red grouper and Louisiana's recreational effort data are currently unavailable. Private vessels represent 80% of this target effort and the vast majority of it occurred in Florida (Table 3.3.2.1). The number of recreational target trips for Gulf red grouper species fluctuated from 2020 through 2024. The majority of catch effort for Gulf red grouper was also attributed to private vessels in Florida and fluctuated from year to year, but on average increase by 18% over during this timeframe (Table 3.3.2.2).

[25] https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries

Table 3.3.2.1. Gulf red grouper recreational target trips, by mode and state, 2020-2024.

	Alabama	Florida	Total
	Shore Mode		
2020	0	0	0
2021	0	4,343	4,343
2022	0	17,332	17,332
2023	0	6,218	6,218
2024	0	8,211	8,211
Average	0	7,221	7,221
	Charter Mode		
2020	0	20,765	20,765
2021	0	61,282	61,282
2022	0	51,125	51,125
2023	0	55,298	55,298
2024	0	42,803	42,803
Average	0	46,255	46,255
	Private/Rental Mode		
2020	1,144	242,547	243,691
2021	0	116,429	116,429
2022	0	252,190	252190
2023	0	208,218	208218
2024	7,023	226,860	233,883
Average	1,633	209,249	210,882
	All Modes		
2020	1,144	263,312	264,456
2021	0	182,054	182,054
2022	0	320,647	320,647
2023	0	269,734	269,734
2024	7,023	277,874	284,897
Average	1,633	262,724	264,358

Source: MRIP database, SERO, NMFS (May 2025).
Note: Louisiana, Texas, and headboat information is currently unavailable. No reported target trips for red grouper in the state of Mississippi during this timeframe.

Table 3.3.2.2. Gulf red grouper recreational catch trips, by mode and state, 2020-2024.

	Alabama	Florida	Total
	Shore Mode		
2020	0	5,558	5,558
2021	0	47,471	47,471
2022	0	12,843	12,843
2023	0	39,426	39,426
2024	0	68,123	68,123
Average	**0**	**34,684**	**34,684**
	Charter Mode		
2020	40	173,522	173,562
2021	32	176,330	176,362
2022	299	188,634	188,933
2023	30	193,344	193,374
2024	3	177,900	177,903
Average	**81**	**181,946**	**182,027**
	Private/Rental Mode		
2020	1,960	619,204	621,164
2021	0	451,360	451,360
2022	759	673,344	674103
2023	0	791,612	791612
2024	1,158	1,061,350	1,062,508
Average	**775**	**719,374**	**720,149**
	All Modes		
2020	2,000	798,284	800,284
2021	32	675,161	675,193
2022	1,058	874,821	875,879
2023	30	1,024,382	1,024,412
2024	1,161	1,307,373	1,308,534
Average	**856**	**936,004**	**936,860**

Source: MRIP database, SERO, NMFS (May 2025).
Note: Louisiana, Texas, and headboat information is currently unavailable. No reported catch trips in the state of Mississippi during this timeframe.

Tables 3.3.2.3 and 3.3.2.4 describe the seasonal patterns of recreational target and catch trips for Gulf red grouper from 2020 through 2024. During this period, both recreational target and catch trips for these species were concentrated most heavily during MRIP waves 3 and 4 (May through August), on average.

Table 3.3.2.3. Gulf red grouper recreational target trips, by MRIP wave, 2020-2024.

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2020	10,804	54,124	64,848	27,172	67,661	39,847
2021	23,113	31,801	73,574	44,372	9,195	0
2022	71,721	57,860	53,164	134,663	3,238	0
2023	49,488	36,198	73,375	99,628	0	11,045
2024	113,675	72,864	80,394	6,716	11,247	0
Average	53,760	50,569	69,071	62,510	18,268	10,178

Source: MRIP database, SERO, NMFS (Aug 2025).

Table 3.3.2.4. Gulf red grouper recreational catch trips, by MRIP wave, 2020-2024.

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2020	117,932	79,405	156,311	183,657	146,796	116,182
2021	115,795	65,705	321,287	128,061	44,345	0
2022	88,179	63,717	246,061	316,598	52,605	108,719
2023	165,667	98,260	157,462	288,411	135,272	179,339
2024	276,218	234,953	302,880	267,917	184,984	41,582
Average	152,758	108,408	236,800	236,929	112,800	89,164

Source: MRIP database, SERO, NMFS (Aug 2025).

Similar analysis of recreational effort is not possible for the headboat mode in the Gulf because headboat data are not collected at the angler level. Estimates of effort by the headboat mode are provided in terms of angler days, or the number of standardized full-day angler trips. [26] The stationary "fishing for demersal (bottom-dwelling) species" nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or reef fish trips by intent.

Headboat angler days have been variable across the Gulf States from 2020 through 2024, but there were no well-defined trends (Table 3.3.2.5). On average (2020 through 2024), Florida accounted for the majority of headboat angler days reported, followed by Texas and Alabama; Mississippi and Louisiana combined accounted for only a small percentage (Table 3.3.2.5). Headboat effort in terms of angler days for the entire Gulf tended to be concentrated most heavily during the summer months of June through August (Figure 3.3.2.1).

[26] Headboat trip categories include half-, three-quarter-, full-, and 2-day trips. A full-day trip equals one angler day, a half-day trip equals 0.5 angler days, etc. Angler days are not standardized to an hourly measure of effort and actual trip durations may vary within each category.

Table 3.3.2.5. Gulf headboat angler days and percent distribution by state (2020 through 2024).

	Angler Days				Percent Distribution			
	FL	**AL**	**MS-LA***	**TX**	**FL**	**AL**	**MS-LA**	**TX**
2020	126,794	13,091	1,728	51,498	65.66%	6.78%	0.89%	26.67%
2021	181,632	13,844	3,197	71,344	67.27%	5.13%	1.18%	26.42%
2022	149,368	14,588	3,675	62,705	64.85%	6.33%	1.60%	27.22%
2023	149,735	12,513	3,244	58,279	66.91%	5.59%	1.45%	26.04%
2024	146,544	10,761	2,113	57,074	67.69%	4.97%	0.98%	26.36%
Average	150,815	12,959	2,791	60,180	66.48%	5.76%	1.22%	26.54%

Source: NMFS SRHS (2023).
*Headboat data from Mississippi and Louisiana are combined for confidentiality purposes.

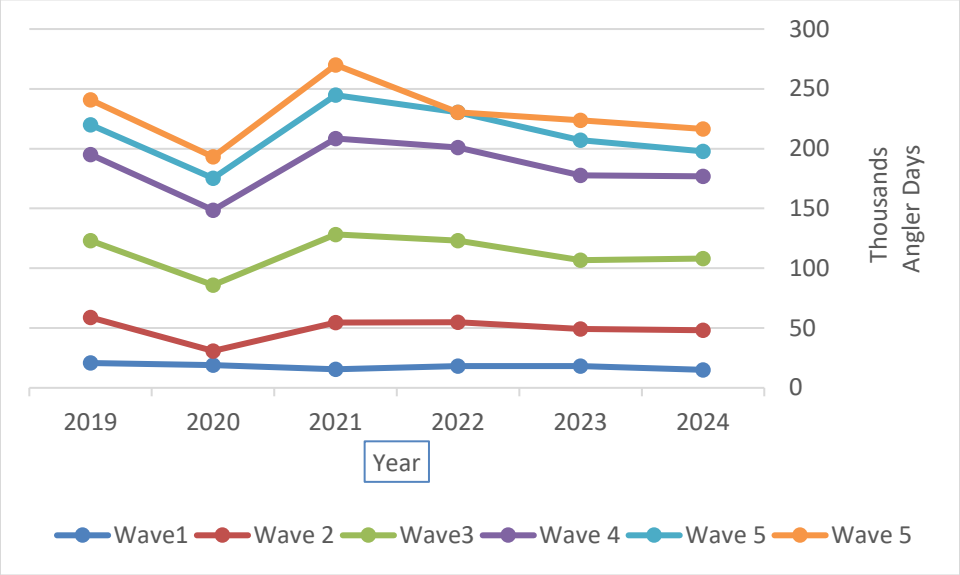

Figure 3.3.2.1. Gulf headboat angler days by wave and year (2020 - 2024).
Source: NMFS SRHS (2023).

Permits

There are no specific federal permitting requirements for private recreational anglers to fish for or harvest shallow water grouper species, red grouper. The same is true for private recreational vessel owners. Instead, private anglers are required either to possess a state recreational fishing permit that authorizes saltwater fishing in general, or to be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual private anglers or private recreational vessels would be expected to be affected by the actions in this amendment.

For anglers to fish for or possess reef fish species in or from the Gulf EEZ on for-hire vessels, those vessels are required to have a Gulf charter/headboat permit for reef fish (Gulf reef fish for-

hire permit). As of August 26, 2021, there were 1,273 valid or renewable[27] Gulf reef fish for-hire permits. The total number of valid or renewable Gulf reef fish for-hire permits has been relatively stable with less than a 1% change from year to year during 2016 through 2020 (Table 3.3.2.6). Note more recent permit information is currently unavailable.

Although the permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, if a vessel meets the selection criteria used by the Southeast Regional Headboat Survey (SRHS) and is selected to report by the Science Research Director of the SEFSC, it is determined to operate primarily as a headboat and is required to submit harvest and effort information to the SRHS. As of July 31, 2024, 68 Gulf headboats were registered in the SRHS (R. Cheshire, NMFS SEFSC, pers. comm. 2024).

Table 3.3.2.6. Number of valid or renewable Gulf reef fish for-hire permits, 2016-2020.

Year	Number of Permits
2016	1,282
2017	1,280
2018	1,279
2019	1,277
2020	1,289

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database (accessed 05/17/22).

Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is consumer surplus (CS), which is the difference between the maximum amount an angler would be willing to pay for a fish and the amount they actually do pay.[28] CS represents a savings of one's income that can be spent later on other goods and services, leading to an overall increase in utility or satisfaction for the angler and a benefit to the economy. All else equal, the amount anglers are willing to pay and the costs of fishing can vary depending on expected catch rates, harvest rates, and existing regulations. The economic value of changes in expected catch rates, harvest rates, or existing regulations can be measured by any associated changes in CS. However, because recreationally-caught fish are non-market goods and there are no transaction data available, CS cannot be measured directly. Instead, using survey elicitation methods and stated or revealed preference models, it is possible to estimate willingness to pay (WTP) values[29] that are a close approximation to the individual CS an angler would derive from an additional fish that is caught and kept. Direct estimates of the WTP for red

[27] A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration.
[28] Holding income and the prices of other goods constant.
[29] These are measures of compensating surplus, or the amount of money that an angler would be willing to pay in order to harvest the additional fish, while maintaining the same level of utility.

grouper are not currently available. There are, however, estimates for grouper species in general. Haab et al. (2012) estimated the WTP for one additional grouper caught and kept in the Southeastern U.S. using four separate econometric modeling techniques. The finite mixture model, which takes into account variation in the preferences of fishermen, had the best prediction rates of the four models and, as such, was selected for presentation here. The mean WTP for an additional grouper was estimated to be $168.76 (2024 dollars). Another study estimated the mean WTP for catching and keeping a second grouper on an angler trip at approximately $131 (2024 dollars) and lower thereafter (approximately $87 for a third grouper, $64 for a fourth grouper, and $51 for a fifth grouper) (Carter and Liese 2012). For the purposes of this amendment, the $131 per fish estimate is assumed to be the best value to use for estimating the CS associated with catching and keeping a species in the Gulf RG. The higher value provided by Haab et al. (2012) is likely less reasonable for this particular species.

Economic value for the for-hire component of the recreational sector can be measured in many ways. According to Savolainen et al. (2012), the average charter vessel operating in the Gulf is estimated to receive approximately $107,000 (2024 dollars) in gross revenue and $32,000 (2024 dollars) in net income (gross revenue minus variable and fixed costs) annually. The average headboat is estimated to receive approximately $325,000 (2024 dollars) in gross revenue and $95,000 (2024 dollars) in net income annually. More recent estimates of average annual gross revenue for Gulf headboats are provided in Abbott and Willard (2017) and D. Carter, SEFSC, pers. comm. 2018. Abbott and Willard (2017) suggest that Savolainen, et al.'s estimate of average annual gross revenue for headboats may be an underestimate, as data in the former suggest that average gross revenue in 2009 for the vessels in their sample was about $575,000 (2024 dollars). Further, their data suggest average annual gross revenue per vessel had increased to about $694,000 (2024 dollars) by 2014. However, Abbott and Willard's estimates are based on a sample of 17 headboats that chose to participate in the headboat collaborative program in 2014, while the Savolainen, et al. estimates are based on a random sample of 20 headboats. The headboats that participated in the collaborative program may be economic highliners, in which case Abbott and Willard's estimates would overestimate average annual gross revenue for Gulf headboats. D. Carter, SEFSC, pers. comm. 2018 recently estimated that average annual gross revenue for Gulf headboats was approximately $514,000 (2024 dollars) in 2017. This estimate is likely the best current estimate of annual gross revenue for Gulf headboats, as it is based on a relatively large sample of 63 boats, or more than 90% of the active fleet, and is more recent.

However, gross revenues overstate the annual economic value and profits generated by for-hire vessels. Economic value for for-hire vessels can be measured by PS per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of revenue, costs, and trip net revenue (TNR) for trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). After accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 42% of revenue for Gulf charter vessels and 54% of revenue for Southeast headboats,[30] or $938 and $2,179 (2024 dollars), respectively (Table

[30] Southeast headboats include headboats operating either the Gulf or South Atlantic. Souza and Liese (2019) state "the sample size available for headboats is limited (n=30) and, hence, the results are presented at an overall SE aggregation."

3.3.2.7). When TNR is divided by the number of anglers on a trip, it represents cash flow per angler (CFpA), which is an approximation of PS per angler trip. The estimated CFpA value for an average Gulf charter angler trip is $171 (2024 dollars) and the estimated CFpA value for an average Gulf headboat angler trip is $77 (2024$; Souza and Liese 2019). Estimates of CFpA for individual Reef Fish species or species group target trips, in particular, are not available.

Table 3.3.2.7. Trip economics for offshore trips by Gulf charter vessels and Southeast headboats in 2017 (2024 dollars).

	Gulf Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	27%	19%
Labor Costs (% of revenue)	27%	22%
Net Revenue per trip including Labor costs (% of revenue)	42%	54%
Net Revenue per Trip	$938	$2,179
Average # of Anglers per Trip	5.5	28.2
Trip Net Cash Flow per Angler Trip	$171	$77

Source: Souza and Liese (2019).

Business Activity

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

Estimates of the business activity (economic impacts) associated with recreational angling for Gulf red grouper species were calculated using average trip-level impact coefficients derived from the 2022 Fisheries Economics of the U.S. report (NMFS 2024a) and underlying data provided by the National Oceanic and Atmospheric Administration Office of Science and Technology. Economic impact estimates in 2022 dollars were adjusted to 2024 dollars using the annual, not seasonally adjusted, gross domestic product (GDP) implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Business activity (economic impacts) for the recreational sector is characterized in the form of jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), output impacts (gross business sales), and value-added impacts (contribution to the GDP in a state or region). Estimates of the average annual economic impacts (2020–2024) resulting from Gulf red grouper charter, private vessel, and shore target trips are provided in Table 3.3.2.8. These impacts should not be added together because this would result in double counting. The average impact coefficients, or multipliers, used in the model are invariant to the "type" of effort (e.g., target or catch) and can therefore be directly used to measure the impact of other effort measures such as Gulf red grouper catch trips. To calculate the multipliers from Table 3.3.2.8, simply divide the desired impact measure (value-added impact, sales impact, income impact, or employment) associated with a given state and mode by the number of target trips for that state and mode.

