Gulf of Mexico Red Snapper Recreational Data Calibration and Recreational Catch Limits

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

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

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ENVIRONMENTAL ASSESSMENT COVER SHEET

Framework Action to the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico: Modification of Gulf of Mexico Red Snapper Recreational Data Calibration and Recreational Catch Limits, including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis.

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This Environmental Assessment is being prepared using the 2020 CEQ NEPA Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). This Environmental Assessment began on DATE, and accordingly proceeds under the 2020 regulations.

ABBREVIATIONS USED IN THIS DOCUMENT

ACL	annual catch limit
AM	accountability measure
AP	Advisory Panel
ATCA	Atlantic Tunas Convention Act
Atlantic HMS	Atlantic Highly Migratory Species Management Division
bandit	electric hook-and-line gear
BiOp	biological opinion
CFR	code of federal regulations
CMP	coastal migratory pelagic
Council	Gulf of Mexico Fishery Management Council
DLMToolkit	Data Limited Methods Toolkit
DPS	distinct population segment
DWG	Deepwater grouper
EA	environmental assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EJ	environmental justice
E.O.	executive order
ELB	electronic logbook
ESA	Endangered Species Act
FHS	for-hire survey
FMP	Fishery Management Plan
FWC	Florida Fish and Wildlife Commission
Gulf	Gulf of Mexico
gw	gutted weight
HAPC	habitat area of particular concern
HMS	highly migratory species
ICCAT	International Commission for the Conservation of Atlantic Tunas
IFQ	individual fishing quota
IPCC	Intergovernmental Panel on Climate Change
KM	king mackerel
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MMPA	Marine Mammal Protection Act
mp	million pounds
MPA	marine protected area
MRIP	Marine Recreational Information Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OY	optimum yield
PAH	polycyclic aromatic hydrocarbons
Reef Fish FMP	Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico
RFA	Regulatory Flexibility Act
RFFA	reasonably foreseeable future actions

RIR	regulatory impact review
RQ	regional quotient
SA	South Atlantic
SAFE	Stock Assessment and Fishery Evaluation
Secretary	Secretary of Commerce
SEDAR	Southeast Data and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SM	Spanish mackerel
SBREFA	Small Business Regulatory Enforcement Fairness Act
SPGM	Gulf of Mexico Shrimp Commercial Fishing Permit
SRHS	Southeast Region Headboat Survey
SSC	Scientific and Statistical Committee
SWG	shallow water grouper
tpy	tons per year
VOC	volatile organic compounds
VMS	vessel monitoring system

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CHAPTER 1. INTRODUCTION

1.1 Background

The Gulf of Mexico (Gulf) red snapper stock is currently under a rebuilding plan. Consistent with this rebuilding plan, both commercial and recreational catch limits have been allowed to increase as the stock has recovered. During this time, the individual Gulf states have established recreational monitoring programs for red snapper landings made by anglers from their state. However, these monitoring programs do not record landings in the same currency in which the Gulf-wide catch limits are set. This action would adjust the state catch limits to account for the monitoring programs used by each Gulf state. Because the action focuses on the recreational sector, this document will not discuss the commercial sector.

From 1996 – 2014, the recreational fishing season for red snapper in Gulf federal waters became progressively shorter. Despite regular increases in the recreational annual catch limit (ACL) since 2010, shorter federal seasons continued as the ACL was caught more quickly and inconsistent (longer) seasons in state water were enacted. In 2015, the recreational sector was divided into a private angling component and a federal for-hire component (GMFMC 2014a), which receive 57.7% and 42.3% of the total recreational ACL, respectively. The federal for-hire component consists of fishermen fishing from vessels with a federal charter/headboat permit for Gulf reef fish and are unaffected by the actions considered in this framework action. The private angling component consists of fishermen fishing from privately owned and rented vessels, and for-hire vessels (charter boats and headboats) without a federal permit (i.e., state-licensed for-hire vessels). For-hire vessels without federal permits are restricted to fishing for red snapper in state waters.[1]

In large part due to the decreased duration of red snapper recreational fishing seasons, fishermen from different areas of the Gulf requested more regional flexibility in the management of red snapper fishing by private anglers so that regulations could allow for greater socioeconomic benefits to their particular regions. Although the Council developed amendments to consider delegating some management control for the recreational harvest of red snapper to the states, each of the five Gulf states requested and were issued exempted fishing permits (EFPs) for the 2018 and 2019 fishing years. The EFPs authorized the marine resource management agencies from each Gulf state to allow recreational red snapper harvest by the private angling component within certain time periods that were determined by the respective states. The purpose of the EFPs was to allow the states to demonstrate the effectiveness of state management of recreationally caught red snapper and data collection methods through the 2-year pilot programs. In these pilot programs, each Gulf state managed the harvest of red snapper by anglers fishing from vessels registered in their state under a state-specific ACL. The states tracked their red

[1] Federal waters refer to the area extending from the seaward boundaries of the Gulf states of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law, out to 200 nautical miles (nm) from shore. State waters refer to the area from shore out to the seaward boundary of each state. For the purpose of reef fish management, state waters extend 9 nm from shore for all five Gulf states.

snapper landings using their own respective monitoring programs and reported their landings to the National Marine Fisheries Service (NMFS).

Red Snapper Recreational Data and Recalibration

NMFS created the Marine Recreational Fisheries Statistics Survey (MRFSS) shortly after the Magnuson-Stevens Fishery Conservation and Management Act mandated a national program for the management of US fishery resources (Papacostas and Foster 2018). MRFSS estimates are available from 1981+ for the catch, effort, and participation of US recreational fishing, including that for Gulf red snapper. This survey included both offsite telephone surveys to collect information about recreational fishing activity and onsite interviews at marinas and other recreational access points to collect information about the fish that were caught. In response to a peer-review by the National Research Council (2006), the MRFSS was replaced by the Marine Recreational Information Program (MRIP) to meet increasing demand for more precise, accurate, and timely recreational catch estimates.

The MRIP introduced a new survey design for the Access Point Angler Intercept Survey (APAIS) in 2013. This new design addressed concerns regarding the validity of the survey approach; specifically, that trips recorded during a given time period are representative of trips for a full day (Foster et al. 2018). The more complete temporal coverage with the new survey design provided for consistent increases or decreases in APAIS angler catch rate statistics, which are used in stock assessments and management, for at least some species (NOAA Fisheries 2019).

MRIP also transitioned from the legacy Coastal Household Telephone Survey (CHTS) to a new mail survey (Fishing Effort Survey [FES]). Launched in 2015, the FES replaced the CHTS in 2018. 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. The CHTS used random-digit dialing of homes in coastal counties to contact fishermen. The new mail-based FES uses fishing license and registration information as one way to identify and contact fishermen (supplemented with data from the U.S. Postal Service). NMFS conducted side-by-side testing of CHTS and FES from 2015 to 2017 to develop a calibration model for transitioning between the two data currencies. Landings estimates since 2018 are back-calculated from MRIP-FES to MRIP-CHTS for quota monitoring purposes because federal red snapper in the Gulf are currently managed under the MRIP-CHTS currency, but information is currently collected using MRIP-FES.

Reef Fish Amendments 50(A-F)

In 2017, the Gulf of Mexico Fishery Management Council (Council) began working on amendments to create a state management program for red snapper that would build off of the state pilot programs. This comprehensive process included the development of six amendments for the Fishery Management Plan for Reef Fish Resources in the Gulf (Reef Fish FMP), including a Program Amendment (GMFMC 2019a) and five individual state amendments, one for each Gulf state (GMFMC 2019b-f).

These amendments (GMFMC 2019a-f) established a structure to delegate some management authority for recreational fishing of red snapper by private anglers in federal waters to the Gulf states. Through these amendments, each state was allocated a portion of the red snapper private angling component ACL (Table 1.1.1) and was delegated the authority to set the private angling fishing season, bag limit, and size limits (the minimum size limit being between 14-18 inches total length [TL]). Each individual state amendment also included an accountability measure (AM) that requires any overage of a state's ACL be deducted in the following year contingent on the best scientific information available; this is known as a payback provision. Table 1.1.1 also features a breakdown of all catch limits for Gulf red snapper from the OFL down to the state-specific ACLs. Note that, except for the for-hire component of the recreational sector, ACTs are not used, and the ACL equals the acceptable biological catch (ABC).

Table 1.1.1. Gulf red snapper catch limits by type and sector in pounds whole weight (ww) in MRIP-CHTS units. The "Buffer" column refers to the percentage difference in the catch limit for that row from the previous catch limit type. The "Allocation" column refers to the percentage allocation of the pounds in that row from the previous catch limit type. "PA" mean private angling.

Catch Limit Type	lbs ww	Buffer	Allocation
OFL	15,500,000		
ABC	15,100,000	2.581% less than OFL	
Commercial ACL	7,701,000	ABC = ACL	51% of ABC
Recreational ACL	7,399,000		49% of ABC
Federal For-Hire ACL	3,130,000		42.3% of Rec ACL
Federal For-Hire ACT	2,848,000	9% less than FH ACL	
Private Angling ACL	4,269,000		57.7% of Rec ACL
Florida ACL	1,913,451		44.822% of PA ACL
Alabama ACL	1,122,662		26.298% of PA ACL
Mississippi ACL	151,550		3.55% of PA ACL
Louisiana ACL	816,233		19.12% of PA ACL
Texas ACL	265,105		6.21% of PA ACL

State Fishery-Dependent Reporting Programs

During the EFP years and upon implementation of Reef Fish Amendments 50A-F on February 6, 2020, NMFS had used MRIP data in concert with the landings and effort data collected from some Gulf state data collection programs to monitor the harvest of red snapper by the private angling component. However, the varied sampling approaches used by the state programs produce landings estimates that differ from estimates generated by MRIP. The state programs aim to collect timelier and more accurate fishery-dependent data for red snapper, and increasingly, other species also. However, the implementation dates, species collected, and methodologies vary among states. The survey designs used in Louisiana, Mississippi, Alabama,

and Florida have been certified by NMFS[2]. However, this certification does not mean that the estimates produced by the state surveys are equivalent to the MRIP estimates, since each survey design is subject to various methodological assumptions and methods that could affect estimates of catch and effort.

Florida: State Reef Fish Survey

Florida implemented the multispecies Gulf Reef Fish Survey (GRFS) in May of 2015[3], which became the State Reef Fish Survey (SRFS) in July of 2020. GRFS received its NMFS certification in December 2018. Information is collected from private recreational anglers and includes thirteen reef fish species: red snapper, greater and lesser amberjack, almaco jack, banded rudderfish, gray triggerfish, mutton snapper, yellowtail snapper, vermilion snapper, gag, red and black grouper, and hogfish. The survey is voluntary but Florida-licensed saltwater fishermen that intend to fish for or harvest certain reef fish from a private vessel are required to get a free angler endorsement for the program, which acts to identify the sample universe. Similarly designed to the MRIP survey, the SRFS runs side-by-side with MRIP, meaning angler interview data from both surveys are used to estimate landings and effort. SRFS requests catch data through random angler intercepts and gathers effort data through a statistically designed mail survey.

Alabama: Snapper Check

Alabama's Department of Conservation and Natural Resources (ALDCNR) implemented Snapper Check in 2014 to collect red snapper data from private recreational anglers and state and federal for-hire captains to provide more precise estimates of Alabama red snapper harvest. Snapper Check requires anglers to provide in-season catch and effort data on red snapper once they return from their fishing trips. The program will be expanding to request catch data on greater amberjack and gray triggerfish in 2021. For the 2020 fishing season, anglers were required to purchase a Reef Fish Endorsement prior to targeting certain Gulf reef fish species, including red snapper. Anglers report to the program through the Outdoor Alabama mobile application (app) or online. Landed catch and collection of biological sampling is conducted by ALDCNR staff through dockside intercepts, which also continue to inform the MRIP survey. Snapper Check completed the NMFS certification process in June of 2018[4].

Mississippi: Tails n' Scales

The Mississippi Department of Marine Resources' (MDMR) Tails n' Scales (TNS) program began mandatory reporting in 2015 for all private recreational anglers and state and federal for-hire captains landing red snapper in Mississippi. Anglers report through the TNS app, online, or by calling a toll-free number. All anglers must have a TNS authorization number prior to fishing for red snapper, and must provide trip-specific information such as number of red snapper harvested and number released in order to obtain their next trip authorization number. MDMR staff gather landed catch and biological information as well as validate angler-reported data

[2] https://www.fisheries.noaa.gov/recreational-fishing-data/certified-recreational-fishing-survey-designs
[3] https://myfwc.com/research/saltwater/fishstats/srfs/program/
[4] https://www.outdooralabama.com/node/2405

through random dockside intercepts at public access points. MDMR recently began requesting information from anglers on greater amberjack. TNS received NMFS certification in June of 2018[5].

Louisiana: LA Creel Survey
Louisiana's Department of Wildlife and Fisheries (LDWF) LA Creel survey began in 2014, replacing the MRIP data collection program in Louisiana, in an effort to gain more precise, localized data to better manage their fisheries. LDWF biologists complete dockside interviews, asking state and federal charter captains and private recreational anglers about their fishing activities on all saltwater finfish species. Anglers and charter captains are also called weekly and emailed to interview them about their fishing activities from the previous week. Together, these data provide information to calculate landings and effort estimates. The program design has been tailored to fit Louisiana's fisheries and coastal areas. Survey sites have been stratified to account for inshore versus offshore fishing activities. Offshore fishermen are also required to possess an Offshore Landing Permit prior to fishing for certain offshore species, including red snapper. LA Creel provides data on area-specific harvest to customize management of fisheries within basins. Since the end of 2015, LA Creel has been the only recreational catch and effort survey in Louisiana, effectively replacing MRIP. LA Creel was certified by NMFS in December of 2017[6].

Texas: Texas Parks and Wildlife Department's (TPWD) Marine Sport-Harvest Monitoring Program
The Texas Parks and Wildlife Department (TPWD) has been operating its own creel surveys for saltwater anglers since 1974. Survey methods were adjusted to the current format, which was adopted in 1983. Surveys are conducted seasonally throughout the year based on a high-use (May 15 – November 20) and low-use season (November 21 – May 14). Information is collected from private recreational and for-hire fishermen through dockside intercepts that provide data to estimate landings and effort. TPWD also counts empty boat slips and boat trailers at public access points to estimate the number of fishing trips being taken; trips originating from and/or returning to private access points are not accounted for. TPWD partners with the Harte Research Institute to supplement its creel data with catch and effort data supplied from the iSnapper program. iSnapper requests private anglers and charter captains to electronically report information through an app or website after every trip. TPWD asks shore-based coastal anglers to provide information on their catch and fishing effort. These surveys are done periodically based on previous months' angler count data to determine if the proportion of landings from shore and vessel remain the same. Texas has never sought NMFS certification for its creel surveys.

Why is calibration (common currency) needed?
Catch and effort surveys and associated estimates of catch must meet both stock assessment and management needs. Annual trend information for catch over the range of a fish stock is

[5] https://dmr.ms.gov/mdmrs-tails-n-scales-survey-design-receives-noaa-fisheries-certification/
[6] https://www.fisheries.noaa.gov/feature-story/noaa-fisheries-certifies-la-creel-survey-design

desirable for a meaningful evaluation of the status of the entire stock, and is available for Gulf red snapper through MRIP. However, using MRIP for in-season monitoring at the state level is challenging because MRIP is a general survey designed to produce catch estimates for a large number of species over a large geographic area. The need for a consistent time series that accounts for changes in survey methods is critical to a meaningful interpretation of catch trends and indices of abundance derived from survey estimates, and is necessary to manage landings to the ACL. The purpose of calibration is simply to allow estimates produced using one method to be expressed in the units of a different method. In the case of the Gulf red snapper, calibrations facilitate conversion of ACLs derived from CHTS to the state survey units, in which the CHTS-based ACLs are monitored. Calibration facilitates conversion of estimates produced using different methods in each state to a common standard, which facilitates the determination of a representative Gulf-wide estimate of harvest. In July 2019, NMFS published a white paper[7] detailing the data available and the need for calibration of the Gulf state survey-generated catch and effort data. The white paper further detailed a progression of incorporating the newly developed state-specific survey data into stock assessment models, as calibration methods were finalized.

Red Snapper Calibration Workshops

Over the past several years, multiple workshops have been hosted by the Gulf States Marine Fisheries Commission and the National Oceanic and Atmospheric Administration (NOAA) Office of Science and Technology (OST) to improve recreational fisheries data. In 2018[8], a workshop was held to determine how to make use of the state specific surveys, how to maintain a comparable long-term time series of landings, how to generate comparable catch estimates among states (i.e., common data currency), and how to develop and implement a process to accomplish these goals. On August 5, 2020[9], a subsequent workshop was held to clarify the processes and methodologies used to establish calibration ratios to allow state survey data to be converted to MRIP-CHTS, making those data comparable to the ACLs that were developed and established using the most recent red snapper stock assessment (SEDAR 52 2018). At this workshop, NMFS staff presented draft calibration results based on NOAA statistical consultants' input.

On August 11, 2020, the Council's Scientific and Statistical Committee (SSC) was convened to review the recommendations from the August 5, 2020, NOAA OST red snapper calibration workshop and make recommendations to the Council about the appropriateness of the proposed calibration ratios (see Appendix A). The state-specific surveys generate catch and effort data in their native data currencies, which need to be calibrated to the MRIP-CHTS currency for quota monitoring and stock assessment purposes. No ratio adjustment is available for Texas because TPWD catch info is used in the stock assessment without modification, because no viable comparison between TPWD creel surveys and MRIP exists. It was necessary for the four other Gulf states to develop ratios to calibrate their data to MRIP-CHTS, with these ratios being reviewed during the August 5th workshop. At that workshop, Florida, Alabama, Mississippi, and Louisiana presented their revised methods for calculating their respective state-specific ACLs.

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[7] https://media.fisheries.noaa.gov/dam-migration/94100569.pdf
[8] https://www.fisheries.noaa.gov/resource/document/mrip-transition-plan-fishing-effort-survey
[9] https://gulfcouncil.org/wp-content/uploads/B-8b-Gulf_Calibration_Wrkshp_report_2020_v1.21.pdf

Alabama preferred calibrating the Snapper Check survey directly to MRIP-CHTS. Mississippi recommended using a weighting procedure to calibrate its TNS survey; this procedure was ultimately not supported by the consultants, and an approach similar to that used for Florida was applied until Mississippi presents an alternative method. Louisiana clarified that their proposed calibration ratio used landings data from all six MRIP waves in 2015, and did not exclude any waves as was written in the NMFS consultant evaluation; the original NMFS consultant report was corrected for this error. Both estimates for Florida and Mississippi used a combination of ratios from the respective state survey to MRIP-FES landings and the MRIP-FES to MRIP-CHTS landings.

Calibration Recommendations

Alabama's Snapper Check to MRIP-CHTS ratio was calculated from the ratio of the means of the 2018-2019 landings in pounds, and was equal to 0.4875, which would reduce the state's ACL from 1,122,662 lbs ww in MRIP-CHTS currency to 550,104 lbs ww in Snapper Check currency. Louisiana's LA Creel ratio to MRIP-CHTS was equal to 1.06, which would increase Louisiana's ACL from 816,223 lbs ww in MRIP-CHTS currency to 865,207 lbs ww in LA Creel currency.

For Florida and Mississippi, two ratios were used to convert from the state surveys to MRIP-CHTS. Both Florida and Mississippi used the mean of a three-year (i.e., 2015-2017) time series of MRIP-FES to MRIP-CHTS red snapper private mode landings. For Florida, private mode red snapper landings from May 2015 through December 2019 were used to estimate a GRFS (now SRFS) to MRIP-FES ratio. When the Florida ratios were combined, the result was a ratio of 1.0602 between GRFS and MRIP-CHTS, and a resultant ACL increase from 1,913,451 lbs ww (MRIP-CHTS) to 2,028,641 lbs ww (GRFS [SRFS]). The Mississippi TNS to MRIP-FES ratio was based on the mean red snapper landings from 2018 and 2019. When the two ratios were combined, the result was a TNS to MRIP-CHTS ratio of 0.3840. Mississippi's ACL calibrated to this ratio would result in a decrease from 151,550 lbs ww (MRIP-CHTS) to 58,189 lbs ww (TNS).

The SSC concluded that the methods used to generate conversion ratios between Gulf state surveys and MRIP data are appropriate for monitoring of the red snapper state-specific ACLs. Those ratios are shown in Table 1.1.2.

Table 1.1.2. Calibration ratios recommended by the SSC to convert state landings data collected in their respective state-specific data collection program to MRIP-CHTS currency for monitoring the state ACLs.

State	Ratio of state landings to MRIP- CHTS landings
Florida	**1.0602**
Alabama	**0.4875**
Mississippi	**0.3840**
Louisiana	**1.06**
Texas	**1***

*No calibration adjustment is made to Texas' data.

Pending Future Action
At its January 2021 meeting, the Council directed staff to begin work on a document to modify the red snapper catch limits using the results of a catch analysis scheduled to be reviewed by the Council's SSC prior to the April 2021 Council meeting. This catch analysis, to be performed by the SEFSC, will use the estimate of absolute abundance generated by the Great Red Snapper Count to generate updated catch recommendations. Any change to the current catch limits resulting from the SSC's review of this new catch analysis will affect the data presented in this document.

1.2 Purpose and Need

The purpose of this action is to reduce the likelihood of exceeding the red snapper private angling component ACL by adjusting the state catch limits to account for the monitoring programs used by each Gulf state.

The need for this action is to use the best scientific information available to prevent overfishing while achieving optimum yield, consistent with the red snapper rebuilding plan.

1.3 History of Management

This history of management covers events pertinent to recreational red snapper and the Council's consideration of state management for the recreational harvest of red snapper. A complete history of management for the Reef Fish FMP) is available on the Council's website.[10]

Prior to 1997, the recreational red snapper season was open year-round. Catch levels were controlled through minimum size limits and bag limits. The Sustainable Fisheries Act of 1996 required the establishment of quotas for recreational and commercial red snapper that, when reached, result in a prohibition on the retention of fish caught by each sector, respectively, for the remainder of the fishing year. From 1997 through 1999, NMFS implemented the recreational quota requirement through an in-season monitoring process that projected closing dates a few weeks in advance. For the years 1997 through 1999, the recreational red snapper season was closed earlier each year. In 1999, an emergency rule temporarily raised the recreational red snapper minimum size limit from 15 to 18 inches TL towards the end of the season from June 4 through August 29 in an attempt to slow down the retained harvest rate [64 FR 30445]. Without this emergency rule, the season would have closed on August 5. However, the rule resulted in a large increase in dead discards and the size limit was allowed to revert back to 15 inches TL the following year. Additional details regarding the seasons and regulation changes for red snapper are presented in Hood et al. (2007).

A February 2000 regulatory amendment (GMFMC 2000) replaced the system of in-season monitoring and closure projections with a fixed season based on a pre-season projection of when the recreational quota would be reached. The season for 2000 and beyond was initially set at April 15 through October 31, with a 16-inch TL minimum size limit, 4-fish bag limit, and zero

[10] http://www.gulfcouncil.org/fishery_management_plans/reef_fish_management.php

bag limit of red snapper by the captain and crew of for-hire vessels. Shortly before the regulatory amendment was submitted to NMFS, the Council, at the request of representatives of the for-hire industry, withdrew the zero bag limit proposal for captain and crew. NMFS recalculated the season length under the revised proposal, and as a result, implemented the regulatory amendment with a recreational fishing season of April 21 through October 31. This recreational fishing season remained in effect through 2007.

In 2008, Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007) revised the rebuilding plan for red snapper. For the recreational sector, the rule implemented a June 1 through September 30 fishing season, 16-inch TL minimum size limit, 2-fish bag limit, and zero bag limit for captain and crew of for-hire vessels. The implementing regulations for this amendment created a June 1 through September 30 fishing season by establishing fixed closed seasons of January 1 through May 31, and October 1 through December 31.

The amendment also addressed differences in shrimp and red snapper fishing effort between the western and eastern Gulf, and the impacts of fishing on the red snapper rebuilding plan. The Council considered options for modifying recreational red snapper fishing effort, including different season opening dates and weekend only or consecutive seasons, for the following regions: Texas and the rest of the Gulf; east and west of the Mississippi River; and Gulf-wide regulations. The Council ultimately opted to maintain consistent Gulf-wide regulations, with a recreational season from June 1 through September 15.

The Southeast Data Assessment and Review (SEDAR) 7 red snapper assessment provided an option to set two regional total allowable catches with the Mississippi River as the dividing line (SEDAR 7 2005; SEDAR 7 Update 2009). These assessments assumed there were two sub-units of the red snapper stock within the Gulf, separated commercially at the Mississippi River (shrimp statistical grids 12 and 13) and recreationally at the Mississippi/Louisiana state line.

When Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007) was submitted to NMFS, the Council requested that the five Gulf states adopt compatible regulations in state waters. Florida adopted a compatible 2-fish bag limit, but maintained its state red snapper fishing season of April 15 through October 31, 78 days longer than the federal fishing season. Texas also maintained its four-fish bag limit and year-round fishing season in its state waters. Prior to the start of the 2008 season, NMFS recalculated its projections for the recreational red snapper season in light of the state regulations, and projected that there would be a 75% probability that the recreational quota would not be exceeded if the season closed on August 5. As a result, NMFS set the 2008 season to be June 1 through August 4 [73 FR 15674]. In 2009, NMFS again recalculated its projections for the season length prior to the start of the recreational season and announced that the recreational season would be June 1 to August 15 [74 FR 21558].

A February 2010 regulatory amendment (GMFMC 2010) increased the total allowable catch, which increased the recreational quota. However, NMFS estimated that in 2009, the recreational sector overharvested its quota by approximately 75%. In recalculating the number of days needed to fill the recreational quota, even with the quota increase, NMFS projected that the 2010 season would need to be shortened to June 1 through July 24, and published notice of those dates prior to the start of the recreational fishing season [75 FR 23186].

In April 2010, the *Deepwater Horizon* MC252 deep-sea drilling rig exploded and sank off the coast of Louisiana. Because of the resulting oil spill, approximately one-third of the Gulf was closed to fishing for much of the summer months. The direct loss of fishing opportunities due to the closure, plus the reduction in tourism throughout the coastal Gulf, resulted in a much lower catch than had been projected. After the recreational season closed on July 24, NMFS estimated that 68% of the recreational quota remained unharvested (NMFS 2010). However, due to the fixed October 1 through December 31 closed season, NMFS could not reopen the recreational season without an emergency rule to suspend the closure. Consequently, the Council requested an emergency rule to provide the NMFS Regional Administrator with the authority to reopen the recreational red snapper season. After considering various reopening scenarios, the Council requested that the season be reopened for eight consecutive weekends (Friday, Saturday and Sunday) from October 1 through November 21 (24 fishing days) [75 FR 58334].

A January 2011 regulatory amendment (GMFMC 2011) increased the red snapper total allowable catch. The resulting final rule established a 48-day recreational red snapper season, running June 1 through July 19 [76 FR 23911]. On August 12, 2011, NMFS published an emergency rule that, in part, increased the recreational red snapper quota for the 2011 fishing year and provided the agency with the authority to reopen the recreational red snapper season later in the year, if the recreational quota had not been filled by the July 19 closing date. However, based on available recreational landings data through June, NMFS calculated that 80% of the recreational quota had been caught. With the addition of July landings data plus Texas Parks and Wildlife Department survey data, NMFS estimated that total recreational landings were well above the quota. Thus, no unused quota was available to reopen the recreational fishing season.

A March 2012 regulatory amendment (GMFMC 2012) increased the commercial and recreational quotas and removed the fixed recreational season closure date of October 1. The recreational season opened June 1 through July 11. However, the north-central Gulf experienced extended severe weather during the first 26 days of the 2012 recreational red snapper fishing season, including Tropical Storm Debby. Because of the severe weather, NMFS extended the season by 6 days and closed on July 17 [77 FR 39647].

A March 2013 framework action (GMFMC 2013a) increased the commercial and recreational red snapper quotas. This was the result of new rebuilding projections based on the 2009 update assessment (SEDAR 7 Update 2009) that were revised to account for additional landings during 2009-2012. On March 25, 2013, an emergency rule gave NMFS the authority to set the closure date of the red snapper recreational season in federal waters off individual Gulf states [78 FR 17882]. The closure dates were dependent on whether state regulations were consistent with federal regulations for the red snapper recreational season length or bag limit. On May 31, 2013, the U.S. District Court in Brownsville, Texas, set aside that emergency rule.

As a result of the Court decision on the emergency rule, on June 10, 2013, the federal red snapper recreational season was adjusted to be the same in federal waters off all five Gulf states. Considering the catches expected later in the year during the extended state-water seasons off Texas, Louisiana, and Florida, NMFS projected the Gulf-wide federal red snapper recreational season could be 28 days long [78 FR 34586].

In July 2013, the Council reviewed a new benchmark assessment (SEDAR 31 2013) which showed that the red snapper stock was rebuilding faster than projected, partly due to strong recruitment in some recent years. Combined with a new method for calculating the ABC, the Council's SSC increased the ABC for 2013, but warned that the catch levels would have to be reduced in future years if recruitment returned to average levels.

After incorporating a buffer to the ACL to reduce the possibility of having to later reduce the quota, the Council further increased the 2013 commercial and recreational quotas (GMFMC 2013b). This increase occurred too late to extend the June recreational season, so the Council requested that NMFS reopen the recreational season. NMFS announced a supplemental season of October 1 through 14, 2013 [78 FR 57313].

In 2014, NMFS initially announced a 40-day recreational season [78 FR 76758]. However, in March 2014, as a result of a legal challenge, the U.S. District Court for the District of Columbia found that there was not an adequate system of AMs in place to prevent the recreational red snapper sector from exceeding its quota and that NMFS did not use the best scientific information available. To address the Court's decision and reduce the probability that the recreational sector would exceed its quota, the projected season length for 2014 needed to be revised to incorporate MRIP) landings, and additional AMs needed to be implemented. NMFS determined that including the 2013 MRIP landings data resulted in a 15-day federal season. During the April 2014 meeting, the Council requested that NMFS implement an emergency rule establishing an annual catch target (ACT) determined by applying a 20% buffer to the recreational quota (which is equivalent to the recreational ACL), to take into account uncertainty in recreational landings estimates. Shortly after the April 2014 meeting, Louisiana declared the state's red snapper season would be open through December 31, 2014. Using the ACT selected by the Council and considering the extended Louisiana fishing season, NMFS set a 2014 federal red snapper season of 9 days [79 FR 27768].

An October 2014 framework action (GMFMC 2014a) implemented permanent AMs that 1) established an ACT that is 20% lower than the quota (equal to the ACL) and set the recreational season length based on the ACT, and 2) established an overage adjustment to be applied while the red snapper stock is overfished that mitigates the effects of a quota overage by reducing the ACL in the following year.

Amendment 40 (GMFMC 2014b) formally adopted the designation of component ACLs for red snapper, established private angling and federal for-hire component ACTs for the years 2015-2017, and established separate in-season closure provisions for each component. Amendment 45 (GMFMC 2016) extended the separate management of the federal for-hire and private angling components for an additional 5 years. Thus, the management of the separate components extends through December 31, 2022.

The Council approved a framework action in April 2015 (GMFMC 2015a) that increased the red snapper stock quota for the years 2015-2017. NMFS estimated the recreational red snapper fishing season length in federal waters for each component and established a 10-day season for

the private angling component and a 44-day season for the federal for-hire component [80 FR 24832].

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

On March 3, 2017, a U.S. district court vacated Amendment 28 and subsequently ordered that the sector quotas for 2017 be set consistent with the previous sector allocations of 51% commercial and 49% recreational. For 2017, NMFS initially established a 3-day fishing season for the private angling component and a 49-day season for the federal for-hire component [FR 82 21140]. The short private angling season in 2017 was due in part to a quota overage in 2016, which required an overage adjustment to the 2017 quota because the stock was overfished. The short season was also due to landings projected to occur in state waters while federal waters were closed. Shortly after the private angling season ended, NMFS reopened the private angling fishing season for an additional 39 days. During this time, the fishing season was open Fridays through Sundays, plus July 3-4 and September 4 [82 FR 27777].

Amendment 44 (GMFMC 2017a) changed the minimum stock size threshold for seven species in the Reef Fish FMP, including red snapper. After the approval of Amendment 44, the Gulf red snapper stock was reclassified as not overfished but rebuilding, because the biomass for the stock is currently estimated to be greater than the minimum stock size threshold but still below the rebuilding target.

For 2018, NMFS established a 51-day red snapper fishing season for the federal for-hire component [83 FR 17623]. For the private angling component, the 2018 and 2019 red snapper fishing seasons were set by the individual states through EFPs approved by NMFS.

The Council recently approved two framework actions that affect recreational red snapper management, which became effective on April 4, 2019. Modification of Gulf of Mexico Red Snapper and West Florida Hogfish Annual Catch Limits (GMFMC 2018a) would increase the private angling and federal for-hire component ACLs and ACTs beginning in 2019. Modification to the Recreational Red Snapper Annual Catch Target Buffers (GMFMC 2018b) reduces the federal for-hire buffer by setting the ACT at 9% below the component's ACL for the 2019 fishing season only.

Reef Fish Amendments 50A-F: At its April 2019 meeting, the Council approved Amendments 50A-F to the Reef Fish FMP (GMFMC 2019), which became effective February 6, 2020. Amendments 50A-F established a state management program for the private angling component's harvest of red snapper. Under Amendments 50A-F, each Gulf state is responsible for managing its annual allocation of the red snapper private angling component ACL using size limits, bag limits, and seasonal closures. If a state exceeds its allocation in a given fishing year,

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

Based on information provided by TPWD, NMFS determined that landings of red snapper off Texas for the private angling component, which includes landings for charter vessels, in 2019 were 375,616 lbs (170,377 kg), which is 110,526 lbs (50,134 kg) greater than 2019 Texas allocation of the private angling component ACL. Accordingly, NMFS issued a temporary rule on August 24, 2020 (85 FR 52055) for the 2020 fishing year and reduced the Texas regional management area private angling component ACL for Gulf red snapper by the ACL overage amount of 110,526 lbs, which resulted in a revised private angling ACL for Texas of 154,579 lb. (70,116 kg). This reduction was in effect through the remainder of the 2020 fishing year, through December 31, 2020.

On September 25, 2020, NMFS issued a temporary rule to implement AMs for the red snapper recreational sector private angling component in the Gulf off Louisiana for the 2020 fishing year. Based on information provided by the LDWF, NMFS determined that the 2019 Louisiana regional management area private angling component ACL for Gulf red snapper (816,439 lbs ww) was exceeded by 31,901 lbs ww. Therefore, NMFS reduced the 2020 private angling component ACL of Gulf red snapper for the Louisiana regional management to 784,332 lbs ww to account for the overage in 2019. This reduction remained in effect through the remainder of the 2020 fishing year, through December 31, 2020.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1: Modification of Gulf of Mexico (Gulf) State-specific Red Snapper Private Angling Component Annual Catch Limits

Alternative 1: No Action – Retain the state-specific red snapper private angling component annual catch limits (ACL) established in Amendment 50A for the Fishery Management Plan (FMP) for Reef Fish Resources in the Gulf (Reef Fish FMP). The state specific allocation percentages and ACLs in lbs whole weight (ww) are as follows:

State	Allocation	Current ACL (MRIP-CHTS)
Alabama	26.298%	1,122,662
Florida	44.822%	1,913,451
Louisiana	19.120%	816,233
Mississippi	3.550%	151,550
Texas	6.210%	265,105
Total		**4,269,000**

Alternative 2: Modify the state-specific red snapper private angling component ACLs using the ratio calibrations developed by the National Oceanic and Atmospheric Administration's (NOAA) Office of Science and Technology (OST) and the respective Gulf states. These ratios and the resulting ACLs in each state's currency are as follows:

State	Current ACL – MRIP-CHTS Currency	Ratio	ACL (lbs ww) (State Currency)
Alabama	1,122,662	0.4875	547,298
Florida	1,913,451	1.0602	2,028,641
Louisiana	816,233	1.06	865,207
Mississippi	151,550	0.3840	58,195
Texas	265,105	1.00	265,105
Total	**4,269,000**		*Not additive*

Any future increases to state-specific ACLs in 2021 or 2022 would be calibrated based on the ratio calibrations described in **Alternative 2**. Further, under **Alternative 2**, the Gulf of Mexico Fishery Management Council (Council) will review the state specific ACLs in 2022, or as soon as practicable.