The estimates provided in Table 3.3.2.8 only apply at the state-level. Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity, because state-level impact multipliers do not account for interstate and interregional trading. It is also important to note that these economic impacts estimates are based on trip expenditures only and do not account for durable expenditures. Durable expenditures cannot be reasonably apportioned to individual species or species groups. As such, the estimates provided in Table 3.3.2.8 may be considered a lower bound on the economic activity associated with those trips that targeted Gulf RG.

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

Table 3.3.2.8. Estimated average annual economic impacts (2020-2024) from Gulf charter, private vessel, and shore red grouper target trips, by state,* using state-level multipliers. All monetary estimates are in 2024 dollars in thousands.

	FL	AL
	Charter Mode	
Target Trips	46,255	0
Value Added Impacts	$31,166	$0
Sales Impacts	$49,362	$0
Income Impacts	$21,245	$0
Employment (Jobs)	441	0
	Private/Rental Mode	
Target Trips	209,249	1,633
Value Added Impacts	$7,484	$64
Sales Impacts	$12,502	$137
Income Impacts	$3,670	$27
Employment (Jobs)	71	1
	Shore	
Target Trips	7,221	0
Value Added Impacts	$416	$0
Sales Impacts	$688	$0
Income Impacts	$222	$0
Employment (Jobs)	4	0
	All Modes	
Target Trips	262,724	1,633
Value Added Impacts	$39,066	$64
Sales Impacts	$62,552	$137
Income Impacts	$25,137	$27
Employment (Jobs)	516	1

*There was no recorded target effort for red grouper in Texas or Mississippi and Louisiana data are currently unavailable.

National-level multipliers must be used to account for interstate and interregional trading when calculating a national total of economic impacts. Between 2020 and 2024, and using national-level multipliers, Gulf red grouper target effort generated employment, income, value-added, and output (sales) impacts of 204 jobs, $11.0 million, $18.0 million, and $32.0 million per year, respectively, on average.

3.4 Description of the Social Environment

This amendment affects the commercial and recreational management of red grouper in the Gulf. The following description presents baseline information on fishing participants and fishing communities. This description includes the current status of the fishery in order to present the

communities that are expected to be primarily affected by the actions in this amendment because they are the most engaged in and/or reliant on the fishery and is used to inform the social effects. Community level data are presented whenever possible 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.

The following description includes permits related to the commercial and recreational reef fish fishing by state and in order to provide a geographic distribution of fishing involvement. Top communities based on the number of permits are presented. Commercial and recreational landings by state are included to provide information on the geographic distribution of fishing involvement. Descriptions of red grouper IFQ accounts with shares, red grouper IFQ accounts with allocation but without shares, and red grouper IFQ species dealers are included at the state and community level. The top communities in the Gulf by commercial landings are identified, the contribution of red grouper species compared to the total landings for the community are depicted, and their commercial engagement and reliance are described. Descriptions of the top communities based on recreational engagement and top communities by headboat survey landings are also included. Lastly, social vulnerability data are presented for all top-ranking communities.

The most recent data available has been utilized in the following section; however, the year range or date presented may not match what is included elsewhere because some sources of data are not available at the community or state level.

3.4.1 Commercial Sector

Description of the IFQ Program

Commercial fishing for red grouper is part of a multi-species reef fish fishery with species commonly co-occurring and co-caught and is conducted through the Grouper-Tilefish (GT) IFQ program. The GT IFQ program includes five share categories including a red grouper IFQ share category. There is a high degree of overlap in participation between share categories within the GT IFQ program, with the majority of shareholders holding shares in three or more share categories since the start of the program (NMFS 2024c). There is also great overlap between vessels that land GT IFQ and those that land Red Snapper IFQ, a separate, but related IFQ program (94% of GT IFQ vessels landed Red Snapper IFQ in 2023, NMFS 2024c).

Participants in the IFQ program include shareholders (those who hold shares and receive annual allocation from those shares), allocation only holders (those who purchase or use annual allocation from other shareholders; however, these accounts may be related to shareholder accounts), vessel owners, permit owners, hired captains, crew, and fish dealers. Shareholders can include such categories of participants as commercial and for-hire fishermen, fish dealers, brokers (those who own shares and sell their allocation to others), and restaurant owners. Shareholders can be involved in the program in multiple ways and through a variety of business arrangements; for example, a shareholder can include an individual or company that owns a vessel and permit, owns shares, fishes their allocation, and purchases additional allocation from

others. Another example of a shareholder is a business that owns a vessel, owns a permit, owns shares, and acts as a fish dealer. Some fish dealers acquire shares and allocation for use by the vessels that supply fish for their fish house, with in some cases, a fleet of vessels reliant on the allocation that they procure. Dealers must have an IFQ account and an IFQ dealer endorsement in order to receive landings of IFQ species.

Interactions between participants within the IFQ program are critical to the way that fishermen operate within the system and comply with the rules and regulations. Anecdotally, it has been reported that fishermen frequently rely on their social networks, the people they know, to find shares and allocation for sale. In particular, it has been described that fishermen frequently rely on their fish dealers for allocation. Some fishermen also rely on their dealer or more technically inclined connections to help them to fill out paperwork required for permit applications or IFQ requirements.

Red grouper allocation is distributed annually to shareholders. The amount of allocation received by each shareholder is based on a proportion of the quota for the year, with the initial issuance of share amounts based on past participation. Shares and allocation can be bought and sold, and the number of shares held by particular shareholders and number of people holding shares has changed over the years, with a steady reduction in the number of accounts with red grouper IFQ shares over time (692 shareholders at the beginning of the program compared to 454 in 2023, NMFS 2024c). The greatest proportion of red grouper IFQ shares are held by medium shareholders (56% of shares in 2023, medium is categorized as holding between 0.05-1.4999% of shares), followed by large shareholders (41%, large is categorized as holding greater than or equal to 1.5% of shares), and small (3%, small is categorized as holding less than 0.05% of shares, NMFS 2024c). Conversely, the greatest number of red grouper IFQ shareholders are small (62% of shareholders in 2023), followed by medium shareholders (35%), and large shareholders (3%). New shareholders are able to participate through the purchase of shares from other shareholders and those without shares are able to participate and land red grouper species through the purchase or use of another shareholder's allocation through a transfer.

Annual allocation can be transferred resulting from the purchase of allocation (commonly referred to as leasing quota) or through other arrangements, for example, such as the transfer of allocation to a related account (such as another account held by the same shareholder) or for example, a transfer to a vessel that is delivering fish to the shareholder's fish house. A sizable proportion of participants (33% of red grouper allocation holders in 2023, NMFS 2024c) acquire red grouper allocation via transfer and do not hold red grouper shares; however, some may receive allocation from a related account that holds shares. In addition, those without shares land the majority of landings of red grouper (65% in 2023, NMFS 2024c). Allocation is transferred more than the total amount of the quota and may often be transferred multiple times before being used to account for landings. For example, in 2023, 294% of the red grouper quota was transferred through 3,839 allocation transfers (NMFS 2024c).

Permits

Gulf reef fish permits are limited access, but transferrable. The name listed on the permit must match the name listed on the IFQ account in order to harvest IFQ species. Gulf reef fish permits

are issued to entities, such as individuals and/or businesses in Florida (81.4% of Gulf reef fish vessels), Texas (7.8%), Alabama (4.5%), Louisiana (3.8%), and Mississippi (0.9%) (SERO permit office, July 8, 2021). Residents of other states (Arkansas, Georgia, Illinois, Maryland, Missouri, North Carolina, New York, Oklahoma, and South Carolina) also hold commercial reef fish permits, but these states represent a smaller percentage of the total number of issued permits.

Gulf reef fish permits are held by those with mailing addresses in 232 communities (SERO permit office, July 8, 2021). Communities with the most commercial reef fish permits are located in Florida and Texas (Table 3.4.1.1). The communities with the most reef fish permits are Panama City, Florida (9.1% of reef fish permits), Key West, Florida (4.8%), and St. Petersburg, Florida (3.3%).

Table 3.4.1.1. Top communities by number of Gulf reef fish permits.

State	Community	Reef Fish Permits (RR)
FL	Panama City	82
FL	Key West	43
FL	St. Petersburg	30
FL	Largo	26
TX	Galveston	22
FL	Destin	22
FL	Cortez	21
FL	Pensacola	21
FL	Seminole	20
FL	Clearwater	16
FL	Tampa	16
FL	Lynn Haven	13
FL	Naples	13
FL	Steinhatchee	13
FL	Apalachicola	11
FL	Tarpon Springs	11

Source: SERO permit office, July 8, 2021.

Landings

Nearly all of the commercial catch of red grouper is landed along the west coast of Florida (average of 99.9% from 2016-2020), with small proportions landed in Louisiana, Alabama, and Texas (NMFS SERO IFQ database accessed 4/2/25).

IFQ Accounts

To land IFQ-managed species, such as RG, fishermen need a permitted vessel with an activated VMS unit, and sufficient IFQ allocation in the vessel's account to land the fish. Like permits,

some accounts are held in the name of an individual, or more than one individual, while others form business entities and open accounts in the name of the business. This makes it more difficult to talk about the social environment as there may be multiple individuals behind the account, and they may not reside in the same area. In the following analysis, accounts are described at the state and community level based on the mailing address of the self-designated primary entity (e.g., individual, business, or primary entity listed on the permit or IFQ application when held by more than one entity).

An IFQ account, also called shareholder account, is required to hold shares and allocation. The number of accounts is used here as a proxy to represent the number of participants and may represent more than one entity.

Shareholders

As of July 8, 2021, a total of 480 IFQ accounts held shares of red grouper IFQ (IFQ database; includes active and suspended accounts). The majority of accounts with red grouper IFQ shares have a mailing address in Florida (86% of accounts with red grouper IFQ shares, Table 3.4.1.2), followed by Alabama (4.2%), Texas (2.7%), Louisiana (2.5%), and Mississippi (0.8%). Accounts with mailing addresses in other states (Arkansas, Georgia, Michigan, North Carolina, New York, Ohio, Oregon, South Carolina, Tennessee, Utah, and Wyoming) also hold red grouper IFQ shares, but these states represent a smaller percentage of the total number of accounts with shares.

The majority of red grouper IFQ shares are held in accounts with mailing addresses in Florida, followed by Texas (Table 3.4.1.2). Accounts in Alabama, Louisiana, Mississippi, and other states also hold red grouper IFQ shares, but these states represent a smaller percentage of shares.

Table 3.4.1.2. Number of IFQ accounts with red grouper shares by state, including the percentage of shares by state by share category.

State	Accounts	Red Grouper Shares (%)
AL	20	0.870
FL	413	83.162
LA	12	0.028
MS	4	0.141
TX	13	6.172
Other	18	9.425
Total	480	99.799

Source: NMFS SERO IFQ database accessed 7/8/21.
Note: Includes active and suspended accounts.

Accounts with red grouper IFQ shares are held by people with mailing addresses in a total of 166 communities (IFQ database accessed 7/8/21). Communities with the most accounts with red grouper IFQ shares are located in Florida (Table 3.4.1.3). The community with the most

accounts with red grouper IFQ shares is Panama City, Florida (8.3% of accounts with shares), followed by Key West, Florida (4.8%), and Largo, Florida (3.8%).

Table 3.4.1.3. Top communities by number of IFQ accounts with red grouper shares, including the percentage of shares by community.

State	Community	Accounts	Red Grouper Shares (%)
FL	Panama City	40	4.827
FL	Key West	23	0.456
FL	Largo	18	8.416
FL	Cortez	15	6.342
FL	St. Petersburg	15	4.990
FL	Destin	12	0.177
FL	Pensacola	12	0.038
FL	Tarpon Springs	10	2.054
FL	Apalachicola	9	2.284
FL	Steinhatchee	9	2.452
FL	Clearwater	8	6.781
FL	Seminole	8	3.602
FL	Tampa	8	0.327

Source: NMFS SERO IFQ database accessed 7/8/21.

The largest or maximum percent of red grouper IFQ shares held in a community is 8.416% in Largo, Florida (IFQ database accessed 7/8/21). The percentage of shares by community varies widely and a large number of accounts with shares may not necessarily correlate to a large percentage of shares in a particular category (Table 3.4.1.3). Some communities with a relatively smaller number of accounts may have a larger percentage of shares.

Allocation Only Holders

In 2020, a total of 296 IFQ accounts held red grouper IFQ allocation or RGM-IFQ allocation without red grouper IFQ shares (IFQ database accessed 2/25/22). However, some of these accounts may be related to accounts with red grouper shares. The majority of accounts with red grouper IFQ allocation or RGM-IFQ allocation, but without red grouper IFQ shares have mailing addresses in Florida (90.9% of accounts with red grouper or RGM allocation, but without red grouper shares, Table 3.4.1.4), followed by Alabama and Louisiana (each with 2.4%), and Texas (1.7%). Account holders with red grouper or RGM allocation, but without red grouper shares also have mailing addresses in other states (Georgia, Illinois, Massachusetts, North Carolina, Ohio, and South Carolina), but these states represent a smaller percentage of the total number of accounts with allocation, but without shares.

Table 3.4.1.4. Number of IFQ accounts with red grouper or RGM allocation, but without red grouper shares by state, 2020.

State	Accounts
AL	7
FL	269
LA	7
MS	0
TX	5
Other	8
Total	296

Source: NMFS SERO IFQ database accessed 2/25/22.

IFQ accounts with red grouper IFQ or RGM-IFQ allocation, but without red grouper IFQ shares, have mailing addresses in a total of 92 communities (IFQ database accessed 2/25/22). Communities with the most accounts with allocation, but without shares are located in Florida (Table 3.4.1.5). The community with the most accounts with allocation, but without shares is Panama City, Florida (7.4% of accounts with allocation, but without shares, Table 3.4.1.5), followed by Largo, Florida (6.1%) and St. Petersburg, Florida (5.7%).

Table 3.4.1.5. Top communities by number of IFQ accounts with red grouper or RGM allocation, but without red grouper shares, 2020.

State	Community	Accounts
FL	Panama City	22
FL	Largo	18
FL	St. Petersburg	17
FL	Madeira Beach	13
FL	Key West	10
FL	Seminole	10
FL	Hernando Beach	8
FL	Lecanto	8
FL	Pensacola	7
FL	Cape Coral	6
FL	Clearwater	6
FL	Indian Shores	6
FL	Pinellas Park	5
FL	Redington Shores	5

Source: NMFS SERO IFQ database accessed 2/25/22.

Dealers

The majority of dealer facilities with red grouper IFQ landings are located in Florida (average of 95.1% of Gulf red grouper IFQ species dealer facilities for 2016-2020, Table 3.4.1.6); followed

by Alabama, Louisiana, and Texas combined (4.9%). Alabama, Louisiana, and Texas are combined to protect confidentiality.