Alternative 3: Modify the state-specific red snapper private angling component ACLs by establishing a "State Management ACL" that is 23% below the private angling component quota and applying the allocation percentages established in Amendment 50A of the Reef Fish FMP. The resulting state ACLs are as follows:

State	Current ACL – MRIP-CHTS Currency	% Reduction	ACL (lbs ww) (State Currency)
Alabama	1,122,662	23	864,450
Florida	1,913,451	23	1,473,357
Louisiana	816,233	23	628,499
Mississippi	151,550	23	116,694
Texas	265,105	23	204,131
Total	**4,269,000**		**3,287,131**

The 23% buffer will be applied to any subsequent increase in the state-specific ACLs for the recreational private angling component for red snapper.

Alternative 4: Modify the state-specific red snapper private angling component ACLs by establishing a "State Management ACL" that is 23% below the private angling component quota and applying the allocation percentages established in Amendment 50A of the Reef Fish FMP (*see table under Alternative 3 for state-specific catch limits*). If the SSC recommends an increase in the overfishing limit (OFL) and acceptable biological catch (ABC) for red snapper, the resulting difference between the status quo and revised combined state-specific ACLs for the private angling component would be incorporated into the respective state-specific ACLs using the ratio calibrations indicated in Alternative 2. The Council will review the state specific ACLs in 2022, or as soon as practicable.

Option 4a: Apply the ratio calibration in Alternative 2 to any additional quota if the ABC is increased

Option 4b: Apply the ratio calibration in Alternative 2 to any additional quota if the ABC is increased by 25% or more

Alternative 5: Modify the state-specific red snapper private angling component ACLs by establishing a "State Management ACL" that is 11.819% below the private angling component quota and applying the allocation percentages established in Amendment 50A of the Reef Fish FMP. The resulting state ACLs are as follows:

State	Current ACL – MRIP-CHTS Currency	% Reduction	New ACL – State Survey Currency
Alabama	1,122,662	11.819	989,975
Florida	1,913,451	11.819	1,687,300
Louisiana	816,233	11.819	719,762
Mississippi	151,550	11.819	133,638
Texas	265,105	11.819	233,772
Totals	**4,269,000**		**3,764,448**

The 11.819% buffer will be applied to any subsequent increase in the state-specific ACLs for the recreational private angling component for red snapper.

Discussion:

In this action, the Council would modify the state-specific red snapper ACLs to ensure that the combined private angling component ACLs for Gulf states will not exceed the total private component ACL established by the National Marine Fisheries Service (NMFS) and the Council.

Amendments 50A-F to the Reef Fish FMP (GMFMC 2019a-f) established state management for the harvest of red snapper by the private angling component of the recreational sector. Under **Alternative 1** (No Action), each Gulf state would continue to manage its private angling component ACL as established in Amendment 50A, which is a percentage of the total private angling component ACL and is calculated in the Marine Recreational Information Program's Coastal Household Telephone Survey (MRIP-CHTS) data currency. The state allocations and ACLs established in Amendment 50A are: Alabama, 26.298% (1,122,662 lbs ww); Florida, 44.822% (1,913,451 lbs ww); Louisiana, 19.120% (816,233 lbs ww); Mississippi, 3.550% (151,550 lbs ww); and Texas, 6.210% (265,105 lbs ww).

Alternative 1 would allow each state to continue to monitor and estimate landings using their own data collection program without calibration. Some of the estimates generated by these state programs differ from estimates generated using MRIP-CHTS, which were used in the most recent stock assessment to generate the current ACLs. For 2018 and 2019, estimates of total state landings in MRIP-CHTS units exceeded the total private angling component ACL. As a result, **Alternative 1** would continue to allow the monitoring of some state's landings in a currency that is not directly comparable to the ACLs, and may continue to result in total landings of red snapper exceeding the ACLs for those states and the total private angling component ACL. This is inconsistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act, meaning that **Alternative 1** is not a viable alternative. Table 2.1.1 divides the current ACL in MRIP-CHTS data currency by the calibration ratios developed by NOAA OST and the Gulf states from **Alternative 2**, to demonstrate the predicted landings (in MRIP-CHTS data currency) that would result from **Alternative 1**.

Table 2.1.1. Gulf state-specific private angling component ACLs in lbs ww in MRIP-CHTS data currency, as adjusted by each ratio calibration, and the resultant predicted landings in MRIP-CHTS data currency under **Alternative 1** of Action 1.

State	Current ACL (lbs ww) (MRIP-CHTS)	Ratio Calibration	Predicted Landings Using State Surveys (in MRIP-CHTS)
Alabama	1,122,662	0.4875	2,302,896
Florida	1,913,451	1.0602	1,804,802
Louisiana	816,233	1.06	770,031
Mississippi	151,550	0.3840	394,661
Texas	265,105	1.00	265,105
Total	**4,269,000**		**5,537,496**

Alternative 2 would modify the state-specific red snapper private angling component ACLs using the conversion ratios developed by NOAA OST and the Gulf states, and recommended by the Council's Scientific and Statistical Committee (SSC). The ratios and corresponding limits (based on 2021 ACLs in MRIP-CHTS currency) are defined in Table 2.1.2.

Table 2.1.2. Gulf state-specific private angling component ACLs in lbs ww for future fishing seasons, and in state survey-specific data currency as adjusted by each calibration ratio for **Alternative 2** of Action 1.

State	Current State ACL (in MRIP-CHTS)	Ratio Calibration	Converted ACL (in State Currency)
Alabama	1,122,662	0.4875	547,298
Florida	1,913,451	1.0602	2,028,641
Louisiana	816,233	1.06	865,207
Mississippi	151,550	0.3840	58,195
Texas	265,105	1.00	265,105
Total	**4,269,000**		*Not additive*

Alternative 2 would implement a ratio-based conversion of MRIP-CHTS catch limits to state ACLs that would reduce the likelihood of the total private angling component ACL being exceeded based on discrepancies in the currencies of the various data collection programs. The methods and techniques used to generate estimates vary in each state (as do state estimates versus MRIP-CHTS), and thus estimates of catch also vary. **Alternative 2** would affect each state differently depending on the state conversion ratio. In state currencies, Florida and Louisiana would benefit from the application of their calibration ratios in **Alternative 2** (approximately 6% increases in the ACLs for those states); Texas would remain unaffected (no change to ACL as compared to **Alternative 1**); and, the ACLs for Alabama and Mississippi would be reduced (decreases of approximately 52% and 62%, respectively). **Alternative 2** would likely result in shorter season durations and reductions in fishing effort in Alabama and Mississippi, and longer season durations in Florida and Louisiana. Any future increases to state-

specific ACLs in 2021 or 2022 would be calibrated based on the ratio calibrations described in **Alternative 2**. As an example, if a future ACL increase results in the private angling component ACL receiving an additional 100,000 lbs, that increase would be divided amongst the states according to the allocations established in Amendment 50A, and then adjusted according to the ratio calibrations in **Alternative 2**. Further, under **Alternative 2**, the Council agrees to review the state-specific ACL allocations by 2022 or sooner.

Alternative 3 would establish and set a "State Management ACL" that is 23% below the total private angling component ACL. This alternative would apply the allocation percentages from Amendment 50A to set the state-specific ACLs (see Table 2.1.1). The resultant catch limits under **Alternative 3** for each state are defined in Table 2.1.3. The 23% buffer was determined iteratively to be the smallest buffer where the predicted state landings in Table 2.1.2 did not exceed the total recreational private angling component ACL. Percent buffers below 23% were insufficient to reduce the sum of predicted landings of all five Gulf states below the total recreational private angling component ACL.

Table 2.1.3. Gulf state-specific private angling component ACLs and ACTs as adjusted by the application of the 23% buffer in lbs ww for the 2020 fishing season for **Alternative 3** of Action 1. The predicted landings (using MRIP-CHTS data currency) by state are also provided.

	Private Angling Component ACL (in MRIP-CHTS)	**State Management ACL (in State currencies)**	**Predicted * Landings (in MRIP-CHTS)**
Federal Catch Limits	**4,269,000**	**3,287,131**	**4,263,872**
State	Current State ACL (in MRIP-CHTS)	State ACLs (in State currencies)	Predicted Landings* (in MRIP-CHTS)
Alabama	1,122,662	864,450	1,773,231
Florida	1,913,451	1,473,358	1,389,698
Louisiana	816,233	628,499	592,924
Mississippi	151,550	116,693	303,888
Texas	265,105	204,131	204,131

*Based on current calibration ratios; assumes each state catches its exact ACL. MRIP-CHTS currency is predicted for Alabama, Florida, Louisiana, and Mississippi predictions since that was the data used in SEDAR 52. State landings currency are used for Texas.

Under **Alternative 3**, a "State Management ACL" would be established and set at 3,287,131 lbs ww for the Gulf red snapper private angling component. Each state would receive the proportion of the ACL as specified in Amendment 50A. In contrast to **Alternative 2**, **Alternative 3** would not require ratio adjustments but would continue to allow each Gulf state to monitor landings in their own state currency. Similar to **Alternative 2**, **Alternative 3** is expected to reduce the likelihood of exceeding the total private angling component ACL relative to **Alternative 1** as long as the states constrain landings to their respective revised state ACLs.

In comparison to **Alternative 2**, **Alternative 3** would result in higher ACLs for Alabama and Mississippi, and lower ACLs for Florida, Louisiana, and Texas. When using MRIP-CHTS as a

common currency for comparison for predicted landings, both Mississippi (101% increase) and Alabama (58% increase) would effectively receive a large increase in their respective ACLs, while Florida (27% decrease), Louisiana (27% decrease), and Texas (23% decrease) would have their respective ACLs reduced.

Alternative 4 would establish and set a "State Management ACL" that is 23% below the total private angling component ACL. This alternative would apply the allocation percentages from Amendment 50A to set the state-specific ACLs. The resultant catch limits under **Alternative 4** are the same as those established for **Alternative 3**, as defined in Table 2.1.3. If the SSC recommends any increase (**Option 4a**), or an increase of at least 25% (**Option 4b**), in the OFL and ABC for red snapper, the resulting difference between the status quo and revised combined state-specific ACLs for the private angling component would be incorporated into the respective state-specific ACLs using the ratio calibrations indicated in **Alternative 2** (see the example offered in **Alternative 2**). The Council will review the state specific ACLs in 2022, or as soon as practicable.

As under **Alternative 3**, a "State Management ACL" would be established and set at 3,287,131 lbs ww for the Gulf red snapper private angling component under **Alternative 4**. Each state would receive the proportion of the ACL as specified in Amendment 50A. In contrast to **Alternative 3**, **Alternative 4** would adjust any increase in the ACLs (see **Options 4a** and **4b**) to the respective state ACLs using the ratio calibrations described in **Alternative 2**, as opposed to applying the 23% buffer to those increases as well, as described in **Alternative 3**. **Alternative 4** is expected to result in a sufficient reduction in the state-specific ACLs to ensure that the combined state landings for the private angling component do not exceed the private angling component's total ACL.

Alternative 5 would establish a "State Management ACL" set at 11.819% below the total private angling component ACL. This alternative takes the difference between the combined state-specific ACLs in MRIP-CHTS data currency, and the combined state-specific ACLs after applying the ratio calibrations from **Alternative 2**, and then uniformly applies that 11.819% difference as a buffer to each state's private angling component ACL in MRIP-CHTS data currency to generate the adjusted "State Management ACL" for each state. A minimum buffer of 23% was determined by NMFS to be the smallest buffer where the predicted state landings did not exceed the total recreational private angling component ACL (see Table 2.1.3 and **Alternative 3**). Percent buffers below 23% were insufficient to reduce the sum of predicted state landings below the total recreational private angling component ACL in iterative simulations. Table 2.1.4 details state-specific and total predicted landings under **Alternative 5**. Two states (Alabama and Mississippi) are predicted to exceed their state-specific ACLs, while the other three states (Florida, Louisiana, and Texas) are predicted to harvest less than their state-specific ACLs. This alternative is expected to result in total predicted landings of 4,883,018 lbs ww, which exceeds the private angling component ACL (4,269,000 lbs ww) by 614,017 lbs in MRIP-CHTS units. Because of the manner in which the values for each state's "State Management ACL" are calculated, and because these values are incompatible for quota monitoring and are likely to result in the total private angling component ACL being exceeded, **Alternative 5** is not a viable alternative.

Table 2.1.4. Gulf state-specific private angling component ACLs and ACTs as adjusted by the application of the 11.819% buffer in lbs ww for the 2020 fishing season for **Alternative 5** of Action 1. The predicted landings (using MRIP-CHTS data currency) by state are also provided. States are shown in different colors to demonstrate that the State Management ACLs are not in a compatible data currency for quota monitoring purposes.

	Private Angling Component ACL (in MRIP-CHTS)	**State Management ACL (from Alternative 2)**	**Predicted Landings* (in MRIP-CHTS)**
Federal Catch Limits	**4,269,000**	**3,764,448**	**4,883,018**
State	Current State ACL (in MRIP-CHTS)	State ACLs (in State currencies)	Predicted Landings* (in MRIP-CHTS)
Alabama	1,122,662	989,975	2,030,718
Florida	1,913,451	1,687,300	1,591,492
Louisiana	816,233	719,762	679,021
Mississippi	151,550	133,638	348,016
Texas	265,105	233,772	233,772

*Based on current calibration ratios; assumes each state catches its exact ACL. MRIP-CHTS currency is predicted for Alabama, Florida, Louisiana, and Mississippi predictions since that was the data used in SEDAR 52. State landings currency are used for Texas. Single pound variations in the sum of predicted landings for a column are the result of rounding.

Table 2.1.5 compares the alternatives presented in Action 1 with respect to their resultant predicted landings in MRIP-CHTS data currency, based on the correction (if any) used by each alternative to modify the state-specific private angling component ACLs. This table demonstrates how **Alternative 1** and **Alternative 5** are predicted to result in an overage of the private angling component ACL. Further, the current buffer between the red snapper stock (commercial and recreational) ACL, which equals the acceptable biological catch (ABC), and the overfishing limit (OFL), is 400,000 lbs ww. This means that **Alternative 1** and **Alternative 5** would also be expected to result in the OFL being exceeded, which would likely result in overfishing of the red snapper stock.

Table 2.1.5. Comparison of predicted landings in MRIP-CHTS data currency for the alternatives in Action 1. Cells highlighted in red in the "Total" row indicate total predicted landings exceeding the current ACL in MRIP-CHTS data currency.

		Predicted Landings in MRIP-CHTS Currency			
State	**ACL (lbs ww)**	**Alternative 1**	**Alternative 2**	**Alternatives 3 and 4**	**Alternative 5**
Alabama	1,122,662	2,302,896	1,122,662	1,773,230	2,030,718
Florida	1,913,451	1,804,802	1,913,451	1,389,697	1,591,492
Louisiana	816,233	770,031	816,233	592,924	679,021
Mississippi	151,550	394,661	151,550	303,889	348,016
Texas	265,105	265,105	265,105	204,131	233,772
Total*	**4,269,000**	**5,537,496**	**4,269,000**	**4,263,872**	**4,883,018**

*Single pound variations in the sum of predicted landings for a column are the result of rounding.

At its January 2021 meeting, the Council directed staff to begin work on a document to modify the red snapper catch limits using the results of a catch analysis scheduled to be reviewed by the Council's SSC prior to the April 2021 Council meeting. If the current catch limits are modified from those presented in **Alternative 1**, the data used to evaluate the alternatives in Action 1 will differ from how they are currently presented. However, the alternatives in Action 1 are structured in such a way as to accommodate any future increases in catch limits that may result from the SSC's review of this new catch analysis.

CHAPTER 3. AFFECTED ENVIRONMENT

The actions considered in this framework action with associated environmental assessment would affect fishing in federal waters of the Gulf of Mexico (Gulf). Descriptions of the physical, biological, economic, social, and administrative environments (affected environments) completed in the environmental impact statements in the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a), and the Generic Annual Catch Limits/Accountability Measures (ACL/AM) Amendment (GMFMC 2011a) apply to the Fishery Management Plan (FMP) for Reef Fish Resources in the Gulf of Mexico (Reef Fish FMP). Descriptions of the affected environments for reef fish are further described in Reef Fish Amendments 30B (GMFMC 2008), 32 (GMFMC 2011b), 40 (GMFMC 2014), 28 (GMFMC 2015), and 50A (GMFMC 2019). Below, information on each of these environments is summarized or updated, as appropriate.

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf surface water temperatures range from 54º F to 84º F (12º C to 29º C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73º F through 83º F (23-28º C) including bays and bayous (Figure 3.1.1) between 1982 and 2009, according to satellite-derived measurements (NODC 2012[11]). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

In general, reef fish species are widely distributed in the Gulf. Reef fish occupy both pelagic and benthic habitats during their life cycle. The planktonic larval stage for most reef fish species 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 meters) that 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 reef fish are also found over sand and soft-bottom substrates.

There are several marine reserves, habitat areas of particular concern (HAPC), and restricted fishing gear areas in the Gulf. These are detailed in GMFMC (2005 and 2018). Included in these are the Madison-Swanson and Steamboat Lumps marine protected areas (MPA), which are sited on gag spawning aggregation areas where all fishing except for surface trolling during May through October is prohibited (219 square nautical miles combined). A 2020 framework action to the Reef Fish FMP (GMFMC 2020), if implemented, will prohibit all fishing year-round in

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

these MPAs. The Bureau of Ocean Energy Management lists historic shipwrecks that occur in the Gulf. Most of these sites are in state or deep (greater than 1,000 feet or 328 meters) waters. There is one site located in federal waters in less than 100 feet (30 meters) that could be affected by fishing for reef fish species. This is the *U.S.S. Hatteras* located approximately 20 miles (32 kilometers) off Galveston, Texas.

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

The *Deepwater Horizon* MC252 oil spill in 2010 affected at least one-third of the Gulf area from western Louisiana east to the Florida Panhandle and south to the Campeche Bank in Mexico. The impacts of the *Deepwater Horizon* MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil was dispersed on the surface, and because of the heavy use of dispersants (both at the surface and at the wellhead), oil was also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed ashore in several areas of the Gulf as did non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles. For more information on the *Deepwater Horizon* MC252 oil spill,[12] see Section 3.2.3 below.

[12] http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm

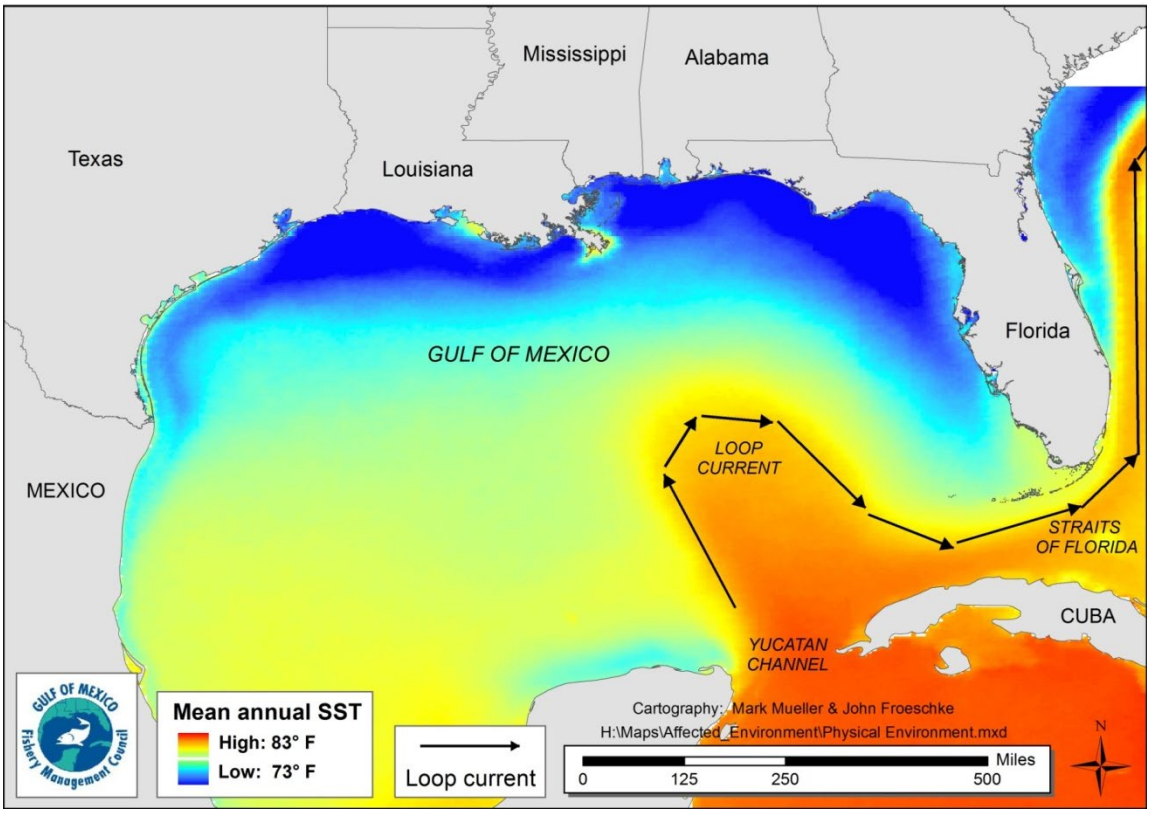

Figure 3.1.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High-Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (http://accession.nodc.noaa.gov/0072888)

3.2 Description of the Biological and Ecological Environment

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

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

3.2.1 Red Snapper

Red Snapper Life History and Biology

Red snapper demonstrates the typical reef fish life history pattern. Eggs and larvae are pelagic (Lyczkowski-Shultz and Hanisko 2007) while juveniles are found over mud bottom and oyster shell reef (Szedlmayer and Conti 1999; Rooker et al. 2004). Red snapper is associated with both natural and artificial habitats (Wilson and Nieland 2001; Szedlmayer and Lee 2004; Glenn 2014)

but larger, older fish occur over open habitat in deeper water (Gallaway et al. 2009). Spawning is protracted from April through September throughout the Gulf, with peak spawning in June through August (Futch and Bruger 1976; Collins et al. 1996). Adult females mature as early as two years and most are mature by four years (Schirripa and Legault 1999). Red snapper has been aged up to 57 years (SEDAR 31 2013). Until 2013, most red snapper caught by the directed fishery were 2 to 4 years old, but the SEDAR 31 stock assessment suggested that the age and weight of red snapper in the directed fishery has increased (SEDAR 31 2013). Red snapper adults exhibit high site fidelity (Szedlmayer and Shipp 1994; Strelcheck et al. 2007). However, other conventional tagging studies have suggested the occurrence of hurricanes can greatly affect the magnitude of red snapper movement (Patterson et al. 2001).

Status of the Red Snapper Stock

Southeast Data, Assessment, and Review (SEDAR) 52 Assessment and Stock Status

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

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

Definition of Overfishing

In January 2012, the Generic ACL/AM Amendment (GMFMC 2011a) became effective. One of the provisions in this amendment was to redefine the criteria used to determine when a stock is undergoing overfishing. In years when there is a stock assessment, overfishing is defined as the fishing mortality rate exceeding the MFMT. In years when there is no stock assessment, overfishing is defined as the catch exceeding the overfishing limit (OFL). The SEDAR 31 update assessment indicates that, as of the terminal year of the assessment data, 2013, overfishing was not occurring. Note that, because the overfishing threshold is now re-evaluated each year instead of only in years when there is a stock assessment, this status could change on a year-to-year basis.

Impact of 2017 Extended Recreational Fishing Season

Due to an extension of the recreational fishing season in 2017, the estimated provisional landings for 2017 (15.36 million pounds) at that time exceeded both the annual biological catch (ABC) (13.74 million pounds) and OFL (14.79 million pounds) for Gulf red snapper as calculated based on the 2014 SEDAR 31 Update Assessment. However, based on the SEDAR 52 reference point projections, overfishing did not occur in 2017. In the interim years between the assessments (2015 and 2016), the projected recruitment assumed in the 2014 SEDAR 31 Update projections was much lower than estimated in the SEDAR 52 assessment (Figure 3.2.1.1), whereas the projected removals were much higher than realized (Figure 3.2.1.2). Therefore, in 2017 the Gulf-wide red snapper resource had rebuilt to a higher biomass and SPR than projected by the 2014 SEDAR 31 Update Assessment, which allowed it to undergo larger removals (i.e., a higher fishing pressure) without any major negative impacts to the rebuilding schedule. Although the result is beneficial for the future status of the red snapper resource, it cannot be expected that projections will always underestimate rebuilding success. It is possible that future recruitment may be below average, which, in combination with higher than predicted removals, would result in overestimation of rebuilding progress.

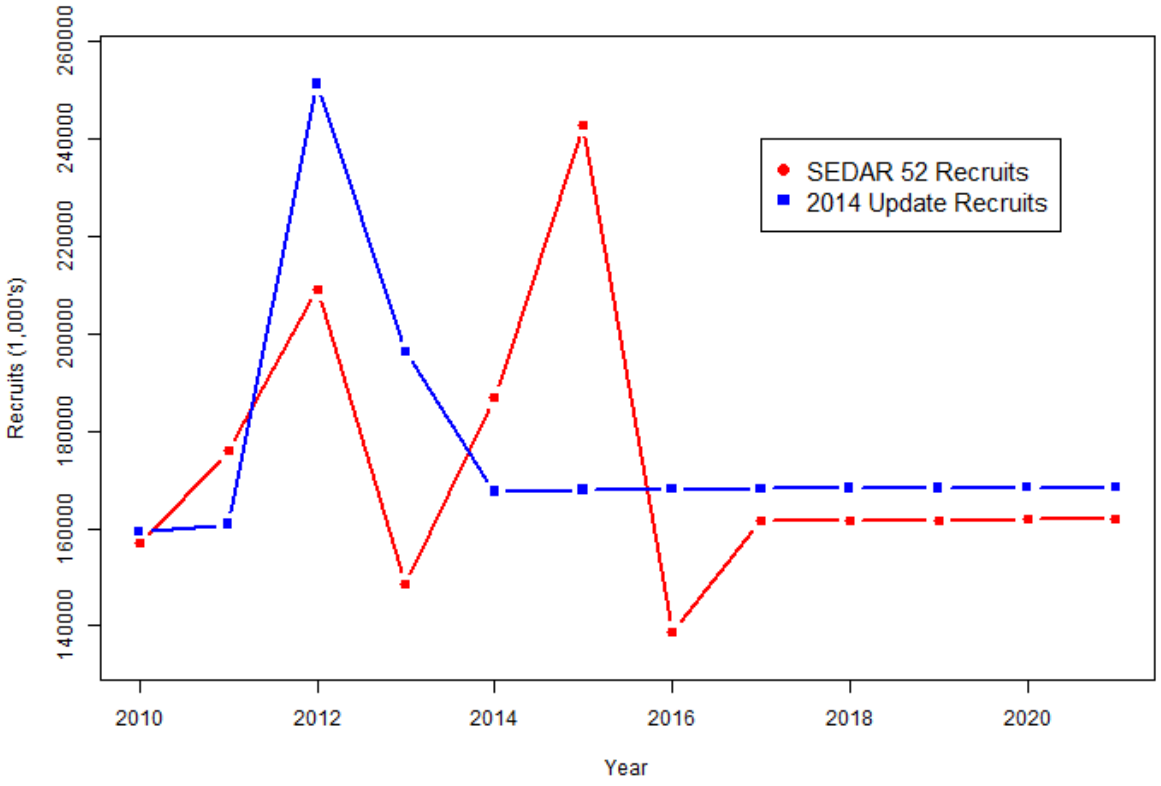

Figure 3.2.1.1. Recruitment (1000s of fish) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those from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

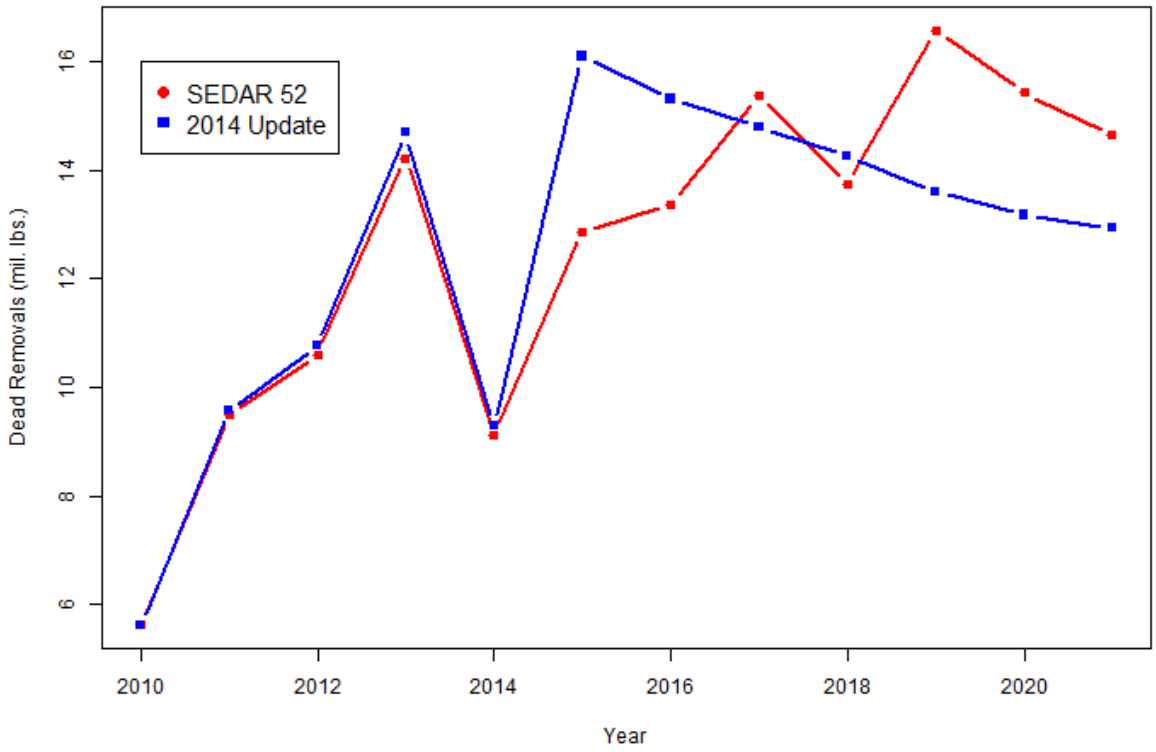

Figure 3.2.1.2. Dead removals (millions of pounds) estimated by the assessment model and projected for OFL forecasts (assuming 2017 provisional landings and 2018 ACLs for SEDAR 52 projections). The results from the 2014 SEDAR 31 Update Assessment (2014 terminal year; blue line) are compared with those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

3.2.2 General Information on Reef Fish

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

Status of Reef Fish Stocks

The NMFS Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress[13] on a quarterly basis utilizing the most current stock assessment information. The Reef Fish FMP currently encompasses 31 species (Table 3.2.1.1). Stock assessments and status

[13] http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

determinations have been conducted and designated for 12 stocks and can be found on the Council[14] and the Southeast Data and Review (SEDAR)[15] websites. Of the stocks for which stock assessments have been conducted, the last quarterly report of the 2020 Status of U.S. Fisheries classifies only one as overfished (greater amberjack), and two stocks as undergoing overfishing (cobia and lane snapper). Lane snapper underwent overfishing in each year from 2016 through 2019.

The status of both assessed and unassessed stocks, as of the most recent version of the Status of U.S. Fisheries Report, is provided in Table 3.2.1.1. Reef Fish Amendment 44 (GMFMC 2017), was implemented December 2017, and modified the minimum stock size threshold (MSST) for seven species in the Reef Fish FMP to 50% of B_{MSY}. Red snapper and gray triggerfish are now listed as not overfished but rebuilding, because the biomass for the stock is currently estimated to be greater than 50% of $B_{MSY,}$ but below B_{MSY}.

A stock assessment was conducted for Atlantic goliath grouper (SEDAR 47 2016). The Council's Science and Statistical Committee (SSC) accepted the assessment's general findings that the stock was not overfished nor experiencing overfishing. Although the SSC determined Atlantic goliath grouper to not be experiencing overfishing, the SSC deemed the assessment not suitable for stock status determination and management advice.

Stock assessments were conducted for seven reef fish stocks (including lane snapper) using the Data Limited Methods Toolkit (DLMToolkit; SEDAR 49 2016). This method allows the setting of the overfishing limit (OFL) and acceptable biological catch (ABC) based on limited data and life history information, but does not provide assessment-based status determinations. Several stocks did not have enough information available to complete an assessment even using the DLMToolkit.

The remaining species within the Reef Fish FMP have not been assessed at this time. Therefore, their overfished status is unknown (Table 3.2.1.1). For those species that are listed as not undergoing overfishing, that determination has been made based on the annual harvest remaining below the OFL. No other unassessed species are scheduled for a stock assessment at this time.

[14] www.gulfcouncil.org
[15] www.sedarweb.org

Table 3.2.1.1. Status of stocks in the Reef Fish FMP grouped by family.

Common Name	Scientific Name	Stock Status		Most recent assessment or SSC workshop
		Overfishing	Overfished	
Family Balistidae – Triggerfishes				
gray triggerfish	*Balistes capriscus*	N	N	SEDAR 43 2015
Family Carangidae – Jacks				
greater amberjack	*Seriola dumerili*	N	Y	SEDAR 70 2020
lesser amberjack	*Seriola fasciata*	Y	Unknown	SEDAR 49 2016
almaco jack	*Seriola rivoliana*	Y	Unknown	SEDAR 49 2016
banded rudderfish	*Seriola zonata*	Y	Unknown	
Family Labridae – Wrasses				
hogfish	*Lachnolaimus maximus*	N	N	SEDAR 37 2014
Family Malacanthidae – Tilefishes				
tilefish (golden)	*Lopholatilus chamaeleonticeps*	N	N	SEDAR 22 2011a
blueline tilefish	*Caulolatilus microps*	N	Unknown	
goldface tilefish	*Caulolatilus chrysops*	N	Unknown	
Family Serranidae – Groupers				
gag	*Mycteroperca microlepis*	N	N	SEDAR 33 Update 2016b
red grouper	*Epinephelus morio*	N	N	SEDAR 61 2019
Scamp	*Mycteroperca phenax*	Unknown	Unknown	
black grouper	*Mycteroperca bonaci*	N	N	SEDAR 19 2010
yellowedge grouper	*Hyporthodus flavolimbatus*	N	N	SEDAR 22 2011b
snowy grouper	*Hyporthodus niveatus*	N	Unknown	SEDAR 49 2016
speckled hind	*Epinephelus drummondhayi*	N	Unknown	SEDAR 49 2016
yellowmouth grouper	*Mycteroperca interstitialis*	Unknown	Unknown	SEDAR 49 2016
yellowfin grouper	*Mycteroperca venenosa*	Unknown	Unknown	
warsaw grouper	*Hyporthodus nigritus*	N	Unknown	
*Atlantic goliath grouper	*Epinephelus itajara*	N	Unknown	SEDAR 47 2016
Family Lutjanidae – Snappers				
queen snapper	*Etelis oculatus*	N	Unknown	
mutton snapper	*Lutjanus analis*	N	N	SEDAR 15A Update 2015
blackfin snapper	*Lutjanus buccanella*	N	Unknown	
red snapper	*Lutjanus campechanus*	N	N	SEDAR 52 2018
cubera snapper	*Lutjanus cyanopterus*	N	Unknown	
gray snapper	*Lutjanus griseus*	N	N	
lane snapper	*Lutjanus synagris*	Y	Unknown	SEDAR 49 Update 2019
silk snapper	*Lutjanus vivanus*	N	Unknown	
yellowtail snapper	*Ocyurus chrysurus*	N	N	SEDAR 64 2020
vermilion snapper	*Rhomboplites aurorubens*	N	N	SEDAR 45 2016
wenchman	*Pristipomoides aquilonaris*	N	Unknown	SEDAR 49 2016

Note: *Atlantic goliath grouper is a protected grouper (i.e., ACL is set at zero) and benchmarks do not reflect appropriate stock dynamics. [+] SEDAR 70 results for Gulf greater amberjack were reviewed by the SSC in January 2021, and are not included in the fourth quarter report of the 2020 Status of U.S. Fisheries.