Table 3.4.1.6. Number of Gulf red grouper IFQ dealer facilities by state for 2016-2020.

Year	FL	AL/LA/TX
2016	111	8
2017	113	5
2018	110	6
2019	111	6
2020	101	3

Source: NMFS SERO IFQ database accessed 4/2/25.

Gulf red grouper IFQ species dealers are located in a total 74 communities (IFQ database accessed 4/2/25, includes dealers with landings of red grouper from 2016-2020). Communities with the most Gulf red grouper IFQ dealer facilities are located in Florida (Table 3.4.1.7). The community with the most Gulf red grouper IFQ dealer facilities is Panama City, Florida (7% of Gulf red grouper IFQ dealer facilities, Table 3.4.1.7), followed by Key West, Florida (6.5%); and Madeira Beach, Florida (6%).

Table 3.4.1.7. Top communities by number of dealer facilities with red grouper IFQ landings during 2016-2020.

State	Community	*Dealer Facilities
FL	Panama City	15
FL	Key West	14
FL	Madeira Beach	13
FL	Steinhatchee	8
FL	Bokeelia	7
FL	St. James City	7
FL	St. Petersburg	7
FL	Venice	7
FL	Panacea	6
FL	Crystal River	5
FL	Fort Myers	5
FL	Pensacola	5

Source: NMFS SERO IFQ database accessed 4/2/25.
*Multiple dealers can use the same facility and a dealer can operate at multiple facilities.

Regional Quotient

Regional Quotient (RQ) is the proportion of red grouper IFQ landed within a community out of the total amount of red grouper IFQ landed within the Southeast region. It is an indicator of the percent contribution in pounds or value of red grouper IFQ landed within that community relative to the regional fishery. The RQ is reported individually only for the top 10 communities by total landings for the years of 2016 through 2020. All other communities that landed red

grouper IFQ are grouped as "Other." Figure 3.4.1.1 shows the RQ in percentage of pounds from 2016 to 2020. The dominant communities for red grouper IFQ pounds landed include the communities of Madeira Beach, Cortez, and Redington Shores, Florida (Figure 3.4.1.1). The top community of Madeira Beach, Florida is frequently referred to as the "Grouper Capital of the World," and includes an average of 43.7% of landings of red grouper IFQ species over the time series. Several of the top 10 communities are located in Pinellas County (Madeira Beach, Redington Shores, Tarpon Springs, Indian Shores, and St. Petersburg) and are within close proximity to each other. In addition, although Cortez, Florida (ranked second) is located in an adjacent county, Manatee County, it is also located within close proximity to Pinellas County. Two of the top 10 communities are located in the Florida Panhandle (Apalachicola and Panama City).

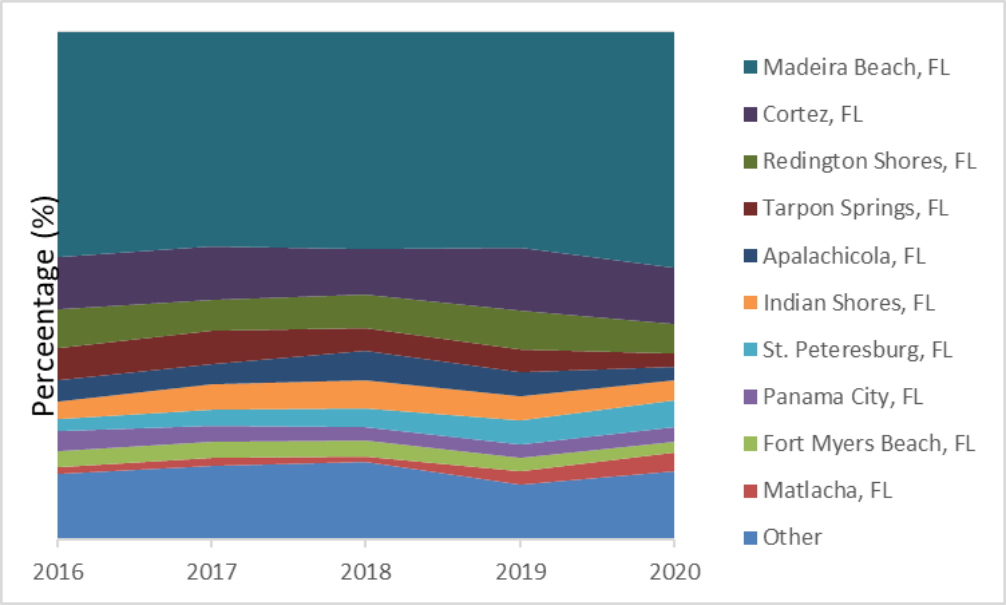

Figure 3.4.1.1. Regional Quotient (pounds) for top communities by landings of Gulf red grouper IFQ from 2016 through 2020.
Source: IFQ database accessed 4/2/25.

Local Quotient

The community Local Quotient (LQ) is the percentage of red grouper landed within that community out of the total of all species landed within that community. It is an indicator of the contribution of the value of red grouper to the overall landings in a community. Figure 3.4.1.2 shows the LQ in percentage of value from 2019 to 2023 for the top communities by landings of red grouper as depicted in Figure 3.4.1.1. The LQ for all included communities fluctuated throughout the time series, but remained relatively stable for most communities. The community of Madeira Beach, Florida includes a comparatively high red grouper LQ for all years with ≥ 37% of value in landings and ranging up to a high of over 49% of value. Cortez, St. Petersburg, and Matlacha, Florida also include a comparatively high LQ for all years, with a particularly high year for the community of Matlacha in 2023.

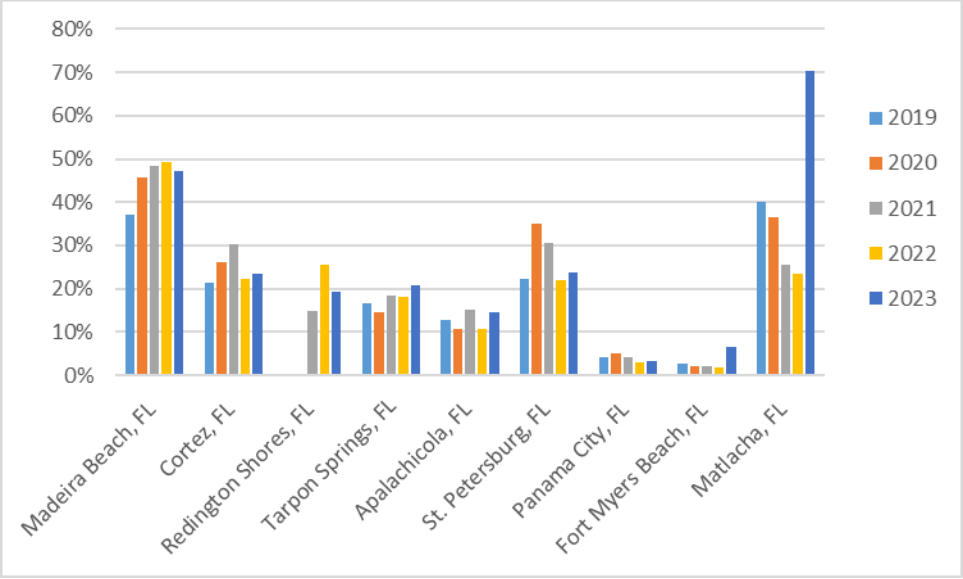

Figure 3.4.1.2. Local Quotient (value) for top communities by landings of Gulf red grouper for 2019 to 2023.
Source: SERO, Community ALS.

Engagement and Reliance

In addition to examining the RQs and LQs to understand how Gulf communities are engaged and reliant on fishing, indices were created using secondary data from permit and landings information for the commercial sector (Jepson and Colburn 2013, Jacob et al. 2013). Fishing engagement is primarily based on the absolute numbers of permits, landings, and value. The analysis used the number of vessels designated commercial by homeport and owner address, value of landings, and total number of commercial permits for each community. Fishing reliance includes the same variables as fishing engagement divided by population to give an indication of the per capita influence of this activity.

Taking the communities with the highest RQs, factor scores of both engagement and reliance for commercial fishing were plotted. Two thresholds of one and one-half standard deviation above the mean are plotted onto the graphs to help determine a threshold for significance. The factor scores are standardized; therefore, a score above one is also above one standard deviation. A score above one-half standard deviation is considered engaged or reliant, with anything above one standard deviation to be very engaged or reliant.

Figure 3.4.1.2 is an overall measure of a community's commercial fishing engagement and reliance and includes the communities with the strongest relationship to the commercial sector for red grouper as depicted in Figure 3.4.1.1. Most communities in Figure 3.4.1.3 would be considered to be highly engaged in commercial fishing, as many are at or above one standard deviation of the mean factor score. Redington Shores, Indian Shores, and Matlacha, Florida show the least amount of engagement in commercial fishing overall. Madeira Beach, Cortez, Apalachicola, Fort Myers Beach, and Matlacha, Florida demonstrate a moderate to high level of commercial reliance.

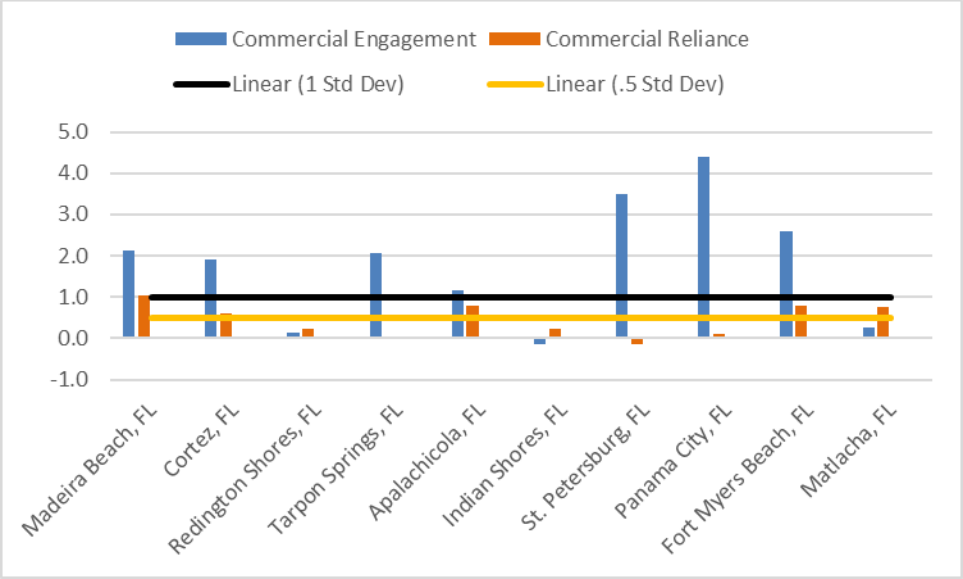

Figure 3.4.1.3. Commercial fishing engagement and reliance for top red grouper communities.
Source: SERO Community Social Vulnerability Indicators Database 2021.

3.4.2 Recreational Sector

Permits

Charter/headboat for reef fish permits are issued to entities, such as individuals and businesses in Florida (60% of charter/headboat for reef fish vessels), Texas (15.7%), Alabama (10.6%), Louisiana (7.4%), and Mississippi (2.6%, SERO permit office, July 8, 2021). Residents of other states (Arkansas, Arizona, California, Colorado, Georgia, Illinois, Michigan, Missouri, Montana, North Carolina, New Jersey, New York, Ohio, Oklahoma, Tennessee, Virginia, and Wisconsin) also hold charter/headboat permits, but these states represent a smaller percentage of the total number of issued permits.

Charter/headboat for reef fish permits are held those with mailing addresses in 355 communities (SERO permit office, July 8, 2021). Communities with the most charter/headboat for reef fish permits are located in Florida, Alabama, and Texas (Table 3.4.2.1). The communities with the most charter/headboat permits are Panama City, Florida (4.6% of charter/headboat permits), Destin, Florida (4.4%), and Orange Beach, Alabama (4.1%).

Table 3.4.2.1. Top Gulf communities by number of charter/headboat for reef fish permits.

State	Community	Charter/Headboat for Reef Fish Permits (RCG)
FL	Panama City	65
FL	Destin	62
AL	Orange Beach	57
FL	Naples	45
FL	Key West	43
FL	Pensacola	30
FL	Sarasota	27
FL	St. Petersburg	23
TX	Galveston	21
FL	Panama City Beach	19
TX	Corpus Christi	19
FL	Cape Coral	18
FL	Clearwater	18
FL	Fort Myers	18
FL	Crystal River	16
FL	Tampa	16
FL	Gulf Breeze	14

Source: SERO permit office, July 8, 2021.

Landings

From 2020-2024, 100% of recreational red grouper landings were from the waters adjacent to the west of Florida (SEFSC Recreational MRIP-FES ACL and LA Creel). In terms of mode of landings, the private anglers dominated, accounting for 61-77% of annual landings from 2020-2024, with remaining percent of annual landings from charters (22-49%) and headboats (1-2%).

Headboat Regional Quotient

Figure 3.4.2.1 shows the top Gulf communities based on a regional quotient (RQ) of recreational headboat landings for red grouper for 2020 through 2024. The RQ is the proportion of landings in the listed homeports for the headboats out of the total SRHS landings for that region and is a relative measure. The RQ is calculated as the homeports' average proportion of the total number of red grouper landings by SRHS vessels during this time period (SEFSC SRHS, 2020-2024) and is presented below in Figure 3.4.2.1, in descending order. The top headboat homeports reporting red grouper landings are concentrated in Florida, off the southwest coast. Headboats with homeports in Alabama and Texas landed a very small proportion of the region's red grouper catch.

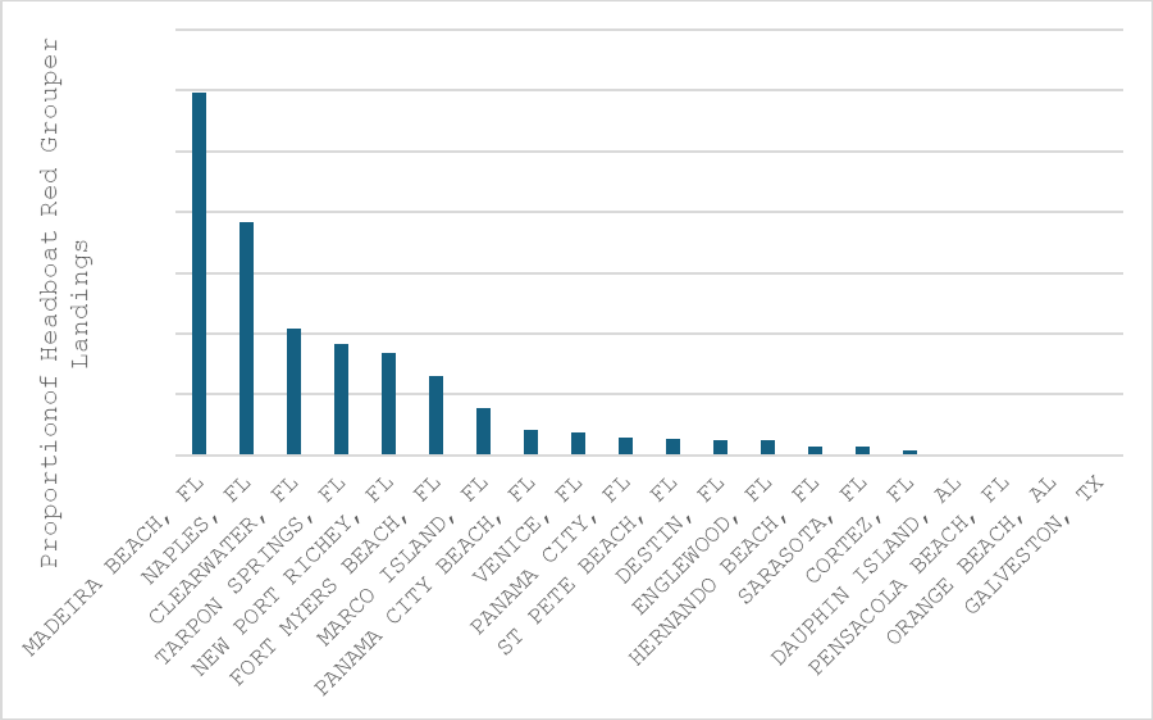

Figure 3.4.2.1. Headboat RQ-average proportion of red grouper landings by community for headboats included in the SRHS.
Source: SEFSC SRHS, 2020-2024.

Engagement and Reliance

Landings for the recreational sector based on fisheries survey data are not an accurate representation of the species caught at the community level, making it difficult to identify communities as dependent on recreational fishing for red grouper. Because limited data are available concerning how communities are engaged and reliant on specific species in the recreational sector, 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 vessels designated as "recreational" by homeport and owner's address and the number of recreational fishing survey sites in a particular community. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted by community.

Figure 3.4.2.2 identifies the Florida communities that are the top communities by engagement upon recreational fishing in general. Two thresholds of one and one-half standard deviation above the mean were plotted to help determine a threshold for significance. Communities are presented in ranked order by fishing engagement and all included communities demonstrate high levels of recreational engagement, although this is not specific to fishing for red grouper. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the top list, suggesting a greater importance for recreational fishing in that area. As all recreational landings occurred in Florida, the table below shows only the top 20 communities in Florida for recreational fishing engagement and reliance. The

communities of Tavernier, Islamorada, Destin, Key West, Marathon, Port St. Joe, and Crystal River, Florida demonstrate the highest reliance on recreational fishing. The communities of Naples, Key Largo, and Fort Myers Beach, Florida demonstrate a moderate to high reliance.

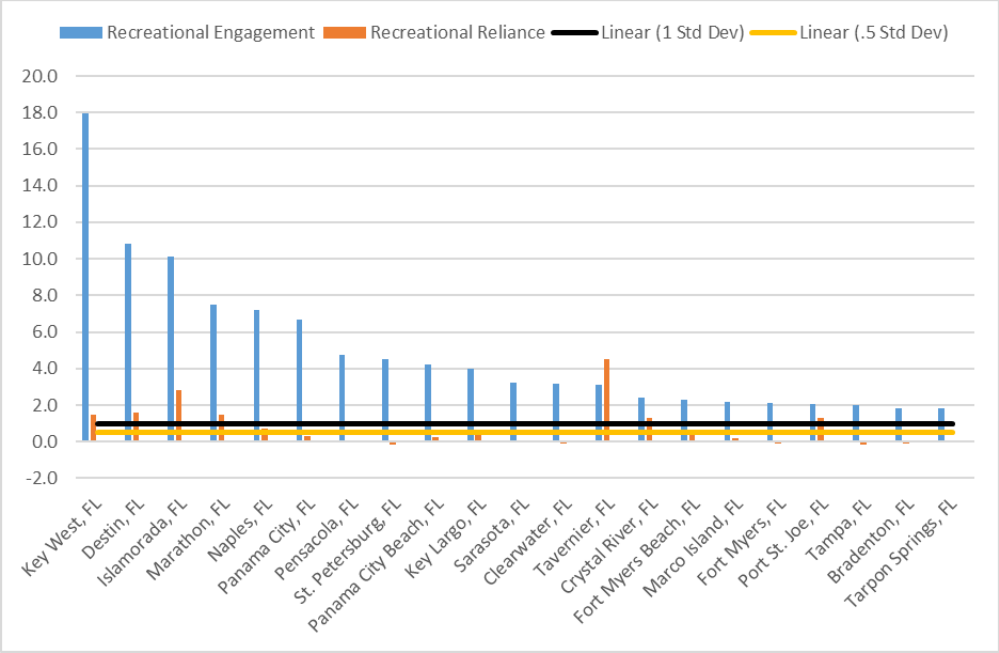

Figure 3.4.2.2 Recreational fishing engagement and reliance for top Florida communities.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

3.4.3 Social Vulnerability

A suite of indices was created using census data to examine the social vulnerability of coastal communities. The three indices are poverty, population composition, and personal disruption. 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. Poverty includes poverty rates for different groups; population composition includes more single female-headed households, households with children under the age of five, minority populations, and those that speak English less than well; and personal disruption includes disruptions such as higher separation rates, higher crime rates, and unemployment. Increased rates in the indicators are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figures 3.4.3.1 and 3.4.3.2 provide social vulnerability rankings for place-based communities identified in Section 3.4 as important to commercial and recreational fishing for red grouper specifically, fishing for reef fish, or marine fishing in general. Several communities in Florida exceed the threshold of one standard deviation above the mean for at least one of the indices (Bokeelia, Panacea, and Steinhatchee). These communities would be the most likely to exhibit vulnerabilities to social or economic disruption resulting from regulatory change.

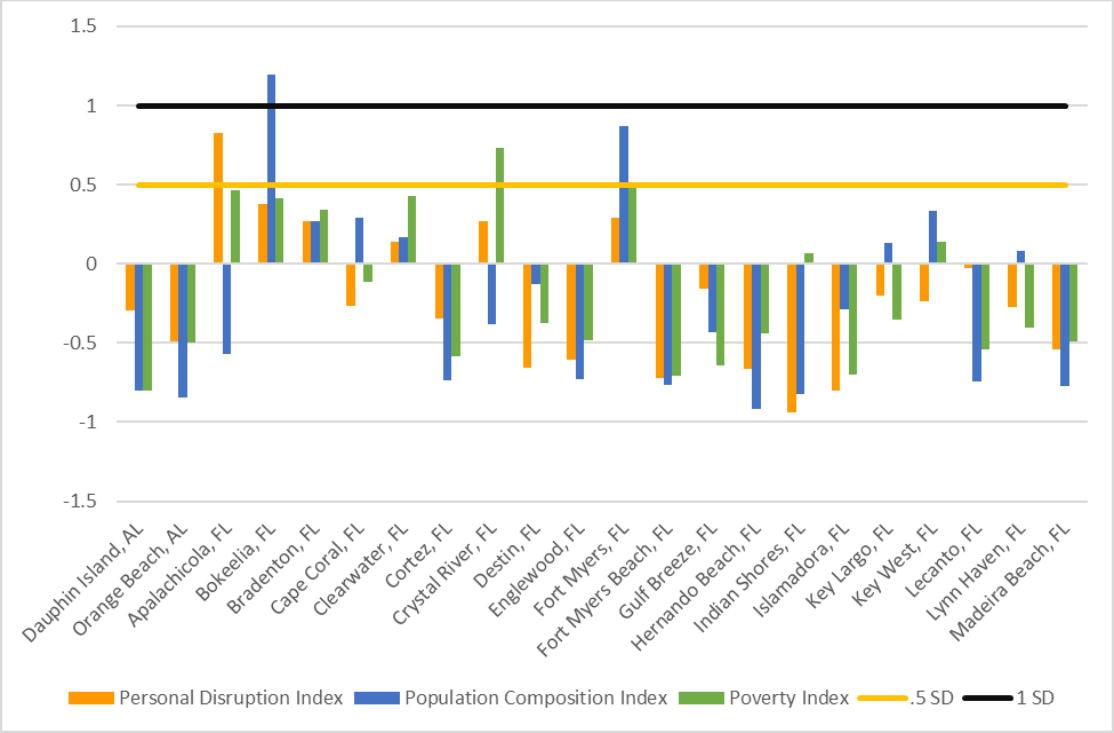

Figure 3.4.3.1. Social vulnerability indices for top commercial and recreational reef fish and red grouper communities.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

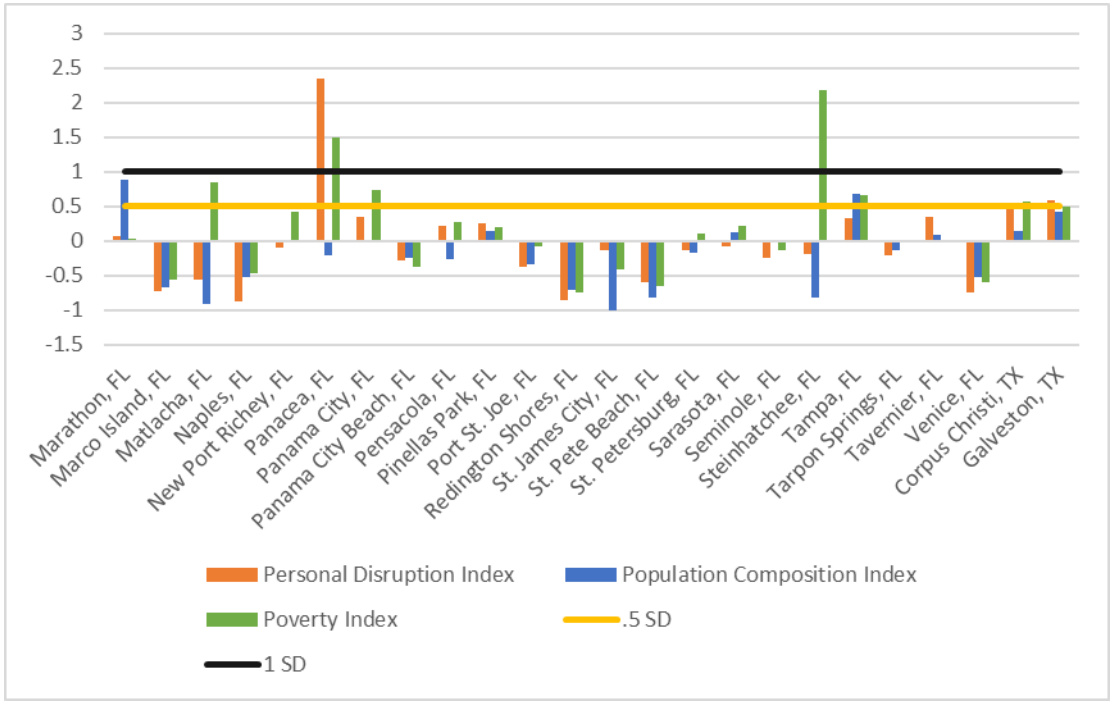

Figure 3.4.3.2. Social vulnerability indices for top commercial and recreational reef fish and red grouper communities continued.
Source: SERO, Community Social Vulnerability Indicators Database 2022.

The description of fishing activities presented here highlights which communities may be most involved in Gulf red grouper fishing. It is expected that the impacts from the regulatory action in this amendment, whether positive or negative, will most likely affect those communities identified above.

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*.). It was 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, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

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

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

The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process through participation on advisory panels and through Council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments. Regulations contained within FMPs are enforced through actions of NOAA's Office of Law Enforcement, the United States Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Technical Committee and the Gulf States Marine Fisheries Commission's Law Enforcement

Committee, which have developed joint enforcement agreements and cooperative enforcement programs.[31]

Reef fish stocks are assessed through the SEDAR process. As species are assessed, stock condition and acceptable biological catch levels are evaluated. As a result, periodic adjustments to stock ACLs and other management measures are deemed necessary to prevent overfishing. Management measures are implemented through plan or regulatory amendments.

3.5.2 State Fishery Management

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

[31] www.gsmfc.org

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1: Modification of Gulf Red Grouper Overfishing Limit (OFL), Acceptable Biological Catch (ABC), and Total Annual Catch Limit (ACL)

4.1.1 Effects on the Physical Environment

The alternatives to the status quo in this action set new catch limits for Gulf of America (Gulf) red grouper. This action would have no direct impact on the physical environment. However, increases in catch limits may result in increased fishing effort, which could increase potential effects. Any effects from this action are not expected to be significant, as this action is not expected to change how the reef fish fishery is prosecuted overall because it is a multi-species fishery targeting many species. This action would only affect the portion of the fishery targeting red grouper.

The commercial sector of the reef fish fishery uses vertical line (i.e., electric reel, bandit rig, hook-and-line, and trolling) and longline gear. The recreational sector (headboat, charter for-hire, and private vessels) primarily uses vertical line gear (hook-and-line). For red grouper, there is no recreational shore mode included in the stock assessment (SEDAR 88 2025), as red grouper is typically not harvested from shore. Generally, reef fish are also harvested by spearfishing in both the commercial and recreational sectors; however, the proportion of recreational landings for red grouper attributable to spearfishing is estimated to be low compared to hook-and-line. In the Gulf, a majority of commercial red grouper landings reported indicated that longline and vertical line were the predominant gears used. For the recreational sector, a majority of red grouper landings indicated that hook-and-line fishing was the predominant gear used.

Anchor damage is also associated with vertical line fishing vessels, particularly by the recreational sector, where fishermen may repeatedly visit well marked or known fishing locations. Hamilton (2000) pointed out that "favorite" fishing areas such as reefs are targeted and revisited multiple times, particularly with the advent of GPS technology. The cumulative effects of repeated anchoring could damage the hard bottom areas where reef fish fishing occurs, which may be exacerbated by repeated drops of weighted fishing rigs onto the reef. Recreational and commercial vessels that use vertical line gear are typically known to anchor more frequently over reef sites. Since the mid-2010s, private recreational and charter for-hire vessels have increasingly adopted the use of bow-mounted electric trolling motors with global positioning system (GPS), allowing these vessels to remain at a geographic point without the need of a traditional anchor. The continued adoption of this method of staying on location when fishing would be expected to decrease physical interactions with the physical environment by these vessels from traditional anchoring practices (Capt. Dylan Hubbard, pers. comm, 2024).

Commercial harvesting for reef fish using longline gear occurs over hard bottom habitats using weights to keep the gear in direct contact with the bottom. The potential for this gear to adversely impact the bottom depends on the type of habitat it is set on, the presence or absence of currents and the behavior of fish after being hooked. In addition, this gear, upon retrieval, can

abrade, snag, and dislodge smaller rocks, corals, and sessile invertebrates (Hamilton 2000; Barnette 2001). Direct underwater observations of longline gear in the Pacific halibut fishery by High (1980) noted that the gear could sweep across the bottom. A study that directly observed deployed longline gear (Atlantic tilefish portion of the snapper-grouper fishery) found no evidence that the gear shifted significantly, even when set in currents (Grimes et al. 1982). **Alternative 2** and **Preferred Alternative 3** would increase allowable harvest of red grouper, which may increase fishing effort. Because of the multi-species nature of the reef fish fishery for the commercial and recreational sectors, and because fishing effort may shift, increasing catch limits as proposed in **Alternative 2** and **Preferred Alternative 3** is not expected to result in measurable effects to the physical environment compared to each other or compared to **Alternative 1**.