Bycatch

Bycatch is defined as fish harvested in a fishery, but not sold or retained for personal use. This definition includes both economic and regulatory discards, and excludes fish released alive under a recreational catch-and-release fishery management program. Economic discards are generally

undesirable from a market perspective because of their species, size, sex, and/or other characteristics. Regulatory discards are fish required by regulation to be discarded, but also include fish that may be retained but not sold. Bycatch practicability analyses have been completed for red snapper (GMFMC 2004b, GMFMC 2007, GMFMC 2014, GMFMC 2015), grouper (GMFMC 2008a, GMFMC 2008c, GMFMC 2011a, GMFMC 2011c), vermilion snapper (GMFMC 2016), greater amberjack (GMFMC 2008b), gray triggerfish (GMFMC 2008b). In addition, a bycatch practicability analysis was conducted for the Generic Annual Catch Limits/Accountability Measures Amendment (GMFMC 2011a) that covered the Reef Fish, Coastal Migratory Pelagics, Red Drum, and Coral FMPs. In general, these analyses found that reducing bycatch provides biological benefits to managed species as well as benefits to the Reef Fish 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. In these cases, there is some biological benefit to the managed species that outweighs any increases in discards. Discard mortality rates for red snapper from the most recent stock assessment (SEDAR 52 2018) are shown in Table 3.2.2.2.

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

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

Protected Species

The Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) provide special protections to some species that occur in the Gulf. A brief summary of these two laws and more information is available on the NMFS Office of Protected Resources website.[16] All 22 marine mammals in the Gulf are protected under the MMPA. Three marine mammals (sperm whales, Gulf of Mexico Bryde's whales, and manatees) are also protected under the ESA. Gulf of Mexico Bryde's whales are the only resident baleen whales in the Gulf and the species was

[16] https://www.fisheries.noaa.gov/protecting-marine-life

recently listed as endangered (84 FR 15446; April 15, 2019). Other species protected under the ESA include sea turtle species (Kemp's ridley, loggerhead (Northwest Atlantic Ocean distinct population segment [DPS]), green (South Atlantic and North Atlantic DPSs), leatherback, and hawksbill), fish species (Gulf sturgeon, smalltooth sawfish, Nassau grouper, giant manta ray, and oceanic whitetip shark), and coral species (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 also occurs in the Gulf, though only loggerhead critical habitat occurs in federal waters.

Reef Fish Fishing Activity

The most recent biological opinion (BiOp) on the Reef Fish FMP was completed on September 30, 2011 (NMFS 2011). The opinion determined the authorization of the Gulf reef fish fishery managed under the Reef Fish FMP is not likely to affect ESA-listed marine mammals or Acropora corals, and is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback), or smalltooth sawfish. An incidental take statement was provided. 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 critical habitat for the Northwest Atlantic Ocean loggerhead sea turtle DPS or four newly listed species of corals (rough cactus, lobed star, mountainous star, and boulder star).

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, effective May 6, 2016. Two of the green sea turtle DPSs, the North Atlantic DPS and the South Atlantic DPS, occur in the Gulf and are 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 and South Atlantic DPSs of green sea turtles or Nassau grouper. Furthermore, 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 reinitiated consultation on the Reef Fish FMP to address the listings of the giant manta and oceanic whitetip and determined that fishing under the Reef Fish FMP during the revised re-initiation period is not likely to jeopardize the continued existence of listed sea turtle species, smalltooth sawfish, the green turtle DPSs, Nassau grouper, the giant manta, or the oceanic whitetip. Since the revised request for reinitiation of consultation, NMFS determined that the newly listed Gulf of Mexico Bryde's whale may be affected by fishing managed under the Reef Fish FMP in a June 20, 2019, memorandum. In that same June 20, 2019, memorandum, NMFS concluded that the activities associated with the Reef Fish FMP were not likely to jeopardize the continued existence of the Bryde's whale during the revised reinitiation period.

There is no information to indicate marine mammals and birds rely on reef fish for food, and they are not generally caught by fishers harvesting reef fish. Primary gear types used in the Gulf reef fish fishery are classified in the Final List of Fisheries for 2020 (84 FR 54543) as Category III gear. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to one percent 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 directed reef fish fishery is adversely affecting seabirds.

Climate Change

Climate change projections predict increases in sea-surface temperature and sea level; decreases in sea-ice cover; and changes in salinity, wave climate, and ocean circulation (Intergovernmental Panel on Climate Change [IPCC]).[17] 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 change could affect temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; change precipitation patterns and cause a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influence the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs. The National Oceanic and Atmospheric Association (NOAA) Climate Change Web Portal[18] predicts the average sea surface temperature in the Gulf will increase by approximately 2ºC for 2006-2100 compared to the average over the years 1956-2005. For reef fishes, Burton (2008) speculated climate change could cause shifts in spawning seasons, changes in migration patterns, and changes to basic life history parameters such as growth rates. It is unclear if reef fish distribution in the Gulf and South Atlantic has been affected. The smooth puffer and common snook are examples of species for which there has been a distributional trend to the north in the Gulf. For other species, such as red snapper and the dwarf sand perch, there has been a distributional trend towards deeper waters. For additional fish species, such as the dwarf goatfish, there has been a distributional trend both to the north and to deeper waters. These changes in distributions have been hypothesized as a response to environmental factors such as increases in temperature.

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

[17] http://www.ipcc.ch/
[18] https://www.esrl.noaa.gov/psd/ipcc/

Greenhouse gases

The IPCC has indicated greenhouse gas emissions are one of the most important drivers of recent changes in climate. Wilson et al. (2014) inventoried the sources of greenhouse gases in the Gulf from sources associated with oil platforms and those associated with other activities such as fishing. A summary of the results of the inventory are shown in Table 3.2.3.1 with respect to total emissions and from fishing. Commercial fishing and recreational vessels make up a small percentage of the total estimated greenhouse gas emissions from the Gulf (2.04% and 1.67%, respectively).

Table 3.2.3.1. Total Gulf greenhouse gas 2014 emissions estimates (tons per year [tpy]) from oil platform and non-oil platform sources, commercial fishing, and percent greenhouse gas emissions from commercial fishing vessels of the total emissions*.

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

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

Deepwater Horizon MC252 Oil Spill

General Impacts on Fishery Resources

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

characteristics similar to species found in the Gulf (Hose et al. 1996; Carls et al. 1999; Heintz et al. 1999; Short 2003).

Increases in histopathological lesions were found in red snapper in the area affected by the oil, but Murawski et al. (2014) found that the incidence of lesions had declined between 2011 and 2012. The occurrence of such lesions in marine fish is not uncommon (Sindermann 1979; Haensly et al. 1982; Solangi and Overstreet 1982; Khan and Kiceniuk 1984, 1988; Kiceniuk and Khan 1987; Khan 1990). Subsequent work analyzing red snapper after the *Deepwater Horizon* MC252 oil spill showed liver damage from aromatic hydrocarbon (oil) exposure in the form of inflammation, lesions, and other damage (Pulster et al. 2021). These results may be signaling increased disease progression in Gulf red snapper from chronic environmental stressors, including elevated PAH exposures and concentrations. Red snapper diet was also affected after the spill. A decrease in zooplankton consumed, especially by adults (greater than 400 mm total length) over natural and artificial substrates may have contributed to an increase in the consumption of fish and invertebrate prey – more so at artificial reefs than natural reefs (Tarnecki and Patterson 2015).

In addition to the crude oil, over a million gallons of the dispersant, Corexit 9500A®, was applied to the ocean surface and an additional hundreds of thousands of gallons of dispersant was pumped to the mile-deep well head (National Commission 2010). No large-scale applications of dispersants in deep water had been conducted until the *Deepwater Horizon* MC252 oil spill. Thus, no data exist on the environmental fate of dispersants in deep water. The effect of oil, dispersants, and the combination of oil and dispersants on fishes of the Gulf remains an area of concern. Marine fish species typically concentrate PAHs in the digestive tract, making stomach bile an appropriate testing medium. A study by Synder et al. (2015) assessed bile samples from golden tilefish (*Lopholatilus chamaeleonticeps*), king snake eel (*Ophichthus rex*), and red snapper for PAH accumulation over time, and reported concentrations were highest in golden tilefish during the same time period when compared to king snake eel and red snapper. These results suggest that the more highly associated an organism is with the sediment in an oil spill area, the higher the likelihood of toxic PAH accumulation. Twenty-first century dispersant applications are thought to be less harmful than their predecessors. However, the combination of oil and dispersants has proven to be more toxic to marine fishes than either dispersants or crude oil alone. Marine fish which are more active (e.g., a pelagic species versus a demersal species) appear to be more susceptible to negative effects from interactions with weathered oil/dispersant emulsions. These effects can include mobility impairment and inhibited respiration (Swedmark et al. 1973). Another study found that while Corexit 9500A® and oil are similar in their toxicity, when Corexit 9500A® and oil were mixed in lab tests, toxicity to microscopic rotifers increased up to 52-fold (Rico-Martínez et al. 2013). These studies suggest that the toxicity of the oil and dispersant combined may be greater than anticipated.

As reported by NOAA's Office of Response and Restoration (NOAA 2010), the oil from the *Deepwater Horizon* MC252 spill is relatively high in alkanes, which can readily be used by microorganisms as a food source. As a result, the oil from this spill is likely to biodegrade more readily than crude oil in general. The *Deepwater Horizon* MC252 oil is also relatively much lower in PAH, especially if the spilled oil penetrates into the substrate on beaches or shorelines. Like all crude oils, MC252 oil contains volatile organic compounds (VOC) such as benzene,

toluene, and xylene. Some VOCs are acutely toxic but, because they evaporate readily, they are generally a concern only when oil is fresh.

Outstanding Effects

As a result of the *Deepwater Horizon* MC252 oil spill, NMFS reinitiated the ESA consultation on the Gulf reef fish fishery. As discussed above, on September 30, 2011, the Protected Resources Division released an opinion, which after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent *Deepwater Horizon* MC252 oil spill in the northern Gulf), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011). The most recent biological opinion addressing the CMP fishery also considered the impacts of the Deepwater Horizon MC252 oil spill in the northern Gulf and concluded that the fishing would not jeopardize continued existence of the species considered. More information is available on the *Deepwater Horizon* MC252 oil spill and associated closures is available on the Southeast Regional Office website.[19]

[19] http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm

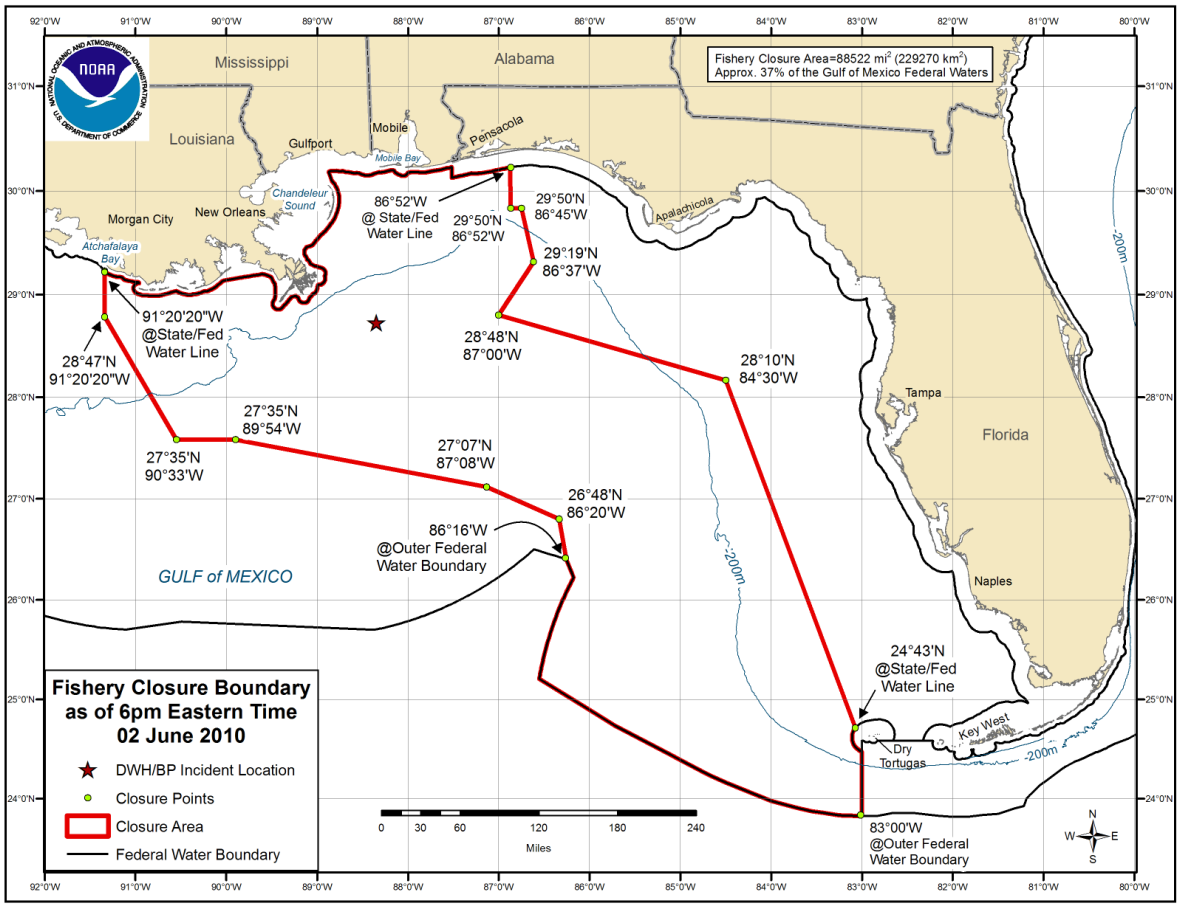

Figure 3.2.3.1. Fishery closure at the height of the *Deepwater Horizon* MC252 oil spill.

3.3 Description of the Economic Environment

3.3.1 Commercial Sector

A description of the red snapper individual fishing quota program can be found on NMFS' Limited Access Privilege Programs (LAPP) webpage.[20] That description is incorporated herein by reference. Additional economic information on the commercial harvest of red snapper in the Gulf is contained in Amendment 28 (GMFMC 2015b). This proposed action does not concern the commercial harvest of red snapper or any other reef fish. Therefore, no additional information on the commercial sector is provided.

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

3.3.2 Recreational Sector

The following section focuses on the economic contribution of the recreational effort and harvest of red snapper. Recreational fishing for red snapper or any Gulf reef fish means fishing or fishing activities which result in the harvest of fish, none of which (or parts thereof) is sold, traded, or bartered (50 CFR 622.2).

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

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

Private Angling Component

Angler fishing effort refers to the estimated number of angler fishing trips taken, and an angler trip is an individual fishing trip taken by a single angler for any amount of time, whether it is half an hour or an entire day. Angler fishing effort of coastal households was estimated by conducting telephone surveys of coastal households (Coastal Household Telephone Survey, CHTS) until 2018, but it has since been replaced with a mail survey (Fishing Effort Survey, FES). Angler effort within the for-hire sector continues to be estimated by conducting telephone surveys of for-hire (charter) vessel captains (For-Hire Survey [FHS]). Both FES and FHS are supplemented by on-site survey methods (Marine Recreational Information Program [MRIP] Access Point Angler Intercept Survey [APAIS]). From these survey interviews, NMFS can estimate how many people are fishing, where people are fishing, and how often people go fishing. Moreover, with the MRIP APAIS (survey of anglers by the private boat, charter vessel and shore modes as they complete a trip), NMFS can estimate how many trips target red snapper, how many trips catch red snapper and how many are being caught, how many red snapper are kept, how many are discarded, the condition of discarded fish, and the size and weight of red snapper caught.

Data from MRIP and LA Creel are used to estimate angler effort by private/rental vessels and state-permitted (and not federally permitted) for-hire vessels that make up the angling component

for each Gulf state, except Texas. The annual number of trips by anglers that targeted red snapper (primary or secondary target) onboard private/rental and charter vessels are shown in Tables 3.3.2.1 and 3.3.2.2. An annual average total of 1,273,085 targeted trips were taken by anglers on board private/rental vessels, and an annual average of 2,400 targeted trips were taken by anglers on board charter vessels.

Table 3.3.2.1. Number of angler trips by private/rental vessels that targeted red snapper (primary or secondary target) in all waters by Gulf state, except Texas, all waves, 2015 – 2019.

Year	AL	FL	LA	MS
2015	278,165	447,544	NA	11,436
2016	330,506	570,887	46,557	69,729
2017	643,163	962,252	55,295	77,092
2018	364,538	836,260	51,266	91,733
2019	562,351	736,971	68,186	106,163
Average	**435,745**	**710,783**	**55,326**	**71,231**

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division December 17, 2020, for AL, FL and MS. LA Creel for LA.

Table 3.3.2.2. Number of angler trips by state-permitted charter vessels with anglers that targeted red snapper (primary or secondary target) in all waters by Gulf state, except Texas, 2015 – 2019.[1]

Year	AL	FL	LA	MS
2015	32	1,963	NA	0
2016	699	0	611	164
2017	767	4,804	78	0
2018	0	490	16	0
2019	3	444	1,402	0
Average	**300**	**1,540**	**527**	**33**

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division December 17, 2020, for AL, FL and MS. LA Creel for LA.

1. Targeted trips during waves when the federal for-hire season was closed, typically waves 3 and 4, are all assigned to state charters regardless of area fished. Furthermore, all targeted trips from state waters are assigned to the federal for-hire fleet when the for-hire season was open. The federal season is typically open during the third and fourth waves, and, consequently, trips during the open season are assigned to the for-hire component.

Angler trips generate economic impacts. The average annual angler trips by private/rental (1,273,085) and charter vessels (2,400) that targeted red snapper from 2015 through 2019 generated an annual average of 788 jobs, approximately $126 million in income, and other economic impacts to the country (Table 3.3.2.3).

Table 3.3.2.3. Average annual economic impacts to U.S. from targeted trips of red snapper (primary or secondary) by mode in Gulf states, except Texas (2019 dollars), 2015 – 2019.

Mode	Directed Trips	Jobs	Income (1,000s 2019 $)	Sales (1,000s 2019 $)	Value-added (1,000s 2019 $)
Private/Rental	1,273,085	771	$39,734	$123,759	$68,685
Charter	2,400	17	$916	$2,332	$1,355
Total	1,275,485	788	$40,651	$126,091	$70,040

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS and U.S. Department of Commerce, Bureau of Economic (BEA) for GDP Implicit Price Deflator.

For anglers, economic value can be measured by consumer surplus (CS). CS per additional fish kept during a trip is defined as the amount of money an angler would be willing to pay for a fish in excess of the cost to harvest the fish. The CS value per fish for a second red snapper kept is estimated at $85.69 (Carter and Liese 2012, updated to 2019 dollars using GDP implicit price deflator). Additional information about the private angling component can be found in Amendments 40 (GMFMC 2014a), 28 (GMFMC 2015b), and 45 (GMFMC 2016), and are incorporated by reference.

3.4 Description of the Social Environment

This amendment affects recreational management of red snapper in the Gulf. A description of the social environment for the red snapper recreational sector is included in the Reef Fish Amendment 50A (GMFMC 2019a), and is incorporated herein by reference. The description primarily focuses on permit data associated with geographic and demographic data to identify communities with a strong relationship to fishing for red snapper. For the recreational sector, there are many communities spread throughout the Gulf, from Florida to Texas, that serve as a launching point for trips that target reef fish species including red snapper. However, because we do not have recreational landings at the community level, reef fish permits and other more general measures are a proxy for identifying communities where red snapper may be an important species.

3.4.1 Recreational Fishing

Red snapper is an important species to recreational fishermen whether it be through private angling, fishing from charter boats or headboats. While there are no landings data at the community level for the recreational sector, Table 3.4.1.1 provides a listing of the top 25 communities based upon the number of charter vessel/headboat (for-hire) permits for reef fish. This is a crude measure of the reliance upon recreational reef fish fishing, is general in nature, and not specific to red snapper. Ideally, additional variables quantifying the importance of recreational fishing to a community would be included, such as the amount of recreational landings in a community by species, availability of recreational fishing related businesses and infrastructure, etc.; however, these data are not available at this time. The communities of

Destin, FL and Orange Beach, AL have the most for-hire reef fish permits, far exceeding other communities.

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

State	Home Port City	Number of Permits
FL	Destin	91
AL	Orange Beach	84
LA	Venice	42
FL	Naples	39
FL	Panama City	35
TX	Galveston	35
FL	Key West	33
TX	Freeport	30
TX	Port Aransas	28
FL	Panama City Beach	26
FL	Clearwater	24
FL	Pensacola	23
FL	Saint Petersburg	21
FL	Sarasota	19
AL	Dauphin Island	18
FL	Crystal River	17
FL	Madeira Beach	15
FL	Fort Myers Beach	14
MS	Biloxi	14
FL	Marco Island	13
FL	Tarpon Springs	13
FL	Venice	12
LA	Grand Isle	12
TX	Matagorda	12
FL	Fort Myers	11

Source: NMFS SERO permit office 2020.

Figure 3.4.1.1 is an overall measure of a community's recreational fishing engagement as measured by engagement and reliance indices developed to identify those communities most involved in recreational fishing. The communities in Figure 3.4.1.1 would be considered to be highly or moderately engaged in recreational fishing as all are at or above 1 standard deviation of the mean factor score. Dauphin Island, Orange Beach, Destin, Grand Isle, Venice and Port Aransas are also highly reliant on recreational fishing as they exceed the 1 standard deviation for recreational reliance also.

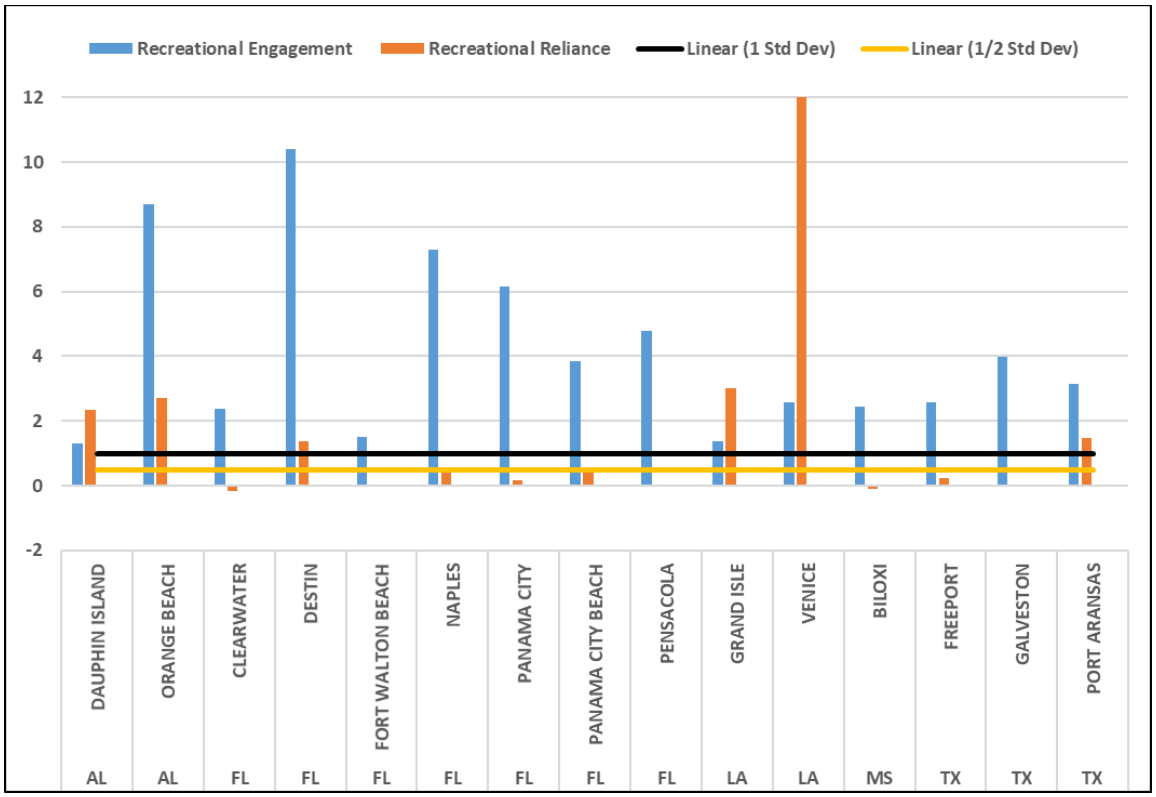

Figure 3.4.1.1. Recreational fishing engagement and reliance for select red snapper communities for 2018.

Source: Social Indicators Database, NOAA Fisheries, NMFS, SERO.

3.4.2 Environmental Justice Considerations

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The main focus of Executive Order 12898 is to consider "the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories…" This executive order is generally referred to as environmental justice (EJ).

In order to assess whether a community may be experiencing EJ issues, a suite of indices created to examine the social vulnerability of coastal communities (Jepson and Colburn 2013; Jacob et al. 2013) is presented in Figures 3.4.2.1 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. Indicators such as increased poverty rates for different groups, more single female-headed households and children under the age of 5, disruptions such as higher separation

rates, higher crime rates, and unemployment are all signs of vulnerable populations. These indicators are closely aligned to previously used measures of EJ which used thresholds for the number of minorities and those in poverty, but are more comprehensive in their assessment. Again, those communities that exceed the thresholds would be expected to exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change. It should be noted that some communities may not appear in these figures as census data are not available to create the indices.

Of the communities in Figure 3.4.2.1., most do not exceed thresholds for any indices and therefore would not be considered to be experiencing any vulnerabilities. The communities of Freeport, Texas seems to exhibit the greatest vulnerabilities with all three indices above or nearly above both thresholds in Figure 3.4.2.1. The communities of Panama City, Venice, Biloxi and Galveston are above the ½ standard deviation threshold for both personal disruption and poverty. The community of Grand Isle is also close to that threshold for those indicators. Those communities with the highest vulnerabilities would be expected to have a more difficult time adapting to any negative social impacts as a result of actions within this amendment. This is not to say that fishermen in these communities will be impacted negatively and as a result will have difficulties. These results posit the possibility that challenges may exist given the overall vulnerabilities that are present within a community.

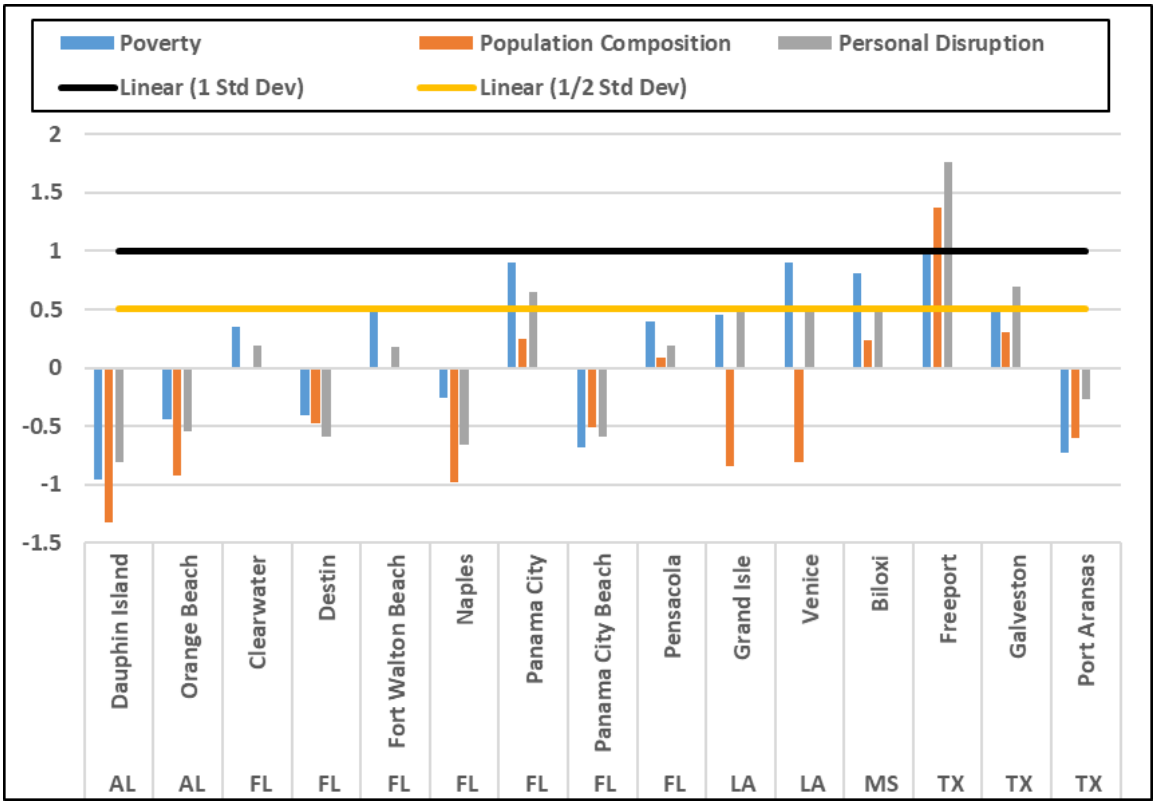

Figure 3.4.2.1. Social vulnerability indices for selected Gulf red snapper fishing communities.
Source: NOAA Fisheries Office of Science and Technology. 2020. NOAA Fisheries Community Social Vulnerability Indicators (CSVIs). Version 3 (Last updated December 21, 2020).

Information on race, ethnicity, and income status for groups at the different participation levels (private anglers, for-hire captains, crew, and customers, and employees of recreational fishing businesses, etc.) is not available at this time. Recreational and commercial fishermen and associated businesses and communities along the coast may be affected by the actions in this amendment. The actions in this amendment would not affect individuals differently based on race, ethnicity, or income status. Thus, disproportionate impacts to EJ populations are not expected to result from any of the actions in this amendment. Nevertheless, the lack of impacts on EJ populations cannot be assumed. Finally, there are no known claims for customary usage or subsistence consumption of red snapper by any population including tribes or indigenous groups.

3.5 Description of the Administrative Environment

3.5.1 Federal Fishery Management

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

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

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

rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of NOAA's Office of Law Enforcement, the U.S. Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee, which have developed joint enforcement agreements and cooperative enforcement programs[21].

3.5.2 State Fishery Management

The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf States exercises legislative and regulatory authority over their respective state's natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states' natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004b). Descriptions of individual state management and data collection programs can be found at the Web Pages shown in Table 3.5.2.1.

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

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

3.5.3 Red Snapper Management

Recreational Sector

The private angling component's fishing seasons for red snapper were set by the states under exempted fishing permits in 2018 and 2019, a permit type issued by NMFS. The states are now responsible for establishing some management measures (i.e., fishing seasons, bag limits, size limits; these may vary by state and year) for the private angling component's harvest of red

[21] www.gsmfc.org

snapper (Amendment 50A; GMFMC 2019) for 2020 and subsequent years. In-season quota monitoring for the private angling component is performed by the states, with the states being responsible for closing the waters adjacent to their state once the state's ACL has been projected to be met. Private recreational fishing vessels are not required to have a federal permit to harvest individual species or species complexes in the reef fish fishery from the Gulf exclusive economic zone (EEZ). However, anglers aboard these vessels must either be federally registered or licensed in states that have a system to provide complete information on the states' saltwater anglers to the national registry.

The for-hire component of the recreational sector in the Gulf is managed by NMFS. In 2015, the for-hire component was given a separate quota from the private angling component (GMFMC 2014a); consequently, the duration of the for-hire fishing season may vary from the season durations for the private angling component as specified by each Gulf state. Presently, the for-hire component's fishing season begins on June 1, and closes when the component's annual catch target is predicted to be harvested (see Section 1.3 for more information on for-hire quota monitoring). Any for-hire fishing vessel that takes anglers into the Gulf EEZ where anglers harvest species or complexes in the reef fish fishery must have a limited-access charter vessel/headboat (for-hire) permit for reef fish that is specifically assigned to that vessel. Since 2003, there has been a moratorium on the issuance of new federal reef fish for-hire permits. This means that participation in the federal for-hire component is capped; no additional federal permits are available. Although the for-hire permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel, and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to NMFS Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the Southeast Fishery Science Center (SEFSC) that the vessel primarily operates as a headboat. Most charter vessel trips occurred in the exclusive economic zone and targeted rig-reef species (i.e., snappers and groupers; Savolainen et al. 2012).

Commercial Sector

The commercial sector for red snapper in the Gulf is managed under an individual fishing quota (IFQ) program administered through the Southeast Regional Office (SERO) NMFS. Primary commercial gear types in the fishery are vertical lines (handlines and bandit gear) and bottom longlines. Commercial operators harvesting reef fish from the Gulf (EEZ) must have a Gulf reef fish permit, which is a limited access permit. Only vessels with a valid Gulf reef fish permit can harvest reef fish in the Gulf EEZ, and those that use bottom longline gear in the Gulf EEZ east of 85º30'W. longitude must also have a valid Eastern Gulf longline endorsement. In addition to these restrictions, operators of reef fish fishing vessels who want to harvest red snapper must participate in the red snapper IFQ program. To harvest IFQ species, a vessel permit must be linked to an IFQ account and possess sufficient allocation for the species to be harvested. IFQ accounts can be opened and valid permits can be linked to IFQ accounts at any time during the year. Eligible vessels can receive allocation from other IFQ participants.

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1 – Modification of Gulf of Mexico (Gulf) State-specific Red Snapper Private Angling Component Annual Catch Limits

4.1.1 Direct and Indirect Effects on the Physical Environment

The alternatives in this action would modify the state-specific red snapper private angling component annual catch limits (ACLs). While this action would not directly affect the physical environment, catch levels that allow for more or less harvest may change fishing activity, which could indirectly affect this environment. 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. The reef fish fishery in the Gulf is a multi-species fishery targeting many species. This action would only affect the private angling component of the recreational sector targeting red snapper.

Participants in the private angling component of the recreational sector of the reef fish fishery primarily use vertical lines (i.e., hook-and-line, and trolling). Concentrations of many managed reef fish species are higher on hard bottom areas than on sand or mud bottoms, thus vertical line gear fishing generally occurs over hard bottom areas (GMFMC 2004). Vertical line gear includes rod-and-reels, and while less likely to contact the bottom than other gear types (e.g., bottom longline gear), it still has the potential to snag and entangle bottom structures and cause attached organisms, such as soft corals and sponges, to tear off or be abraded (Barnette 2001). Barnette (2001) suggested that physical impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers). Anchor damage is also associated with vertical line fishing vessels, particularly by the recreational sector, where anglers 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, as well as repeated drops of weighted fishing rigs onto the reef. Recreational vessels that use vertical line gear are typically known to anchor more frequently over the reef sites. Spears are used by the recreational sector to harvest reef fish, but represent a relatively minor component of fishing effort. Barnette (2001) summarized a previous study that concluded spearfishing on reef habitat might result in some coral breakage. In addition, there could be some impacts from divers touching coral with their hands or from re-suspension of sediment by fins (Barnette 2001).