4.1.2 Effects on the Biological Environment

Effects from fishery management actions as they relate to red grouper have been discussed in detail in GMFMC (2011a) and GMFMC (2021) and are incorporated here by reference. Management actions that affect the biological and ecological environments primarily relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from a population through fishing reduces the overall population size. Fishing gear types have different selectivity patterns, which refer to a fishing method's ability to target and capture a species by size (length) and age. Selectivity patterns also include discards, which are mostly comprised of sublegal sized fish or fish caught during seasonal closures, and the mortality associated with releasing these fish. Potential impacts of the 2010 *Deepwater Horizon* MC252 oil spill on the biological/ecological environment are discussed in Section 3.2 and in the *Deepwater Horizon* Programmatic Damage Assessment and Restoration Plan (DWH Trustees 2016) and are also incorporated here by reference. These impacts include potential recruitment failure and reduced fish health.

Fishing can affect life history characteristics of reef fish, such as growth and maturation rates. Grouper reproduction may also be impacted by fishing. As an example, Fitzhugh et al. (2006) reported the size at which 50% of female gag (*Mycteroperca microlepis*) are sexually mature, and the size at which 50% of females transition to males, was smaller in their studies compared to earlier years. In addition, for hermaphroditic species (like red grouper), fishing pressure has been suggested as influential to changes in sex ratios. A decline in the ratio of male to female grouper could be an ongoing source of concern depending on the reproductive strategy of a particular species. However, for species that do not aggregate to spawn like red grouper, there is less vulnerability to sex-specific fishing mortality because fishing pressure on the stock is generally diffuse across its distribution. Of note though, red grouper is vulnerable to mortality from barotrauma when hooked at depth and then reeled to the surface.

Alternative 1 (No Action) would maintain the current maximum sustainable yield (MSY) proxy and catch limits and for red grouper. This alternative would restrict harvest compared to the OFL and ABC recommendations from the Gulf Council's Scientific and Statistical Committee (SSC) which, compared to the higher allowable catch expected from **Alternative 2** and **Preferred Alternative 3**, would be expected to result in positive biological effects from comparatively lower removals. Because **Alternative 1** would restrict harvest at current levels, it

is not consistent with the goals of this action. Further, the catch limits in **Alternative 1** are inclusive of Marine Recreational Information Program (MRIP) data for private recreational vessels, and these data are no longer considered consistent with the best scientific information available. As such, **Alternative 1** is not a viable alternative.

Alternative 2 would revise the MSY proxy and catch limits for red grouper based on the results of the SEDAR 88 (2025) stock assessment, and recommendations of the SSC using a three-year constant-catch scenario. The OFL and ABC for red grouper would be set based on an MSY proxy of the yield when fishing at $F_{40\%SPR}$, and the yield when fishing at 75% of the F_{MSY} proxy, respectively. Modifying the MSY proxy for red grouper from $F_{30\%SPR}$ to $F_{40\%SPR}$ is expected to help ensure that the stock can be continually harvested and remain robust to environmental perturbations like episodic mortality from red tides. The OFL and ABC in **Alternative 2** are inclusive of the State of Florida's State Reef Fish Survey (SRFS) data for private recreational vessels which, for red grouper, is considered consistent with the best scientific information available. The total ACL is set equal to the ABC. **Alternative 2** is expected to increase harvest of red grouper compared to **Alternative 1** for both the commercial and recreational sectors, regardless of any sector allocation decisions in Action 2. So long as the catch limits prescribed in **Alternative 2** are not exceeded, no negative biological effects on red grouper are expected because these removals are projected to be sustainable based on the results of the SEDAR 88 stock assessment.

Preferred Alternative 3 would revise the MSY proxy and catch limits for red grouper based on the results of SEDAR 88, and recommendations of the Gulf Council's SSC using a three-year constant-catch scenario. The OFL and ABC for red grouper would be set based on an MSY proxy of the yield when fishing at $F_{40\%SPR}$, and the yield when fishing at 75% of the F_{MSY} proxy, respectively. The OFL and ABC are inclusive of SRFS data for private recreational vessels. In contrast to **Alternative 2**, **Preferred Alternative 3** sets the total ACL at 80% of the ABC in 2026, 90% of the ABC in 2027, and 100% of the ABC in 2028 and subsequent years. This stepped method of increasing the ACL relative to the ABC over a period of years is meant to phase-in the catch limit increases for both fishing sectors and allow fishery managers to see how the red grouper stock responds to these increases. Because of this phase-in approach to catch limit increases, **Preferred Alternative 3** is expected to result in greater positive biological effects compared to **Alternative 2** by way of lower allowable removals in 2026 and 2027. By 2028, no difference in biological effects is expected between **Alternative 2** and **Preferred Alternative 3**.

Expected effects to discards and co-occurring species

Bycatch occurs within the reef fish fishery, and includes fish released due to catch limits, seasons, or other regulatory measures. In general, reducing bycatch provides biological benefits to managed species and the reef fish fishery through less waste, higher yields, and thus, less forgone yield.

With regard to discards of red grouper, **Alternative 1** is expected to have no effect, since it allows fishing to continue at current levels. **Alternative 2** and **Preferred Alternative 3** may result in fewer discards in both sectors since commercial and recreational vessels alike will be

able to fish for red grouper more than they currently can under **Alternative 1**. This is because more commercial quota would be available under the Red Grouper Individual Fishing Quota (IFQ) program, and the increased recreational ACL would be expected to result in fewer recreational closed season discards compared to **Alternative 1**.

None of the Action 1 alternatives are expected to have measurable impacts on any other component of the biological environment, because of the multi-species nature of the reef fish fishery for the commercial and recreational sectors. Fishing effort may shift to or from other species and away or towards red grouper specifically but is not expected to change the prosecution of the fishery as a whole.

Expected effects to protected species

The reef fish fishery can affect species outside the reef fish complex. Specifically, sea turtles have been observed to be directly affected by the bottom longline component of the Gulf reef fish fishery. These effects occur when sea turtles interact with fishing gear and result in capture and incidental injury or mortality (GMFMC, 2010). However, the most recent biological opinion (NMFS 2011a) for the Reef Fish FMP and re-initiation memos concluded that the operation of the fishery is not likely to jeopardize the continued existence of sea turtles or other species listed under the Endangered Species Act (ESA). This fishery is also not expected to adversely affect marine mammals. The primary gear types used by the commercial sector (longline and hook-and-line) were classified in the 2025 Marine Mammal Protection Act Proposed List of Fisheries as a Category III fishery (89 FR 77789; September 24, 2024) with regard to marine mammal species, indicating the gear has little effect on these populations.

The actions in this amendment would not significantly modify the way in which the reef fish fishery is prosecuted. Therefore, there are no additional impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see Section 3.2 for a more detailed description of ESA-listed species and critical habitat in the action area).

4.1.3 Effects on the Economic Environment

Alternative 1 maintains the current maximum sustainable yield (MSY) proxy, OFL, ABC, and total ACL for red grouper. The OFL, ABC, and total ACL values, respectively, in SRFS units are 5.40 million pounds (mp) gutted weight (gw), 5.02 mp gw, and 5.02 mp gw. **Alternative 2** increases the OFL, ABC, and total ACL for red grouper. The OFL, ABC, and total ACL values, respectively, in SRFS units are 10.64 mp gw, 8.28 mp gw, and 8.28 mp gw. The total ACL under **Alternative 2** increases by 3.26 mp gw, compared with **Alternative 1**. **Preferred Alternative 3** increases the OFL and ABC, and the total ACL is set at 80% of the ABC in 2026, 90% of the ABC in 2027, and 100% of the ABC in 2028 and subsequent years. The OFL and ABC, respectively, in SRFS units are 10.64 mp gw and 8.28 mp gw. The total ACL, in SRFS units, is 6.62 mp gw in 2026, 7.45 mp gw in 2027, and 8.28 mp gw in 2028 and subsequent years. Therefore, in 2028 and in subsequent years, the effects from **Alternative 2** and **Preferred Alternative 3** would be expected to be the same, as the total ACL would be the same. The total ACL under **Preferred Alternative 3** increases by 1.60 mp gw in 2026, by 2.43 mp gw in 2027, and by 3.26 mp gw in 2028 and subsequent years, compared with **Alternative 1**. To analyze the

effects of solely a change in the total ACL without a change in sector allocations, the status quo sector allocations (59.3% commercial, 40.7% recreational) are used to determine the sector ACLs. Should the Council modify the sector allocations in Action 2, the cumulative effects of both a change in the total ACL and in the sector allocations will be analyzed within Action 2. For Action 1's analyses, the status quo commercial buffer between the ACL and ACT (quota) of 5% and the status quo recreational buffer of 9% are also applied.

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a consumer surplus (CS) estimate. The most recent proxy for a CS estimate for red grouper is the estimated value of the CS for a 1 fish change in grouper harvest. A value of $106.32 (Carter and Liese 2012; values updated to 2024$) reflects recreational willingness-to-pay (WTP) for 1 additional red grouper harvest.

The first column in Table 4.1.3.1 shows the change in expected landings, in pounds (lb) gutted weight, from the recreational ACL under **Alternative 2** and **Preferred Alternative 3** from the SRFS equivalent recreational ACL under **Alternative 1**. As the total ACL and thereby the recreational ACL increase from 2026 to 2027 to 2028 with **Preferred Alternative 3**, three rows are associated with Preferred Alternative 3 to separately capture the effects across years. The next column shows the expected change in recreational landings, expressed as number of fish, as compared to **Alternative 1**. This change in the number of fish was determined by multiplying the expected change in recreational landings in lb gw by 1.048 (Table 1, SEDAR 88 2025) to obtain the expected change in recreational landings in lb ww and then dividing by 7.66 (the average weight in ww of a recreationally landed red grouper from 2020 to 2024; A. Gray, SERO, pers. comm. 2025). As shown in the last column, the expected change in the recreational sector's CS is calculated by multiplying the expected change in recreational landings, expressed as number of fish, by the value of $130.75, described previously.

Table 4.1.3.1. Expected change in the recreational sector's CS (2024$) from **Alternative 2** and **Preferred Alternative 3**, in comparison with **Alternative 1**.

	Expected Change in Rec Landings (lb gw)	Expected Change in Rec Landings, Expressed as Number of Fish	Expected Change in Rec Sector CS
Alt 2 – Alt 1 (SRFS)	1,326,820	181,528	$23,734,835
2026, Preferred Alt 3 – Alt 1 (SRFS)	651,200	89,094	$11,648,999
2027, Preferred Alt 3 – Alt 1 (SRFS)	989,010	135,311	$17,691,917
2028+, Preferred Alt 3 – Alt 1 (SRFS)	1,326,820	181,528	$23,734,835

The producer surplus (PS) of the for-hire component of the recreational sector, composed of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught. Therefore, an assumption that no headboat trips would be gained or lost due to a change in the recreational ACL would be reasonable. However, charter vessel trips that are targeting red grouper may be added by anglers and are the focus of the recreational sector PS analysis. The recreational red grouper season closed in Gulf waters on July 1 and on July 21, respectively, in 2024 and in 2023. For this analysis, a July 1 recreational red grouper season closure date is assumed for **Alternative 1**, so **Alternative 2** and **Preferred Alternative 3** would each provide for additional trips in all of waves 4, 5, and 6. The average number of target trips by charter vessels by 2-month wave from 2021 to 2024 is shown in Table 4.1.3.2. For analyzing the effects of wave 4 (July-August) remaining open, the average for only 2021 to 2022 (19,031 charter target trips) is used, as the 2021 closure did not occur in wave 4 and the 2022 closure occurred 2 days prior to the end of wave 4. In 2023, the recreational season closed on July 21. A proxy for the number of charter target trips is needed for waves 5 and 6, as none of the years from 2021 to 2024 were open throughout those entire waves. Based on input from captains in the charter industry that have targeted red grouper trips, wave 1 was identified as the best proxy for waves 5 and 6, as target trips for gag, greater amberjack, and potentially red snapper occur in wave 5, and targeted trips in both waves 5 and 6 can be impacted by tropical cyclone activity in the Gulf in the fall season. As noted in the discussion of Action 2, no season closure is expected under either **Alternative 2** or **Preferred Alternative 3** from Action 1. Therefore, in comparison with **Alternative 1**, **Alternative 2** and **Preferred Alternative 3** are expected to result in an additional 19,031 target trips for wave 4 and an additional 10,411 target trips for wave 5 and for wave 6 (20,822 target trips for waves 5 and 6 combined). Multiplying the trip net cash flow per angler trip of $171 (2024$) for charter vessels, as seen in Table 3.3.2.7, by the number of additional

target trips produces an expected change in the recreational PS of $6,814,778 from **Alternative 2** and **Preferred Alternative 3**, as seen in Table 4.1.3.3.

Table 4.1.3.2. Gulf* red grouper charter target trips, by 2-month wave, 2021-2024.

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2021	2,583	26,853	11,765	17,272	2,809	0
2022	10,333	6,925	13,079	20,789	0	0
2023	17,131	9,667	20,186	6,857	0	1,456
2024	11,597	15,743	15,463	0	0	0
Average	10,411	14,797	15,123	11,230	702	485

Source: MRIP database, SERO, NMFS (Aug 2025).
*No recorded target trips for MS. LA and TX data unavailable

Table 4.1.3.3. Expected change in the for-hire component's PS, based on the number of expected additional target trips by charter vessels under **Alternative 2** or **Preferred Alternative 3**, in comparison with **Alternative 1**. PS values are in 2024$.

	Expected Additional Target Trips by Charter Vessels	Expected Change in For-Hire Component's PS
Alt 2 – Alt 1	20,822	$6,814,778
Preferred Alt 3 – Alt 1	20,822	$6,814,778

The expected net economic benefits to the recreational sector are a summation of the changes in the recreational sector's CS and PS. The expected net economic benefits to the recreational sector from **Alternative 2** and **Preferred Alternative 3** are shown in Table 4.1.3.4.

Table 4.1.3.4. Total Expected Change in Net Economic Benefits to the Recreational Sector (2024$) from **Alternative 2** and **Preferred Alternative 3**, in comparison with **Alternative 1**.

Alternative	Total Expected Change in Net Economic Benefits to the Recreational Sector
Alt 2	$30,549,613
2026, Preferred Alt 3	$18,463,776
2027, Preferred Alt 3	$24,506,695
2028+, Preferred Alt 3	$30,549,613

Commercial Sector

The proposed increases in the total ACL, and subsequent increases to the commercial ACL and ACT (quota) with **Alternative 2** and **Preferred Alternative 3** would increase the availability of the annual individual fishing quota (IFQ) allocation for sale, compared with **Alternative 1**. As the supply of annual IFQ allocation increases, the allocation price would be expected to decrease. As shares reflect the expected supply of annual allocation available in the future, **Alternative 2** and **Preferred Alternative 3** would be expected to result in a decrease in red grouper share price.

For the commercial sector, the comparison of effects is based on the resulting quota from **Alternative 2** (4,664,538 lb gw) and **Preferred Alternative 3** (3,729,377 lb gw in 2026; 4,196,958 lb gw in 2027; 4,664,538 in 2028+) relative to the quota from the SRFS equivalent **Alternative 1** (2,828,017 lb gw). To calculate expected changes in commercial consumer surplus (CS), own-price flexibility[32] for the Gulf red grouper commercial sector would be required to derive the expected average price change. Keithly and Tabarestani (2018) estimated an uncompensated own-price flexibility for "GOM Red Grouper" of -0.533. The expected change in commercial CS are displayed in Table 4.1.3.5, as are the expected average price changes, which are based on the calculated percent change in price multiplied by the average ex-vessel price from 2020-2024 from Table 3.3.1.2.

[32] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

Table 4.1.3.5. Expected change in the commercial sector's CS, relative to **Alternative 1**. Values are in 2024$.

Alternative	Expected Change in Landings by Commercial Sector (lb gw)	Expected Average Price Change ($/lb)	Expected Change in CS (2024$)
Alt 2	1,836,521	-$2.15	$8,065,502
2026, Preferred Alt 3	901,360	-$1.06	$3,464,457
2027, Preferred Alt 3	1,368,941	-$1.60	$5,636,830
2028+, Preferred Alt 3	1,836,521	-$2.15	$8,065,502

To determine the respective expected change in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings, the quotas from **Alternative 2** and **Preferred Alternative 3** are multiplied by the sum of the respective expected average price change from Table 4.1.3.5 and the average ex-vessel price per lb gw of $6.22 for red grouper from 2020-2024 (2024$) from Table 3.3.1.2. From those values are then subtracted the average ex-vessel price per lb gw multiplied by **Alternative 1's** quota. The expected changes in revenue are displayed in Table 4.1.3.6. The commercial PS for vessels that harvested red grouper in the Gulf is estimated as 47.6% of the ex-vessel value (Section 3.3.1). The expected changes in commercial PS are shown in Table 4.1.3.6.

Table 4.1.3.6. Expected change in the commercial sector revenue and PS, relative to **Alternative 1**. Values are in 2024$.

Alternative	Expected Change in Comm Revenue	Expected Change in Comm PS
Alt 2	$1,380,701	$657,213
2026, Preferred Alt 3	$1,665,788	$792,915
2027, Preferred Alt 3	$1,779,544	$847,063
2028+, Preferred Alt 3	$1,380,701	$657,213

The total expected changes in net economic benefits for the commercial sector from **Alternative 2** and **Preferred Alternative 3** relative to **Alternative 1** are calculated by adding the expected change in commercial CS from Table 4.1.3.5 to the expected change in commercial PS from Table 4.1.3.6. The values are displayed in Table 4.1.3.7.

Table 4.1.3.7. Total expected change in net economic benefits for the commercial sector relative to **Alternative 1**. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits to the Commercial Sector
Alt 2	$8,722,716
2026, Preferred Alt 3	$4,257,372
2027, Preferred Alt 3	$6,483,893
2028+, Preferred Alt 3	$8,722,716

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors can be calculated by summing the expected changes shown in Tables 4.1.3.4 and 4.1.3.7 and is displayed in Table 4.1.3.8.

Table 4.1.3.8. Total expected change in net economic benefits for the both the recreational and commercial sectors relative to **Alternative 1**. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits
Alt 2	$39,272,328
2026, Preferred Alt 3	$22,721,148
2027, Preferred Alt 3	$30,990,587
2028+, Preferred Alt 3	$39,272,328

4.1.4 Effects on the Social Environment

Additional effects would not be expected from retaining **Alternative 1** (No Action), as the catch limits for red grouper would remain at the current levels and fishing activity would not be affected; however, this is not a viable alternative because it is not based on the best scientific information available. **Alternative 2** and **Preferred Alternative 3**, would provide positive social benefits, as both alternatives rely on the SEDAR 88 and the concurrence of the SSC recommending a substantial increase to the OFL and ABC, relative to current harvest limits. Both **Alternative 2** and **Preferred Alternative 3** raise the OFL, ABC, and total ACL for red grouper**. Alternative 2** offers the largest immediate increase in ACL This would allow more fishing activity to take place and increase the overall landings, across both the commercial and recreational sector. This action does not consider the distribution of this increase through the setting of sector allocations and sector ACLs; these are discussed in Action 2. To the extent that **Preferred Alternative 3** reflects a more cautious approach to increasing the catch limits for red grouper, it could provide additional social benefits in the future, to both the commercial and

recreational sectors, by ensuring the sustainability of red grouper stocks and reducing the need for future management actions limiting or reducing landings of these fish.

This action would provide benefits to those communities in the Gulf most engaged in fishing activity, both commercial and recreational (see the discussion of particular communities in Section 3.4.).

4.1.5 Effects on the Administrative Environment

Action 1 would set the OFL, ABC, and total ACL for red grouper in the Gulf. Administrative effects from this action would primarily involve mitigating the risk of overfishing and the administrative burden resulting from an overfishing and overfished determination. Because **Alternative 1** is not viable, its effects on the administrative environment will not be discussed. **Alternate 2** and **Preferred Alternative 3** would both set the OFL at 10.64 mp and would set the ABC at 8.28 million pounds. These alternatives would also set the total ACL for Gulf red grouper. However, because harvest would be managed to the sector ACLs set in Action 2 of this document, setting the total ACL in this action is largely administrative in nature, and would not impact the administrative environment. Both the OFL and the ABC set in the action alternatives represent a substantial increase from current management and are expected to reduce the probability of overfishing. This is mostly because the buffer between the ABC and OFL is near 2.4 mp, and an overage of catch limits to this extent is extremely unlikely, especially given the indication from both the commercial and recreational sector that it is unlikely they would be able to harvest all of these higher catch limits. The Gulf red grouper OFL has not been exceeded in recent years, but recreational catch has exceeded the recreational ACL by a substantial margin, which caused overall harvest to exceed the ABC and approach the OFL. Thus, increasing these catch limits and the buffer between the OFL and ABC is expected to reduce the likelihood of overfishing, resulting in slight positive impacts to the administrative environment.

Because differences between **Alternative 2** and **Preferred Alternative 3** would only be in year 1 (2026) and year 2 (2027), differences in administrative effects between these alternatives would only be present in these years. However, since neither of the alternatives are expected to result in exceeding the OFL or in an overfished determination, the difference in effects on the administrative environment between **Alternative 2** and **Preferred Alternative 3** are expected to be negligible.

4.2 Action 2: Modification of Gulf Red Grouper Sector Allocations and Sector ACLs

4.2.1 Effects on the Physical Environment

General effects on the physical environment from fishing are described in Section 4.1.1. The effects on the physical environment of **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** are not expected to be measurably different from **Alternative 1** due to the multi-species nature of the reef fish fishery for the commercial and recreational sectors.

4.2.2 Effects on the Biological Environment

General effects on the physical environment from fishing are described in Section 4.1.2. Generally, changes to sector allocations are not expected to result in pronounced changes in biological effects due to the multi-species nature of the reef fish fishery. In Action 2, the percentage of the red grouper ABC allocated to the recreational ACL is expected to decrease under **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** compared to **Alternative 1**. The percentages of the ABC to be allocated to the recreational ACL between **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** differ by at most, 1.2% of the ABC, or 99,360 lb gw. This amount is far less than the typical interannual variation in SRFS-inclusive recreational landings of red grouper. As such, differentiating between **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** with regard to biological effects as they relate to recreational discards cannot be precisely estimated. However, despite the decrease in sector allocation to the recreational sector under these alternatives compared to **Alternative 1**, the increase in the catch limits under Action 1 would be expected to extend the recreational fishing season duration, thereby reducing regulatory discards of red grouper due to a recreational fishing season closure. Because the commercial sector operates under the IFQ program, commercial discards are expected to be limited to those commercial reef fish fishermen who do not hold the requisite allocation to land red grouper. This reality is no different for **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** compared to **Alternative 1**. The percentage of the ABC allocated to the commercial sector is expected to increase under **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** compared to **Alternative 1**, thereby increasing the amount of commercial quota available for harvest or lease. This would be expected to reduce commercial discards of red grouper and also result in positive biological effects.

4.2.3 Effects on the Economic Environment

As established in Amendment 53 to the Reef Fish FMP (GMFMC 2022), **Alternative 1** maintains the current sector allocations of the total ACL as 59.3% commercial and 40.7% recreational. **Preferred Alternative 2** would revise the sector allocations of the total ACL as 68.2% commercial and 30.8% recreational, based on average landings using SRFS data during the years 1986 through 2005. **Alternative 3** would revise the sector allocations of the total ACL as 69.2% commercial and 30.8% recreational, based on average landings using SRFS data during 1986 to 2009. **Alternative 4** would revise the sector allocations of the total ACL as 68.0% commercial and 32.0% recreational, based on average landings using SRFS data during 1986

through 2024, excluding 2020. All four alternatives maintain the commercial buffer between the ACL and ACT of 5% and the recreational buffer of 9%. For purposes of these analyses, **Alternative 1** from Action 2 when paired with Action 1's alternatives is used as the No Action comparison for effects; however, Action 1 Alternative 1 is not analyzed alongside Action 2's four alternatives as Action 1 Alternative 1 is not viable. Therefore, only the values listed in Tables 2.2.1 and 2.2.2 are analyzed in this section.

Recreational Sector

Estimated changes in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a consumer surplus (CS) estimate. The most recent proxy for a CS estimate for red grouper is the estimated value of the CS for a 1 fish change in grouper harvest. A value of $130.75 (Carter and Liese 2012; values updated to 2024$) reflects recreational willingness-to-pay (WTP) for 1 additional red grouper harvest.

The first column in Table 4.2.3.1 shows the change in expected landings, in pounds (lb) gutted weight, from the recreational ACL under Action 2 **Preferred Alternative 2** and **Alternatives 3-4** from the recreational ACL under **Alternative 1** when Action 1 Alternative 2's total ACL is selected. The next column shows the expected change in recreational landings, expressed as number of fish, as compared to **Alternative 1**. This change in the number of fish was determined by multiplying the expected change in recreational landings in lb gw by 1.048 (Table 1, SEDAR 88 2025) to obtain the expected change in recreational landings in lb ww and then dividing by 7.66 (the average weight in ww of a recreationally landed red grouper from 2020 to 2024; A. Gray, SERO, pers. comm. 2025). As shown in the last column, the expected change in the recreational sector's CS is calculated by multiplying the expected change in recreational landings, expressed as number of fish, by the value of $130.75, described previously.

Table 4.2.3.1. Expected change in the recreational sector's CS (2024$) from Action 2 **Preferred Alternative 2** and **Alternatives 3-4**, in comparison with **Alternative 1**, when Action 1 Alternative 2's total ACL is selected.

Action 1 Alt 2 Paired with Action 2 Alts	Expected Change in Rec Landings (lb gw)	Expected Change in Rec Landings, Expressed as Number of Fish	Expected Change in Rec Sector CS
Pref Alt 2 – Alt 1	-740,000	-101,243	-$13,237,499
Alt 3 – Alt 1	-820,000	-112,188	-$14,668,580
Alt 4 – Alt 1	-720,000	-98,507	-$12,879,728

The first column in Table 4.2.3.2 shows the change in expected landings, in pounds (lb) gutted weight, from the recreational ACL under Action 2 **Preferred Alternative 2** and **Alternatives 3-4** from the recreational ACL under **Alternative 1** when Action 1 Preferred Alternative 3's total ACL is selected. These values are designated by year, as Action 1 Preferred Alternative 3 has an annual increase of the total ACL from 2026 to 2027 and then from 2027 to 2028. Of note for

these analyses, Action 2 Alternative 1's total ACL values also increase annually from 2026 to 2028. The values used for the analyses are shown in Table 2.2.2. The next column in Table 4.2.3.2 shows the expected change in recreational landings, expressed as number of fish, as compared to **Alternative 1**. The last column displays the expected change in the recreational sector's CS.

Table 4.2.3.2. Expected change in the recreational sector's CS (2024$) from Action 2 **Preferred Alternative 2** and **Alternatives 3-4**, in comparison with **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected.

Action 1 Preferred Alt 3 Paired with Action 2 Alts	Year	Expected Change in Rec Landings (lb gw)	Expected Change in Rec Landings, Expressed as Number of Fish	Expected Change in Rec Sector CS
Pref Alt 2 – Alt 1	2026	-580,000	-79,352	-$10,375,337
	2027	-660,000	-90,298	-$11,806,418
	2028+	-740,000	-101,243	-$13,237,499
Alt 3 – Alt 1	2026	-650,000	-88,930	-$11,627,533
	2027	-740,000	-101,243	-$13,237,499
	2028+	-820,000	-112,188	-$14,668,580
Alt 4 – Alt 1	2026	-570,000	-77,984	-$10,196,452
	2027	-650,000	-88,930	-$11,627,533
	2028+	-720,000	-98,507	-$12,879,728

The producer surplus (PS) of the for-hire component of the recreational sector, composed of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught. Therefore, an assumption that no headboat trips would be gained or lost due to a change in the recreational ACL would be reasonable. However, charter vessel trips that are targeting red grouper may be added by anglers and are the focus of the recreational sector PS analysis. As discussed in Section 2.2, **Preferred Alternative 2** and **Alternatives 3-4** are not expected to result in a closed recreational season, when paired with the total ACL of either Action 1 Alternative 2 or Preferred Alternative 3. The effects of the shift from a closed recreational season to no closure due to the increase in the total ACL have been analyzed in Section 4.1.3.

Therefore, no additional analyses of the PS of the for-hire component of the recreational sector are required here.

The expected net economic benefits to the recreational sector are a summation of the changes in the recreational sector's CS and PS. However, as no changes are expected in the recreational sector's PS, the expected net economic benefits to the recreational sector are identical to the changes in the recreational sector's CS from **Preferred Alternative 2** and **Alternatives 3-4**. These values, when Action 1 Alternative 2's total ACL is selected, are shown in Table 4.2.3.3. These values, when Action 1 Preferred Alternative 3's total ACL is selected, are shown in Table 4.2.3.4.

Table 4.2.3.3. Total Expected Change in Net Economic Benefits to the Recreational Sector (2024$) from **Preferred Alternative 2** and **Alternatives 3-4**, in comparison with **Alternative 1**, when Action 1 Alternative 2's total ACL is selected.

Action 1 Alt 2 Paired with Action 2 Alts	Total Expected Change in Net Economic Benefits to the Recreational Sector
Preferred Alt 2	-$13,237,499
Alt 3	-$14,668,580
Alt 4	-$12,879,728

Table 4.2.3.4. Total Expected Change in Net Economic Benefits to the Recreational Sector (2024$) from **Preferred Alternative 2** and **Alternatives 3-4**, in comparison with **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected.

Action 1 Preferred Alt 3 Paired with Action 2 Alts	Year	Total Expected Change in Net Economic Benefits to the Recreational Sector
Pref Alt 2 – Alt 1	2026	-$10,375,337
	2027	-$11,806,418
	2028+	-$13,237,499
Alt 3 – Alt 1	2026	-$11,627,533
	2027	-$13,237,499
	2028+	-$14,668,580
Alt 4 – Alt 1	2026	-$10,196,452
	2027	-$11,627,533
	2028+	-$12,879,728

Commercial Sector

The proposed reallocations of the total ACL to the commercial sector and subsequent increases to the commercial ACL and ACT (quota) with **Preferred Alternative 2** and **Alternatives 3-4** would increase the availability of the annual individual fishing quota (IFQ) allocation for sale, compared with **Alternative 1**, with either Action 1 Alternative 2 or Alternative 3's total ACL selected. As the supply of annual IFQ allocation increases, the allocation price would be expected to decrease. As shares reflect the expected supply of annual allocation available in the future, **Preferred Alternative 2** and **Alternatives 3-4** would be expected to result in a decrease in red grouper share price.