Alternative 1 (No Action) would maintain the current state-specific ACLs for the private angling component. Under **Alternative 1**, fishing effort and effects on the physical environment would be similar to what has been experienced in recent years (2018-2020) under the state-specific ACLs. **Alternative 2**, **Alternative 3**, and **Alternative 4** would modify the state-specific ACLs in such a manner that would reduce the combined landings from each state relative to **Alternative 1**. Reducing the landings would be expected to reduce the negative effects of

fishing pressure on the physical environment proportional to the decrease in projected landings; however, because the reef fish fishery is a multi-species fishery, overall fishing pressure is not expected to be measurably different from **Alternative 1**. Likewise, **Alternative 5** would also reduce the projected landings compared to **Alternative 1**; however, like **Alternative 2**, **Alternative 3**, and **Alternative 4 (and its options)**, **Alternative 5** is not expected to result in a measurably different effect on the physical environment compared to **Alternative 1**.

4.1.2 Direct and Indirect Effects on the Biological Environment

Direct and indirect effects from fishery management actions have been discussed in detail for a variety of reef fish species in past amendments to the Fishery Management Plan for Reef Fish Resources in the Gulf (Reef Fish FMP; e.g., GMFMC 2018b, 2019a) and are incorporated here by reference. Management actions that affect the biological and ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from the population through fishing reduces the overall population size. Fishing gears have different selectivity patterns that refer to a fishing method's ability to target and capture organisms by size and species. This would include the number of discards, which are expected to be mostly sublegal fish or fish caught during seasonal closures, and the mortality associated with releasing these fish. Fishing can affect life history characteristics of reef fish such as growth and maturation rates. For example, Fischer et al. (2004) and Nieland et al. (2007) found that the average size-at-age of red snapper had declined and associated this trend with fishing pressure. Woods (2003) found that the size at maturity for Gulf red snapper had declined and speculated this change may also have been due to increases in fishing effort. Bycatch does occur within the reef fish fishery. If fish are released due to catch limits, seasons, or other regulatory measures, these fish are considered bycatch. Bycatch practicability analyses have been completed for red snapper (GMFMC 2004b, GMFMC 2007, GMFMC 2014a, GMFMC 2019a). 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. Some management measures can increase bycatch through regulatory discards such as increased minimum sizes and closed seasons. However, these measures are implemented in situations where the biological benefit to the managed species outweighs any increases in discards. For this action, any effects on bycatch are likely to be negligible because the action is not expected to change how the reef fish fishery is prosecuted.

Fishing for species in the reef fish fishery can also affect species outside the reef fish complex. However, as described in Section 3.3, the reef fish fishery is not likely to jeopardize the continued existence of any endangered species and has a remote likelihood of, or no known incidental mortality or serious injury of, marine mammal species. Modifying the catch levels through this action is not expected change how the reef fish fishery is prosecuted or result in any impacts beyond those described in Section 3.3.

Alternative 1 (No Action) would maintain the current state-specific ACLs. Under **Alternative 1**, fishing effort and effects on the biological/ecological environment would be similar to what has been experienced in recent years (2018-2020). Landings would still be limited insofar as the stock is managed under the current state-specific ACLs. However, under **Alternative 1**,

landings as measured by the respective state-specific survey programs are expected to exceed the ACLs established in Reef Fish Amendment 50A (GMFMC 2019a). These catch limits were set based on the findings of the most recent stock assessment on Gulf red snapper (SEDAR 52 2018), using recreational catch and effort data from the Marine Recreational Information Program's Coastal Household Telephone Survey (MRP-CHTS). The MRIP-CHTS informed state-specific ACLs are the catch limits against which each state's harvest is monitored, and are used to determine whether a state's ACL has been exceeded. However, some of the estimates generated by these state programs differ from estimates generated using MRIP-CHTS. For 2018 and 2019, estimates of total state landings in MRIP-CHTS units exceed the total private angling component ACL. As a result, **Alternative 1** would continue to allow the monitoring of some state's landings in a currency that is not directly comparable to the ACLs, and may continue to result in total landings of red snapper exceeding the ACLs for those states and the total private angling component ACL. **Alternative 1** is expected to continue the trend of the total private angling component ACL being exceeded, which is expected to have negative effects on the red snapper stock in the form of increased removals. If this trend were to continue, it may jeopardize the rebuilding plan established under Reef Fish Amendment 27 (GMFMC 2007), and would be expected to be detrimental to the long-term sustainability of the stock.

Alternative 2, **Alternative 3**, and **Option 4a** of **Alternative 4** would modify the state-specific ACLs in such a manner that would reduce the total private angling component landings from each state relative to **Alternative 1**. Because **Option 4b** of **Alternative 4** would apply the ratio calibrations only for a subsequent ACL increase of 25% or more, any increase less than that would therefore not be calibrated by state, and could result in overharvest. Generally, these alternatives are expected to constrain the state-specific landings to the state-specific private angling component ACLs, thereby reducing the negative effects to the biological and ecological environments currently being experienced under **Alternative 1**. This reduction in negative effects would come by way of reduced fishing pressure on red snapper and would be proportional by each of **Alternatives 2**, **3**, and **4** compared to **Alternative 1** (see Table 2.1.5). **Alternative 5**, similar to **Alternatives 2**, **3**, and **4**, also reduces the state-specific ACLs in such a manner that would reduce the total private angling component landings from each state relative to **Alternative 1**. However, **Alternative 5** is not expected to reduce these landings enough to constrain those landings below the total private angling component ACLs. Thus, like **Alternative 1**, albeit to a lesser degree (see Table 2.1.5), **Alternative 5** is also expected to continue the trend of the total private angling component ACL being exceeded, which is expected to have negative effects on the red snapper stock via increased removals. If harvest continues to exceed the catch limits, it may jeopardize the rebuilding plan established under Reef Fish Amendment 27 (GMFMC 2007), and would be expected to be detrimental to the long-term sustainability of the stock.

4.1.3 Direct and Indirect Effects on the Economic Environment

Alternative 1 (No Action) would maintain the state-specific private angling component ACL established in Amendment 50A for the Reef Fish FMP. While changes in economic value would not be expected to result from this alternative, **Alternative 1** is not a viable selection, as it may continue to result in landings of red snapper exceeding state ACLs as well as the total private

angling component ACL. In order to compare the potential state and total landings that could occur under **Alternatives 2-5** against **Alternative 1,** the predicted landings in MRIP-CHTS currency as shown in Table 2.1.5 are used.

The evaluation of changes in economic value expected to result from ACL increases for the private angling component of the recreational sector is based on work by Liese and Carter (2012). The consumer surplus (CS) value per fish for a second red snapper kept is estimated at $85.69 (2019 dollars) using the gross domestic product implicit price deflator. Estimated increase in economic value are approximated by dividing the change in ACT by 6.09 lbs, which is the average weight of a Gulf recreationally landed red snapper from 2017-2019 (SEFSC MRIP CHTS Recreational ACL file, accessed September 14, 2020), to obtain the increase in number of red snapper, which is then multiplied by the CS value per fish of $85.69. The proposed changes in state-specific private angling ACTs are in Table 4.1.3.1; the expected annual changes in private angling values are in Table 4.1.3.2.

Table 4.1.3.1. Changes in state-specific private angling ACTs under **Alternatives 2-5**.

	Alt 2	Alt 3	Alt 4	Alt 5
	Change in Private Angling ACT*	**Change in Private Angling ACT**	**Change in Private Angling ACT**	**Change in Private Angling ACT**
AL	**-193,799**	**-86,973**	**-86,973**	**-44,693**
FL	**17,841**	**-68,162**	**-68,162**	**-35,026**
LA	**7,587**	**-29,082**	**-29,082**	**-14,944**
MS	**-39,920**	**-14,905**	**-14,905**	**-7,659**
TX	**0**	**-10,012**	**-10,012**	**-5,145**
Total	**-208,291**	**-209,133**	**-209,133**	**-107,467**

*ACTs in million pounds whole weight and adjusted for average weight of a Gulf recreationally landed red snapper.

Table 4.1.3.2. Expected annual change in private angling values under **Alternatives 2-5**, by state and in total.

	Alt 2	Alt 3	Alt 4 4a and 4b**	Alt 5
	Expected Annual Change in Private Angling Value*	**Expected Annual Change in Private Angling Value**	**Expected Annual Change in Private Angling Value**	**Expected Annual Change in Private Angling Value**
AL	**-$16,606,609**	**-$7,452,708**	**-$7,452,708**	**-$3,829,710**
FL	**$1,528,757**	**-$5,840,765**	**-$5,840,765**	**-$3,001,401**
LA	**$650,090**	**-$2,492,003**	**-$2,492,003**	**-$1,280,566**
MS	**-$3,420,719**	**-$1,277,231**	**-$1,277,231**	**-$656,323**
TX	**$0**	**-$857,941**	**-$857,941**	**-$440,874**
Total	**-$17,848,481**	**-$17,920,649**	**-$17,920,649**	**-$9,208,875**

*Dollar values are in 2019 dollars.
The expected private angling values associated with **Alternatives 4a and **4b** will only differ if there are increases to the ABC, and that is described qualitatively in the analysis.

The expected total change in private angling value under **Alternative 2** would be -$17,848,481 and falls within the range of expected value changes under **Alternatives 3-5**. However, as **Alternative 5** is not a viable alternative, as it is predicted to result in an overage of private angling component ACL similar to **Alternative 1**, **Alternative 2** has the smallest expected total change in private angling value amongst the viable alternatives. **Alternatives 3** and **4** have the same expected total change in private angling value as they apply the same buffer to the current state-specific private angling ACLs, and only differ in what buffer or ratio calibration is applied to any subsequent increase in the state-specific ACs are. While **Alternative 4 Options 4a** and **4b** cannot be quantitatively analyzed, the expected impacts they may have can be qualitatively compared. In total, **Alternative 4 Option 4a** will result in a higher private angling ACT than **Alternative 3** if additional quota is made available by an increase in the ABC and, therefore, will be expected to result in a higher total private angling value. In total, **Alternative 4 Option 4b** will result in a higher private angling ACT than **Alternative 3** only when there is an increase of 25% or more in the ABC and the ratio calibration from **Alternative 2** is applied and, therefore, will be expected to result in a higher total private angling value. In total, **Alternative 4 Option 4b** will result in a higher private angling ACT than **Alternative 4 Option 4a** only when there is an increase of 25% or more in the ABC and the ratio calibration from **Alternative 2** is applied; **Alternative 4 Option 4b** will be expected to result in a higher total private angling value in that case.

The expected changes in private angling values are presented as annual changes, without discounting, as the Council is currently developing a framework amendment to modify the current red snapper sector and component ACLs. The estimates shown here are based on the current component ACLs, so if they are subsequently revised in another framework amendment, these estimates would have to be revised to remain valid.

4.1.4 Direct and Indirect Effects on the Social Environment

The purpose of this action is to reduce the likelihood of exceeding the private angling component ACL for red snapper by adjusting the state catch limits to account for the different monitoring programs used by each state. Long-term positive effects would be expected for the social environment by constraining landings to the ACL, as the health of the stock is maintained. Although there are not usually effects from **Alternative 1**, the private angling component ACL was set in MRIP-CHTS units at 4.269 mp ww, and was divided among the states based on landings that were calculated in MRIP-CHTS, which uses a particular methodology to produce an estimate of the amount of red snapper landed. The state monitoring programs estimate the amount of red snapper landings by private anglers using different methodologies than MRIP-CHTS and result in different estimates of the pounds of fish harvested. As each state monitors its landings that results in an estimate that differs from MRIP-CHTS, the landings may not represent the historical effort represented by each's state allocation as calculated in MRIP-CHTS. For some states, monitoring their portion of the private angling component ACL in their state's system results in the anglers of their state catching more fish (Alabama and Mississippi), providing short-term benefits from the additional fishing opportunities, while in other states it

results in less fish available to their anglers in the short-term from reduced fishing opportunities (Louisiana and Florida). Because Texas has always provided its own estimates of red snapper landings which were incorporated into the assessments for which the current private angling ACL is based, there is no discrepancy between the units in which the ACL was set and Texas' system for monitoring its landings; even though they represent different "currencies" (i.e., ways of estimating landings), they exchange at a one-to-one ratio. Compared with these different short-term effects on different states, fishermen from all states and sectors would share in any negative long-term effects from allowing the ACL to be exceeded, which could harm the sustainability of the stock. In addition, it could be seen as inequitable to allow anglers in some states additional fishing opportunities than afforded by their allocation in MRIP-CHTS currency, and fewer opportunities to others.

Conversion rates were calculated to quantify the difference between the MRIP-CHTS estimates and the state monitoring programs, provided in Table 4.1.4 as the "exchange rates." The conversion ratios allow each state's estimate of red snapper (its currency) to be compared to the MRIP-CHTS currency. If the states use their respective MRIP-CHTS state ACL under **Alternative 1** to constrain landings using the estimates from their state monitoring programs (see column for **Alternative 1**, Predicted landings), Texas would realize no change in the short term. Louisiana and Florida would realize some negative short-term effects through lost fishing opportunities as their monitoring programs would estimate they have caught their share of the quota before it would have been caught using the MRIP-CHTS currency. Alabama and Mississippi's anglers would benefit from additional fishing opportunities in the short-term. However combined, predicted landings from these two states would be expected to cause the private angling ACL to be exceeded by 1.268 mp ww, which could lead to long-term negative effects for the health of the stock.

Table 4.1.4. Comparison of how the conversion ratios (i.e., "exchange rates") are used to calculate the predicted landings in MRIP-CHTS units (i.e., one currency) if each state's landings are monitored toward the proposed state ACLs using that state's monitoring program (which is a different currency). The totals shaded in yellow are comparable as they are provided in the same currency (MRIP-CHTS). Predicted landings and ACLs are provided in pounds whole weight.

Alt.	1	Ratio	2	1	3 & 4	3 & 4	5	5
Calcu-lation	ACL in CHTS currency	Exchange Rate	CHTS x exchange rate	Predicted landings in CHTS (CHTS/ exchange rate)	Reduce Alt 1 ACL by 23%; apply state allocation percentages	Predicted landings in CHTS (Alt 3/exchang e rate)	Reduce Alt 1 ACL by 11.819%; apply state allocation percentages	Predicted landings in CHTS (Alt 5/exchange rate)
AL	1,122,662	0.4875	547,298	2,302,896	864,450	1,773,231	989,975	2,030,717
FL	1,913,451	1.0602	2,028,641	1,804,802	1,473,358	1,389,698	1,687,301	1,591,493
LA	816,233	1.06	865,207	770,031	628,499	592,924	719,762	679,021
MS	151,550	0.384	58,195	394,661	116,693	303,888	133,638	348,015
TX	265,105	1	265,105	265,105	204,131	204,131	233,772	233,772
Curr-ency	CHTS		5 States	CHTS	5 States	CHTS	5 States	CHTS
Total	**4,269,001**		**3,764,446**	**5,537,495**	**3,287,131**	**4,263,872**	**3,764,448**	**4,883,019**

Note: The predicted landings from the state currency ACLs under **Alternative 2** equal the ACL in CHTS currency under **Alternative 1**, because each state's ACL is calculated based on its conversion ratio/exchange rate.

The proposed state ACLs under **Alternatives 2, 3,** and **4** would equal or nearly equal the private angling component ACL in MRIP-CHTS currency and be expected to result in positive effects compared to **Alternative 1** for the long-term. By calculating a new ACL for each state using the approved conversion rate for that state, the sum of the proposed state ACLs under **Alternative 2** would equal the private angling component ACL set in the MRIP-CHTS currency. By most closely representing the allocation among the states that was adopted through Amendment 50A (GMFMC 2019a), the distribution of fishing opportunities should be most similar to the method for allocation agreed upon through that amendment, resulting in the fewest effects. By reducing each state's ACL by 23% **Alternatives 3** and **4** would reduce the state ACLs, and thus the fishing opportunities, for Louisiana, Florida, and Texas in order to offset the reductions necessary to adjust the additional fishing opportunities that result for Alabama and Mississippi if those states use their monitoring programs to estimate the amount of fish landed in each state. Greater negative effects would be expected for Louisiana, Florida, and Texas under **Alternatives 3** and **4** than under **Alternative 2**, while positive effects would result for Alabama and Mississippi.

Alternatives 3 and **4** differ in what would happen when an increase in the OFL and ABC for red snapper are recommended. For future ACL increases, **Alternative 3** would apply the increase using the same method as **Alternative 3**; thus, the effects would be the same as those described above with the total predicted landings closely approximating the private angling ACL in MRIP-CHTS units under **Alternative 1**. For future ACL increases, **Option 4a** would apply the method used in **Alternative 2** to the full amount of the increase, and **Option 4b** would apply the method to the amount of an increase greater than 25% of the ABC. Upon a later ABC increase, **Option 4a** would adjust the state ACLs to more closely approximate those agreed upon through Amendment 50, i.e., more similar to **Alternative 2**. These effects would occur under **Option 4b** when the ABC is increased more than 25%.

Similar to **Alternative 1**, the state ACLs under **Alternative 5** would allow for landings that are predicted to exceed the private angling ACL by approximately 14%, which could result in negative long-term effects on red snapper fishermen of all states and sectors if the health of the stock is not maintained. The effects on each state from **Alternative 5** would be similar to **Alternatives 3** and **4** in comparison to **Alternative 2**, in terms of how fishing opportunities are redistributed.