For the commercial sector, the comparison of effects is based on the resulting quota from **Preferred Alternative 2** (5,360,000 lb gw) and **Alternative 3** (5,440,000 lb gw) and **Alternative 4** (5,350,000 lb gw) relative to the quota from **Alternative 1** (4,660,000 lb gw), when Action 1 Alternative 2's total ACL is selected. To calculate expected changes in

commercial consumer surplus (CS), own-price flexibility[33] for the Gulf red grouper commercial sector would be required to derive the expected average price change. Keithly and Tabarestani (2018) estimated an uncompensated own-price flexibility for "GOM Red Grouper" of -0.533. The expected changes in commercial CS are displayed in Table 4.2.3.5, as are the expected average price changes, which are based on the calculated percent change in price multiplied by the average ex-vessel price from 2020-2024 from Table 3.3.1.2. The comparison of effects when Action 1 Preferred Alternative 3's total ACL is selected is based on the quotas from Table 2.2.2. The resulting expected changes in commercial CS are displayed in Table 4.2.3.6.

Table 4.2.3.5. Expected change in the commercial sector's CS, relative to **Alternative 1**, when Action 1 Alternative 2's total ACL is selected. Values are in 2024$.

Alt	Expected Change in Landings by Commercial Sector (lb gw)	Expected Average Price Change ($/lb)	Expected Change in Comm CS (2024$)
Preferred Alt 2	700,000	-$0.50	$2,494,982
Alt 3	780,000	-$0.56	$2,802,320
Alt 4	690,000	-$0.49	$2,456,885

[33] The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold. This shows the responsiveness of a product's price to the quantity being sold.

Table 4.2.3.6. Expected change in the commercial sector's CS, relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected. Values are in 2024$.

Alt	Year	Expected Change in Landings by Commercial Sector (lb gw)	Expected Average Price Change ($/lb)	Expected Change in Comm CS (2024$)
Pref Alt 2	2026	560,000	-$0.50	$1,995,911
	2027	630,000	-$0.50	$2,245,260
	2028+	700,000	-$0.50	$2,494,982
Alt 3	2026	620,000	-$0.55	$2,226,290
	2027	700,000	-$0.55	$2,514,072
	2028+	780,000	-$0.55	$2,802,320
Alt 4	2026	550,000	-$0.49	$1,957,825
	2027	610,000	-$0.48	$2,169,167
	2028+	690,000	-$0.49	$2,456,885

To determine the respective expected change in ex-vessel revenue as a result of the proposed change to the quota and its effect on commercial landings when paired with Action 1 Alternative 2's total ACL, the quotas from **Preferred Alternative 2** and **Alternatives 3-4** are multiplied by the sum of the respective expected average price change from Table 4.2.3.5 and the average ex-vessel price per lb gw of $6.22 for red grouper from 2020-2024 (2024$) from Table 3.3.1.2. From those values are then subtracted the average ex-vessel price per lb gw multiplied by **Alternative 1's** quota. The expected changes in revenue are displayed in Table 4.2.3.7. The commercial PS for vessels that harvested red grouper in the Gulf is estimated as 47.6% of the ex-vessel value (Section 3.3.1). The expected changes in commercial PS are shown in Table 4.2.3.7. The corresponding values for the expected changes in commercial revenue and in commercial PS when **Preferred Alternative 2** and **Alternatives 3-4** are paired with Action 1 Preferred Alternative 3's total ACL are displayed in Table 4.2.3.8.

Table 4.2.3.7. Expected change in the commercial sector revenue and PS, relative to **Alternative 1**, when Action 1 Alternative 2's total ACL is selected. Values are in 2024$.

Alternative	Expected Change in Comm Revenue	Expected Change in Comm PS
Preferred Alt 2	$1,684,718	$801,926
Alt 3	$1,832,864	$872,443
Alt 4	$1,665,559	$792,806

Table 4.1.3.8. Expected change in the commercial sector revenue and PS, relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected. Values are in 2024$.

Alt	Year	Expected Change in Comm Revenue	Expected Change in Comm PS
Pref Alt 2	2026	$1,347,924	$641,612
	2027	$1,516,694	$721,946
	2028+	$1,684,718	$801,926
Alt 3	2026	$1,459,280	$694,617
	2027	$1,646,538	$783,752
	2028+	$1,832,864	$872,443
Alt 4	2026	$1,328,742	$632,481
	2027	$1,478,175	$703,611
	2028+	$1,665,559	$792,806

The total expected changes in net economic benefits for the commercial sector from **Preferred Alternative 2** and **Alternatives 3-4** relative to **Alternative 1**, when Action 1 Alternative 2's total ACL is selected, are calculated by adding the expected change in commercial CS from Table 4.2.3.5 to the expected change in commercial PS from Table 4.2.3.7. The values are displayed in **Table 4.2.3.9.**

Table 4.2.3.9. Total expected change in net economic benefits for the commercial sector relative to **Alternative 1**, when Action 1 Alternative 2's total ACL is selected. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits to the Commercial Sector
Preferred Alt 2	$3,296,908
Alt 3	$3,674,763
Alt 4	$3,249,691

The total annual expected changes in net economic benefits for the commercial sector from **Preferred Alternative 2** and **Alternatives 3-4** relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected, are calculated by adding the expected change in commercial CS from Table 4.2.3.6 to the expected change in commercial PS from Table 4.2.3.8. The values are displayed in **Table 4.2.3.10.**

Table 4.2.3.10. Total annual expected change in net economic benefits for the commercial sector relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected. Values are in 2024$.

Alt	Year	Total Expected Change in Net Economic Benefits to the Commercial Sector
Pref Alt 2	2026	$2,637,523
	2027	$2,967,206
	2028+	$3,296,908
Alt 3	2026	$2,920,908
	2027	$3,297,824
	2028+	$3,674,763
Alt 4	2026	$2,590,307
	2027	$2,872,778
	2028+	$3,249,691

Net Economic Benefits

The total expected change in net economic benefits for both the recreational and commercial sectors from **Preferred Alternative 2** and **Alternatives 3-4** relative to **Alternative 1**, when

Action 1 Alternative 2's total ACL is selected, can be calculated by summing the expected changes shown in Tables 4.2.3.3 and 4.2.3.9 and is displayed in Table 4.2.3.11.

Table 4.2.3.11. Total expected change in net economic benefits for the both the recreational and commercial sectors from **Preferred Alternative 2** and **Alternatives 3-4** relative to **Alternative 1**, when Action 1 Alternative 2's total ACL is selected. Values are in 2024$.

Alternative	Total Expected Change in Net Economic Benefits
Preferred Alt 2	-$9,940,591
Alt 3	-$10,993,817
Alt 4	-$9,630,037

The total expected change in net economic benefits for both the recreational and commercial sectors from **Preferred Alternative 2** and **Alternatives 3-4** relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected, can be calculated by summing the expected changes shown in Tables 4.2.3.4 and 4.2.3.10 and is displayed in Table 4.2.3.12.

Table 4.2.3.12. Total annual expected change in net economic benefits for the commercial sector relative to **Alternative 1**, when Action 1 Preferred Alternative 3's total ACL is selected. Values are in 2024$.

Alt	Year	Total Annual Expected Change in Net Economic Benefits
Pref Alt 2	2026	-$7,737,814
	2027	-$8,839,212
	2028+	-$9,940,591
Alt 3	2026	-$8,706,625
	2027	-$9,939,675
	2028+	-$10,993,817
Alt 4	2026	-$7,606,145
	2027	-$8,754,755
	2028+	-$9,630,037

4.2.4 Effects on the Social Environment

Overall, given the increase in ACL proposed in the viable alternatives in Action 1 (**Alternatives 2** and **Preferred Alternative 3**), there are no social effects from any of the action Alternatives in Action 2. **Alternative 1** (No action) proposes to maintain the sector allocations established in Amendment 53 (GMFMC 2021). On the other hand, **Preferred Alternative 2** and **Alternatives 3-4** propose a reallocation of recreational quota to the commercial sector that reflect recreational landings estimated using SRFS landings data (which has been determined to better reflect recreational fishing effort and catch) but include different time series. Such a reallocation to the commercial sector would provide benefits to the commercial sector, enabling those fishermen to land more red grouper and could more fairly represent both sectors' historical efforts in this fishery.

All alternatives under consideration would provide for an increase in the ACL/ACT for both commercial and recreational sectors, relative to current levels. Looking at the distributional impacts of the proposed increase in ACL, **Alternative 1** (No action) would provide the greatest increase in ACL/ACT to the recreational sector. Under **Preferred Alternative 2** and **Alternatives 3-4**, given the changes to the allocation percentages, both sectors would see an increase in their ACL/ACTs relative to their current levels, but the commercial sector would see their ACL/ACT increase more. **Alternative 3** would provide the largest increase to the commercial sector ACL/ACT. (See tables 2.2.1 and 2.2.2 for a further breakdown of total ACLs, sector ACLs, commercial quotas, and recreational ACTs, by the various Alternatives proposed in Action 1).

Finally, an early season closure for the recreational sector is not projected for any combination of alternatives in Action 1 and 2 (See table 2.2.3). The social effects of the combination of action one and action two would likely produce social benefits and increase opportunities for fishing for both the commercial and recreational sectors, as both sectors would see an increase in their ACL/ACT relative to current levels. The alternative selected in action two would determine which sector would receive a larger increase to their ACL/ACTS, relative to their current limits. **Preferred Alternative 2,** and **Alternatives 3-4** would likely produce greater benefits for the commercial fishery, by providing a larger increase to their quota, while providing more limited increases to recreational fishing. The selection of these **Preferred Alternative 2** or **Alternatives 3-4** could have an impact on communities with high levels of commercial reliance on Gulf fisheries, as described in Section 3.4.

4.2.5 Effects on the Administrative Environment

Under **Alternative 1**, sector allocations would remain the same as in current management (59.6% commercial / 40.3 % recreational), which uses data based on average landings from MRIP-FES. Under **Alternatives 2-4**, sector allocations of the total ACL between the recreational and commercial sector would be revised based on average landings using SRFS private recreational data supplemented by MRIP-FES for other necessary recreational data components. All alternatives would set the sector ACLs based on the allocation percentages chosen in Action 2 and the overall ACL chosen in Action 1. Each of **Alternatives 2**, **3**, and **4** in Action 2 (assuming Alternative 1 in Action 1 is not chosen as it is not viable) would result in an

increase in the commercial ACL, with a range from 68.2% commercial/31.8% recreational to 69.2% commercial/30.8% recreational. **Alternative 3** would result in the largest increase for the commercial sector and largest decrease for the recreational sector (9.4%), while **Alternative 2** would result in the smallest increase for the commercial sector and smallest decrease for the recreational sector (8.4%). Due to the similarity in the action alternatives (within 1% of each other), the effects between the alternatives on the administrative environment are expected to be negligible. The overall potential impacts on the administrative environment depend on the likelihood of needing to implement a recreational closure or take additional action to prevent overfishing. All alternatives would result in an increase in recreational ACL, and none of the alternatives are projected to result in a recreational closure (see Appendix A). Thus, all of the action alternatives are expected to result in slight positive effects to the administrative environment since they are expected to obviate the need for closures in the recreational sector. However, even if the recreational ACL was to be exceeded in a given year, the recreational ACT would be used to reduce the fishing season duration in the following year, which reduces the likelihood of overharvest in successive years by the recreational sector. Thus, it is unlikely that any of the action alternatives will result in any significant increase in exceeding the OFL. Based on these factors, the overall impacts of this action on the administrative environment is expected to be slightly positive.

4.3 Action 3: Modification of the February-March Recreational Shallow-Water Grouper (SWG) Closure

4.3.1 Effects on the Physical Environment

General effects on the physical environment from fishing are described in Section 4.1.1. While the February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary limits the harvest of SWG species like red grouper, gag, scamp, yellowmouth grouper, black grouper, and yellowfin grouper, it does not also limit the harvest of other reef fish species which may be open to harvest during the SWG closure. As such, recreational fishing in the area closed to SWG during February and March would be expected to continue, as would any effects to the physical environment, due to the multi-species nature of the reef fish fishery for the recreational sector. Eliminating this closure under **Preferred Alternative 2** may increase recreational fishing effort on SWG species open to harvest during February and March. However, there are no data to inform compliance with the closure as prescribed in **Alternative 1**, nor are there any observed effects of the closure which are identifiable in stock assessments. This suggests that recreational fishing effort may not differ spatially or temporally during the closure period and would further suggest no difference in effects to the physical environment between **Alternative 1** and **Preferred Alternative 2**.

4.3.2 Effects on the Biological Environment

General effects on the biological environment from fishing are described in Section 4.1.1. The February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary limits the harvest of SWG species, but not of other reef fish species which may be open to harvest during the SWG closure. As such, recreational fishing in the area closed to SWG during February and March would be expected to continue due to the multi-species nature of the reef fish fishery for the recreational sector. Eliminating this closure under **Preferred Alternative 2** may increase recreational fishing effort on SWG species open to harvest during February and March. Recent stock assessments on four of the six SWG species (scamp and yellowmouth grouper, SEDAR 68 2022; gag, SEDAR 72 2021, red grouper, SEDAR 88 2025) do not demonstrate evidence of a positive biological effect from the SWG closure. Further, there are no data to inform compliance with the closure as prescribed in **Alternative 1**. This suggests that recreational fishing effort may not differ spatially or temporally during the closure period and would further suggest no difference in effects to the biological environment between **Alternative 1** and **Preferred Alternative 2**.

4.3.3 Effects on the Economic Environment

Alternative 1 would retain the February 1 through March 31 recreational closed season in federal waters seaward of the 20-fathom boundary for all six SWG species. The original intent of the 20-fathom closure was to provide additional protection during the spawning season for SWG species by limiting harvest in deeper waters. The recreational closed season may be redirecting fishing effort into inshore waters where the average size of fish is smaller and more interactions with undersize fish occur. This could be leading to additional fishing effort (and

discards) necessary to harvest the bag limit, thereby potentially reducing, or eliminating the conservation benefit of this seasonal area closure. In doing so, this could have negative effects in the long-term for both the commercial and recreational sectors if the total ACL for red grouper is reduced. **Preferred Alternative 2** would eliminate the February 1 through March 31 recreational closed season for SWG in federal waters seaward of the 20-fathom boundary. In the short-term, this would be expected to have positive effects on the recreational sector by providing additional access to fishing grounds. Of the six SWG species, only the recreational season for red grouper would be affected currently[34], and so only the private angling component and the for-hire component specifically targeting and/or catching red grouper would be affected. The extent to which this may increase catch rates and landings for red grouper by the recreational sector cannot be quantitively estimated. The commercial sector is not expected to be affected in the short-term, as the closed season is specific to the recreational sector.

4.3.4 Effects on the Social Environment

The social effects of this measure would likely be difficult to assess, but in this case are limited to the red grouper fishery. As currently articulated, this measure only applies to red grouper, as the framework action (GFMC 2025), currently in the rulemaking process, established a recreational fixed closed season for the Other SWG complex as January 1 through June 30 each year (season open July 1 through December 31). **Alternative 1** (No action) would continue to limit fishing opportunities for recreational fishers. Additionally, by moving fishing activities to shallow waters, it could lead to further actions being needed to protect the sustainability of the fishery, which could further reduce and limit recreational fishing access. The recreational season for red grouper would be affected by **Preferred Alternative 2**, as these species have no other recreational fixed closed season. Preferred Alternative 2 would allow recreational fishers to have additional fishing opportunities during this time of the year. However, depending on fishing dynamics and catch rates of red grouper, the increased access to the deep water locations may necessitate the early closure of the recreational red grouper fishery. This would limit access to recreational fisherman, once the ACT is reached and could have a negative social effect on the opportunities for the recreation sector. This could have negative social effect that could be felt heavily in Florida communities that demonstrate moderate to high engagement in recreational fishing, including Tavernier, Islamorada, Destin, Key West, Marathon, Port St. Joe, Crystal River, Naples, Key Largo, and Fort Myers Beach.

4.3.5 Effects on the Administrative Environment

Action 3 would eliminate the fixed-closed season from February 1 through March 31 each year for SWG species. Administrative effects from this action would primarily involve enforcement of these measures and the administrative burden placed due to that requirement. Currently, this action would not affect all SWG species, since some of these species have or are expected to

[34] Should the recreational fixed closed seasons for gag, black grouper, scamp, yellowmouth grouper, and yellowfin grouper be subsequently modified, the elimination of the recreational closed season for SWG in federal waters seaward of the 20-fathom boundary would affect those species.

have a closed season in place that overlap the February 1 through March 31 fixed closed season. Gag is currently closed to fishing each year between January 1 and August 31, and the Council has finalized a framework action for the Other SWG complex (black grouper, yellowfin grouper, scamp, and yellowedge grouper) that would set a fixed closed season from January 1 through June 30 each year. These fixed-closed seasons are expected to be in effect upon implementation of this Amendment, and thus, the only species affected by this closure is expected to be red grouper. **Preferred Alternative 2** is expected to have positive results on the administrative environment by reducing burden associated with enforcement of these regulations. Regulations based on boundaries that are not easily seen or defined are difficult to enforce, and often require a substantial workload for those charged with enforcement. **Preferred Alternative 2** would result in elimination of the fixed-closed season, which would result in positive effects to the administrative environment relative to the current regulations as stated in **Alternative 1**.

CHAPTER 5. LIST OF AGENCIES CONSULTED

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office
- Office for Law Enforcement
National Oceanic Atmospheric Administration General Counsel

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

CHAPTER 6. LIST OF PREPARERS

Name	Expertise	Responsibility
Matt Freeman, Gulf Council	Economist	Co-Team Lead – amendment development, introduction, Economic effects, Regulatory Impact Review
Daniel Luers, NMFS/SF	Fishery Biologist	Co-Team Lead – amendment development, introduction, physical and biological/ecological environments, and administrative effects
Ryan Rindone, Gulf Council	Fishery Biologist	Physical and biological/ecological effects
Adam Stemle, NMFS/SF	Economist	Economic Environment
David Records, NMFS/SF	Economist	Regulatory Flexibility Act analysis
Quinn Bernier, NMFS/SF	Anthropologist	Social effects, Social environment
Christina Package-Ward, NMFS/SF	Anthropologist	Social environment
Alisha Gray, NMFS/SF	Fishery Biologist, Data Analyst	Data analysis

Name	Discipline/Expertise	Role in EA Preparation
Mara Levy, NOAA GC	Attorney	Legal review
Noah Silverman, NMFS	Natural Resource Management Specialist	NEPA review
David Dale, NMFS/HC	EFH Specialist	Habitat review
Jennifer Lee, NMFS/PR	Protected Resources Specialist	Protected resources review
Scott Sandorf, NMFS/SF	Regulatory Writer	Regulatory preparation and review
Juan Agar, NMFS SEFSC	Economist	Economic review
Francesca Forrestal, NMFS SEFSC	Research Fishery Biologist	Physical, biological, and ecological review
Carrie Simmons, Gulf Council	Fishery Biologist	Physical, biological, and ecological review
John Froeschke, Gulf Council	Fishery Biologist	Physical, biological, and ecological review
Frank Helies, NMFS/SF	Fishery Biologist	Physical, biological, and ecological review

NMFS = National Marine Fisheries Service, SF = Sustainable Fisheries Division, PR = Protected Resources Division, HC = Habitat Conservation Division, GC = General Counsel

CHAPTER 7. REFERENCES

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APPENDIX A. RECREATIONAL SEASON ANALYSES FOR GULF OF AMERICA RED GROUPER

Southeast Regional Office
LAPP/DM Branch
August 2025

Gulf of America[135] (Gulf) red grouper are currently managed in federal waters under the Fishery Management Plan for the Reef Fish Resources of the Gulf (Reef Fish FMP). In 2025, a stock assessment of red grouper was completed (SEDAR 88 2025), and passed a peer-review by the Gulf Council's (Council) Scientific and Statistical Committee (SSC). The SSC recommended increasing the Gulf red grouper Overfishing Limit (OFL) and Acceptable Biological Catch (ABC). To act on these recommendations, the Council initiated work on Amendment 62 to the Reef Fish FMP that considers red grouper catch limits and sector allocations. This analysis provides the average recreational landings of recreational Gulf red grouper and recreational season closures based on all management options being considered.

Recreational landings data

Gulf recreational landings for red grouper were obtained from the Southeast Fisheries Science Center (SEFSC) recreational ACL files (accessed May 2025; **Table 1**). The SEFSC recreational landings dataset includes landings from the Texas Parks and Wildlife recreational creel survey (TPWD), Louisiana Department of Wildlife and Fisheries creel survey (LA Creel), Southeast Region Headboat Survey (SRHS), and Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES; Florida, Alabama and Mississippi). The MRIP FES file contains estimates from MRIP's Access Point Angler Intercept Survey (APAIS), MRIP FES (private angler effort estimates), and For-Hire Telephone Survey (FHS; for-hire effort estimates). For 2020 and 2021, imputed MRIP FES catch estimates are used to account for disruptions in the dockside sampling due to COVID. Monthly landings were estimated for MRIP FES, TPWD and LA Creel by assuming equal daily catch rates for months within a wave and then combined with SRHS, which are provided monthly. Predicted future landings for the recreational sector were estimated by averaging monthly landings in 2022-2024 for January through June. Due to recreational season closures in 2021 through 2024, predicted future landings for the recreational sector were estimated by averaging monthly landings in 2020-2022 for July through August and 2020 singularly for September through December since those landings were more consistent and elevated through December. The average monthly landings for each month were then divided by the number of days in each month to provide a daily catch rate for each sector.

The Florida Fish and Wildlife Conservation Commission's (FWC) State Reef Fish Survey (SRFS; accessed May 2025) provides private angling landings for red snapper, gag, red grouper and several other reef fish species harvested in state and federal water of the west coast of Florida. FWC SRFS data was determined best available data by the Scientific and Statistical

[35] The Gulf of Mexico was renamed the Gulf of America pursuant to Executive Order 14172, and Secretary of the Interior Order No. 3423. All geographical references to the Gulf of America or "the Gulf" in this Framework Action refer to the same body of water known as the Gulf of Mexico in the regulations at 50 CFR part 622.

Committee (SSC) at the May 2025 meeting for reporting and analyzing Florida private recreational landings of red grouper. As a result, Florida private recreational landings of red grouper in the MRIP FES landings file were replaced with SRFS landings that are calibrated to MRIP FES to generate a SRFS informed recreational landings time series with which future landings could be projected. SRFS landings are reported in whole weight, but were converted to pounds gutted weight (lb gw) using a revised gutted to whole weight conversion factor of 1.05 (SEDAR 88). All landings are reported in lb gw (**Table 1**).

Average recreational landings of red grouper are calculated to project future landing rates and are provided to compare against each of the proposed annual catch limits (ACLs; **Table 2**). The recreational sector will be closed if the ACL is met or is projected to be met. Predicted recreational closure dates are provided in **Table 2** based on cumulatively summed projected recreational landings of red grouper.

Table 1. Monthly recreational landings (lb gw) of Gulf red grouper from 2020-2024 along with projected future landings estimated using averaged landings from 2022-2024 for January through June, 2020-2022 for July and August, and 2020 for September through December.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Landings
2020	58,287	99,625	185,870	33,786	70,905	255,523	168,920	123,696	150,107	140,021	121,969	96,184	1,504,893
2021*	129,815	32,576	394,996	171,275	177,608	774,480	341,632	220,738	45,550	8,550	38	59	2,297,317
2022*	100,123	79,368	45,173	207,264	83,941	407,007	361,860	151,619	24,322	-	-	123	1,460,801
2023*	131,622	148,848	118,156	102,413	206,665	428,655	197,298	96,482	9,772	9,906	495	132	1,450,444
2024*	66,180	193,517	119,559	145,487	136,192	285,707	15,118	855	46	30	-	-	962,692
Projected Landings	99,308	140,578	94,296	151,721	142,266	373,790	290,804	165,351	150,107	140,021	121,969	96,184	1,966,396

Source: SEFSC MRIP FES recreational ACL dataset [May, 2025] and FWC SRFS [May 2025].
Notes: MRIP FES landings include red grouper landings (TPWD, SRHS, LA Creel, MRIP FES, FWC SRFS).
*The red grouper recreational season ran January 1 through September 14 in 2021, January 1 through August 30 in 2022, January 1 through July 20 in 2023, and January 1 through June 30 in 2024. Closed seasons are highlighted in gray.

Table 2. Projected Gulf red grouper closure dates expected for the recreational sector with each proposed Annual Catch Limit (ACL) alternative. Data Source: SEFSC MRIP FES Recreational ACL Dataset (May 2025) and FWC SRFS (May 2025).

Action 1, Alternative 2 Options		
Action 2 Alternatives	Recreational ACL (lb gw)	Projected Closure
Alternative 1	3,370,000	No Closure
Alternative 2	2,630,000	No Closure
Alternative 3	2,550,000	No Closure
Alternative 4	2,620,000	No Closure
Action 1, Alternative 3 Options		
2026 (70% of ABC)		
Action 2 Alternatives	Recreational ACL (lb gw)	Projected Closure
Alternative 1	2,360,000	No Closure
Alternative 2	1,840,000	**Nov 23**
Alternative 3	1,790,000	**Nov 11**
Alternative 4	1,830,000	**Nov 21**
2027 (80% of ABC)		
Action 2 Alternatives	Recreational ACL (lb gw)	Projected Closure
Alternative 1	2,690,000	No Closure
Alternative 2	2,110,000	No Closure
Alternative 3	2,040,000	No Closure
Alternative 4	2,090,000	No Closure
2028 (90% of ABC)		
Action 2 Alternatives	Recreational ACL (lb gw)	Projected Closure
Alternative 1	3,030,000	No Closure
Alternative 2	2,370,000	No Closure
Alternative 3	2,290,000	No Closure
Alternative 4	2,350,000	No Closure
2029 (ABC = ACL)		
Action 2 Alternatives	Recreational ACL (lb gw)	Projected Closure
Alternative 1	3,370,000	No Closure
Alternative 2	2,630,000	No Closure
Alternative 3	2,550,000	No Closure
Alternative 4	2,620,000	No Closure

The reliability of these results is dependent upon the accuracy of the underlying data and input assumptions. The analysis intends to create a realistic baseline as a foundation for comparisons, under the assumption that projected future landings will accurately reflect actual future landings. These closure dates are our best estimate, but uncertainty still exists as economic conditions,

weather events, changes in catch-per-unit effort, fisher response to management regulations, and a variety of other factors may cause departures from any assumption.

APPENDIX B. SUMMARY OF RECREATIONAL DATA COLLECTION

Red Grouper Recreational Data

The NMFS created the Marine Recreational Fisheries Statistics Survey (MRFSS) in 1979. In the Gulf, MRFSS collected recreational catch and effort data beginning in 1981. MRFSS included both the Coastal Household Telephone Survey (CHTS) and onsite interviews at marinas and other points where recreational anglers fish. In 2008, the MRIP replaced MRFSS to meet increasing demand for more precise, accurate, and timely recreational catch estimates. MRIP is a state-regional-federal partnership that utilizes large-scale surveys of the saltwater recreational fishing community to estimate recreational fishing catch and effort information used in stock assessments and fisheries management. MRIP utilizes separate surveys to measure catch rate and effort by mode (e.g., private angler vs for-hire) to estimate total recreational catch. For each mode the catch rate is multiplied by the effort to obtain an estimate of total catch.

The MRIP Access Point Angler Intercept Survey (APAIS) captures catch rate for both the private angler and for-hire modes. This survey was designed in 2013 to address concerns of potential bias and better account for all types of completed trips by extending the time period dockside samplers stayed at an assigned location (Foster et al. 2018). The more complete temporal coverage with the new survey design provides for consistent increases or decreases in APAIS angler catch rate statistics, which are used in stock assessments and management, for at least some species (NMFS 2019).

MRIP transitioned from the legacy CHTS to a new mail survey, known as the MRIP-Fishing Effort Survey (FES), in 2015. The surveys were run side by side for three years, and in 2018, MRIP-FES replaced MRIP-CHTS. Both survey methods collect data needed to estimate marine recreational fishing effort (number of fishing trips) by shore and private/rental boat anglers on the Atlantic and Gulf coasts. MRIP-CHTS used random-digit dialing of homes in coastal counties to contact anglers. The new mail-based FES uses angler license and registration information as one way to identify and contact anglers (supplemented with data from the U.S. Postal Service, which includes virtually all U.S. households). Comparisons of the CHTS and FES surveys from the side-by-side years indicated that, in general, total recreational fishing effort estimates generated from the FES are higher — and in some cases substantially higher — than the CHTS estimates (NMFS 2019). This is because the FES is designed to measure fishing activity more accurately than the CHTS, albeit while recognizing a greater degree of uncertainty in those landings estimates. This increase in estimated effort is not because there was a sudden rise in fishing effort, but rather because FES better targets actual fishery participants through the directed mail survey. Likewise, the increase in uncertainty about the effort estimates reflects uncertainty that was likely also present in CHTS but went unaccounted for due to biases that were identified as FES was developed. NMFS developed a calibration model to allow historic effort estimates using MRIP-CHTS to be compared to estimates from MRIP-FES.

At the August 2023 Council meeting, the NOAA Office of Science and Technology (OST) discussed the release of a pilot study (NOAA 2023[36]), which evaluated potential respondents' bias as recall error in the mail portion of the recreational FES survey used to estimate effort. The 2023 pilot study evaluated this bias for a portion of the year across several states, and preliminary results suggest the order of the questions in the survey has led to overestimation of fishing effort by MRIP-FES. In light of the results of this pilot study, NMFS conducted a new and more comprehensive year-long study of FES, which compared the current FES design to a revised version that is mailed more frequently (monthly as opposed to every 2 months) and changes the order of fishing activity questions to improve respondent recall.

NMFS plans to produce a report outlining key findings and estimate comparisons in summer 2025, followed by peer review of the revised design, a peer reviewed report of the findings of the study, a peer review of the updated calibration model, and finally implementation of and transition to a revised FES in 2026 in collaboration with partners, which includes producing calibrated historical estimates updated to reflect outputs from the revised design.

[36] https://www.fisheries.noaa.gov/recreational-fishing-data/fishing-effort-survey-research-and-improvements