4.1.5 Direct and Indirect Effects on the Administrative Environment

Modifying catch limits does not typically result in substantial direct or indirect effects on the administrative environment. This is expected to be the case with regard to **Alternatives 2, 3**, and **4**, which set viable catch limits that are expected to constrain catch below the ACL and OFL. Regardless, the administrative burden of monitoring to various catch limits would not be significant because monitoring to these limits is routine for the Southeast Regional Office (SERO). Once these catch limits are implemented, the type of regulations needed to manage the

red snapper fishery would remain unchanged regardless of the choice of harvest levels. SERO monitors both the recreational and commercial landings in cooperation with the SEFSC and Gulf states to determine if landings are meeting or exceeding the specified catch limits. Some administrative burden is anticipated with respect to outreach as it relates to notifying stakeholders of the changes to harvest levels.

Alternative 1 and **Alternative 5** would be expected to result in additional administrative burden. **Alternative 1** would maintain the state specific ACLs and catch levels set forth in Amendment 50 (A-F). For 2018 and 2019, estimates of total state landings in MRIP-CHTS units exceed the total private angling component ACL. As a result, **Alternative 1** would continue to allow the monitoring of some state's landings in a currency that is not directly comparable to the ACLs, and may continue to result in total landings of red snapper exceeding the ACLs for those states and the total private angling component ACL. **Alternative 5** would modify the state-specific private angling component ACLs by establishing a "State Management ACL" that is 11.819% below the established private angling component ACLs for each state. **Alternative 5** would allow total landings of red snapper to exceed the private angling component ACL and the Gulf red snapper OFL. Because **Alternative 1** and **Alternative 5** are likely to continue to result in exceeding the private angler ACL and overfishing the red snapper resource, these alternatives increase the likelihood of the red snapper stock becoming overfished. If this were to occur, it would require NMFS to develop an updated rebuilding plan, which would greatly increase the administrative burden. In addition, Alternative 1 or Alternative 5 are more likely to allow private angling harvest to exceed the private angling ACL and OFL. Therefore, NMFS may not approve implementation of these alternatives, which would increase the administrative burden by requiring additional deliberation and action by the Council.

4.2 Cumulative Effects Analysis

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

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

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

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

   Other fishery related actions – The cumulative effects of establishing state management of the private recreational component of the red snapper fishery was analyzed in the environmental impact statements (EIS) for Amendment 50 (A-F). The cumulative effects of establishing ACTs were analyzed in the EIS for Amendments 28 and 40 (GMFMC 2015b and 2014b). In addition, cumulative effects relative to changes in red snapper management have been analyzed in the

EISs for Amendments 22 (GMFMC 2004b), 26 (GMFMC 2006), and 27/14 (GMFMC 2007), and relative to the reef fish fishery in Amendment 29 (GMFMC 2008c), Amendment 30A (GMFMC 2008a), Amendment 30B (GMFMC 2008b), Amendment 31 (GMFMC 2009), and Amendment 32 (GMFMC 2011b). These cumulative effects analyses are incorporated here by reference. Other pertinent actions are summarized in the history of management (Section 1.3). Currently, there are several present and RFFAs that are being considered by the Council for the Reef Fish FMP or implemented by NMFS, which could affect reef fish stocks. These include: Amendment 36B and 36C, which would further revise the red snapper and grouper-tilefish commercial individual fishing quota (IFQ) programs; Amendment 48, which would establish status determination criteria for many reef fish stocks; Amendment 51, which modified stock status determination criteria for gray snapper and reduced the ACL based on the recent stock assessment; and some actions to address red snapper allocation, the carryover of unharvested quota, the acceptable biological catch control rule, the commercial harvest of greater amberjack, and the recreational harvest of greater amberjack. Descriptions of these actions can be found on the Council's website.

Non-fishery related actions - Forces affecting the reef fish fishery have been described in previous cumulative effect analyses (e.g., Amendment 40 [GMFMC 2014b]). Three important examples include impacts of the Deepwater Horizon MC252 oil spill, the Northern Gulf Hypoxic Zone, and climate change (See Sections 3.1 and 3.2). Reef fish species are mobile and are able to avoid hypoxic conditions, so any effects from the Northern Gulf Hypoxic Zone on reef fish species are likely minimal regardless of this action. Impacts from the Deepwater Horizon MC252 oil spill are still being examined; however, as indicated in Section 3.2, the oil spill had some adverse effects on fish species.

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

4. **The impacts or expected impacts from these other actions**
   The cumulative effects from managing the reef fish fishery have been analyzed in other actions as listed in part three of this section. They include detailed analysis of the reef fish fishery, cumulative effects on non-target species, protected species, and habitats in the Gulf. In general, the effects of these actions are positive as they ultimately act to

restore/maintain the stocks at a level that will allow the maximum benefits in yield and recreational fishing opportunities to be achieved.

5. **The overall impact that can be expected if the individual impacts are allowed to accumulate**
   This action, combined with other past actions, present actions, and RFFAs, is not expected to have significant beneficial or adverse effects on the physical and biological/ecological environments because this action would only minimally affect current fishing practices (Sections 4.1.1 and 4.1.2). For the social and economic environments, effects should be variable or negative, as some states may see increases in allowable catch, while some or all states are expected to see substantial decreases in allowable catch, depending on the alternative chosen (Sections 4.1.3 and 4.1.4). Most effects are likely minimal as the proposed action, along with other past actions, present actions, and RFFAs, are not expected to alter the manner in which the fishery is prosecuted. Because it is unlikely there would be any changes in how the fishery is prosecuted, this action, combined with past actions, present actions, and RFFAs, is not expected to have significant adverse effects on public health or safety.

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

CHAPTER 5. REGULATORY IMPACT REVIEW

COMPLETION PENDING

CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS

COMPLETION PENDING

6.1 Introduction

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

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

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

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

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

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

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

The rule concerns recreational fishing for red snapper in federal waters of the Gulf of Mexico (Gulf) and would have a direct impact on anglers (recreational fishers). Anglers are not

considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from for-hire fishing, private or leased vessels. Therefore, estimates of the number of anglers directly affected by the rule and the impacts on them are not provided here.

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

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

CHAPTER 7. 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 8. LIST OF PREPARERS

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Name	Expertise	Responsibility
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Daniel Luers, NMFS/SF	Fishery Biologist	Co-Team Lead – amendment development, introduction, and administrative effects
Matt Freeman, GMFMC	Economist	Economic effects, Regulatory Impact Review
Ava Lasseter, GMFMC	Anthropologist	Social effects
Denise Johnson, NMFS/SF	Economist	Economic environment, Regulatory Flexibility Act analysis
Christina Package-Ward, NMFS/SF	Anthropologist	Social environment, Environmental Justice
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Reviewers:

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

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

CHAPTER 9. REFERENCES

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APPENDIX A. SCIENTIFIC AND STATISTICAL COMMITTEE SUMMARY: AUGUST 11, 2020

Standing, Reef Fish, Ecosystem, and Socioeconomic SSC Webinar Meeting Summary August 11-12, 2020

The webinar meeting of the Gulf of Mexico (Gulf) Fishery Management Council's (Council) Standing, Reef Fish, Ecosystem, and Socioeconomic Scientific and Statistical Committees (SSC) was convened at 9:00 AM on August 11, 2020. The agenda for this webinar meeting was approved as written, along with the minutes from the Gulf SSC's July 21-23, 2020, joint webinar meeting with the South Atlantic Council's SSC. Verbatim minutes from past SSC meetings can be reviewed here. Dr. Joe Powers reviewed the meeting objective, which is to review the proceedings of the NOAA Science and Technology Calibration Workshop for Red Snapper, with particular attention being paid to the methods used to generate the calibration ratios between the state-specific survey catch and effort data and the federal data.

Workshop Summary, Overview of Gulf State Methods and Resulting Calibrations

Overview of Meeting Outcomes

Council Staff reviewed the proceedings of the National Oceanic and Atmospheric Administration (NOAA) Science and Technology Calibration Workshop for Red Snapper, which took place on August 5, 2020. Red snapper annual catch limits (ACLs) for the five Gulf states established under Amendment 50A to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico were set using data from the Marine Recreational Information Program's (MRIP) Access Point Angler Intercept Survey (APAIS) and Coastal Household Telephone Survey (CHTS). The five Gulf States (Florida, Alabama, Mississippi, Louisiana, and Texas) are responsible for monitoring private recreational catch and effort for red snapper landed in their state, and use their state-specific surveys. These state-specific surveys generate catch and effort data in their native data currencies, which need to be calibrated to MRIP-CHTS currency for quota monitoring and stock assessment purposes. Currently, for quota monitoring purposes, private recreational catch and effort data are recorded using MRIP's APAIS and Fishing Effort Surveys (FES; successor to CHTS), and converted back to MRIP-CHTS using ratio adjustments developed by the National Marine Fisheries Service (NMFS) by state for all states except Texas. No ratio adjustment is available for Texas because MRFSS data from that state predate the program's full implementation, are incomplete, and not capable of calibration. The four other Gulf states have developed their own calibration methods and ratios to calibrate their data to MRIP-FES and MRIP-CHTS, with these ratios being reviewed during the aforementioned August 5th workshop. At that workshop, Florida, Alabama, Mississippi, and Louisiana presented their revised methods for calculating their respective state-specific ACLs. Alabama recommended calibrating its Snapper Check survey directly to MRIP-CHTS, without converting to MRIP-FES first, since it was against the MRIP-CHTS methodology that Snapper Check was developed. Mississippi's Tails n' Scales (TnS) survey recommended a weighting procedure to

determine Mississippi's calibration ratio. Louisiana clarified that their proposed ratio calibration used catch and effort data from all waves in 2015, and did not exclude any waves as was written in the NMFS consultant evaluation. Louisiana requested that the NMFS consultant report be corrected to reflect this error.

Consultants' Report from August 5, 2020 Calibration Workshop

Dr. Richard Cody from the NOAA Office of Science and Technology (OST) reviewed the independent consultants' report from the August 5th MRIP workshop. Broadly, the consultants encouraged NOAA OST to generate a finalized report detailing the methodologies and results from the state-specific calibration ratios analyzed and presented during the workshop. The consultants also stated that a standardized approach for calculating calibration ratios from the states would be ideal. However, they recognized that survey design differences and the differing years when state surveys were being run side-by-side with MRIP make standardization of calibration methods arduous. The consultants also included state-specific feedback on calibration ratio development. For Louisiana, while only 2015 data were used as comparison, the consultants approved of the calibration ratio method proposed. For Alabama, the consultants also approved of the method proposed but requested some further clarification for omitting 2017 data from the final calculation. For Florida, the consultants approved of the methodology used to calculate the calibration ratio, but suggested another approach for generating the variance estimate for the correlation analysis. The consultants suggested using a correlation coefficient value of 0.0, rather than the proposed 0.5, as this would limit the unknown sources of correlation to only positive correlations and aid in interpretation of analyses. For Mississippi, the consultants did not recommend the new meta-analysis re-weighting procedure presented. They stated the proposed calculation contained an interaction term between MRIP and TnS which makes interpretation between survey estimates difficult. The consultants also indicated that the proposed method should have used estimated variances, rather than the standard errors that were used in the analyses presented. The consultants stated that the estimated variance is more appropriate to use for survey weighting and more closely reflected the methods described in the supporting literature presented by Mississippi. The consultants did conclude that a meta-analysis approach would be appropriate should Mississippi be interested in investigating a calibration ratio approach using a composite estimate.

The SSC inquired about how averaging different sets of concurrent years for state surveys along with either MRIP-CHTS or MRIP-FES affected the calibrated ratio results. Dr. Cody indicated that those differences in considering particular years for calibration ratios for each state would be need to be published in a document as recommended by the consultants. This report would allow for some transparency and justification for why the calibration methods differed among the states. Dr. Luiz Barbieri asked about what further progress was needed by the states to have their calibration ratio methods approved. Dr. Cody stated that the role of the consultants was to review and potentially recommend approval by NOAA OST of the methodologies presented by the states and indicated that the SSC could make further recommendations about which presented state-specific ratios were most appropriate. He also indicated that the Transition Team Gulf Subgroup could also make recommendations on the presented calibration ratios, once that group is convened.

Recommendations from NMFS

Dr. Joe Powers asked Dr. Cody to provide more information on the participants and objectives of the Transition Team Gulf Subgroup. The Transition Team Gulf Subgroup represents a subsection of the larger MRIP Transition Team that was created during the beginning of the MRIP-CHTS to MRIP-FES transition. That larger team contained state agency, regional council, NOAA regional office, NOAA science center, and NOAA OST staff from both the Atlantic and Gulf. The Transition Team Gulf Subgroup will comprise many of the same Gulf participants from the larger MRIP Transition Team but will be specifically tasked with examining issues related to collection of private recreational fisheries data within the Gulf. Dr. Cody indicated the group would be convened for their first meeting sometime in late September of 2020. Dr. Powers reiterated the importance of the SSC to be informed about the various state surveys and their proposed calibration ratio results.

Background: State Survey and Calibration Ratio Presentations

Dr. Joe Powers requested that each state briefly summarize the presentations they provided at the August 5th workshop. Representatives from all four states provided background on their respective recreational survey programs and methodologies for their calibration ratios. The SSC then provided feedback and discussed each presentation.

Alabama:

Mr. Kevin Anson from the Alabama Department of Conservation and Natural Resources reviewed the methods used by Alabama to determine its calibration ratio to MRIP-CHTS. Only private recreational data were considered in Alabama's analysis, which focused on harvested pounds of fish (as opposed to numbers of fish) for the years 2018-2019. The years 2014-2017 were also considered; however, some variability exists in these years, possibly due to state season variability. As such, 2018-2019 were selected for stability and consistency. Alabama determined that the majority of the difference between the estimates of harvested fish from Snapper Check and MRIP-FES are attributable to how fishing effort is estimated by FES. The resultant ratio of Snapper Check to MRIP-CHTS pounds was calculated by Alabama to be 0.5259, using a mean of the ratios from 2018-2019 and preliminary data for 2019. The inverse of the ratio, or MRIP-CHTS to Snapper Check, was calculated to be 1.9015. The annual proportional standard error (PSE) estimates from MRIP-CHTS and MRIP-FES were greater than those produced by Snapper Check.

Dr. Will Patterson asked Mr. Anson to provide more detail on the rationale for using data collected from 2018-2019 for calculating the proposed calibration ratio. Mr. Anson stated that differing season lengths and timing for both the federal and state recreational red snapper seasons in 2017 created some highly variable estimates that were likely unreliable. While, 2018-2019 had more consistency in fishing season duration that made annual estimates from those years more robust. The SSC also inquired as to why estimates in harvested biomass were so different between Alabama's state survey and MRIP. Mr. Anson stated that MRIP is consistently estimating greater harvest in both numbers of fish and pounds. He suggested the discrepancy

could be attributed to differences in the average weight observed from the two surveys. The SSC further inquired as to why a state survey would be certified by NOAA when it yielded such differing estimates and why states surveys were being scaled to MRIP values. Dr. Cody responded that the NOAA certification process approves methodologies for private recreational data collection sampling designs, but cannot distinguish what drivers are responsible for accuracy between survey estimates. Currently, red snapper ACLs are published based on recreational estimates derived from MRIP-CHTS, so the state surveys must be adjusted to be comparable to those catch limits. The SSC asked if there was a method to quantify the accuracy of catch reporting in the state survey. Mr. Anson responded that angler-reported surveys of catch could be referenced to state-conducted dockside observations using an identifier (i.e., vessel number) to match reports.

The SSC then more broadly discussed how to determine whether a particular state survey or MRIP was more accurate in reporting recreational data estimates. Further, the SSC indicated that paramount to the discussion was to determine what is most appropriate for direct input into the stock assessment. Mr. Anson reminded the SSC that the need for state surveys arose from shortened red snapper fishing seasons that requires monitoring precision on the levels of days to weeks that is not practical using MRIP methodologies. Dr. Paul Mickle from the Mississippi Department of Marine Resources (MDMR) further indicated that simply dividing survey estimates may not be appropriate and some other approach like a meta-analysis should be investigated further. Dr. Clay Porch reiterated the importance of having a consistent historical time series when developing the stock assessment models and indicated that MRIP has been back calibrated to perform this task while the state survey data has not undergone this process.

Dr. Mickle added that the issue at hand is resolving the disparate estimates of catch and fishing effort between the state and federal surveys by using a calibration ratio. The problem with this approach is that it assumes the surveys are directly comparable in terms of their precision, which may not be true.

Florida:

Ms. Beverly Sauls from the Florida Fish and Wildlife Conservation Commission (FWC) provided an overview of Florida's Gulf Reef Fish Survey's (GRFS) methods for determining private recreational catch and effort. GRFS measures only private vessel catch and effort along Florida's Gulf coast, excluding the shore mode and Monroe County. GRFS was benchmarked against MRIP-CHTS from 2015-2017, and against MRIP-FES in 2018 and 2019. She indicated she was amenable to using a correlation coefficient of 0.0, as opposed to 0.5, based on the NMFS consultants' report. The SSC stated that the consultants approved of Florida's method for calculating its calibration ratio. Further, the SSC indicated that specifics for calculating variance estimates depend more on what the estimate may be used for and whether the objective requires choosing a less or more biased estimate. A comparison of the estimates of catch, effort, and discards between GRFS and MRIP-FES show higher estimates of fishing effort and discards for MRIP-FES, coupled with substantially greater variance in MRIP-FES.

Louisiana:

Mr. Jason Adriance from the Louisiana Department of Wildlife and Fisheries (LDWF) detailed Louisiana's calibration of its LA Creel survey to MRIP-CHTS. Only data from 2015 were used for Louisiana's calibration, as this was the only year that both surveys occurred in the state. The calibration between LA Creel and MRIP-CHTS yields a ratio of 1.06. No calibration exists between LA Creel and MRIP-FES because both surveys did not exist at the same time. Dr. Sean Powers asked if Louisiana will need to develop a calibration ratio to MRIP-FES in the future as federal recreational data are now being collected using only MRIP-FES, and future stock assessments will be incorporating data from MRIP-FES. Dr. Cody indicated that, in the future, the calibration ratio for Louisiana will require updating to MRIP-FES. The SSC asked for an explanation for the differences in harvest estimates for offshore fish species. Mr. Adriance indicated that encounter rates and site selection for the offshore portion of the sample frame might be different between the two surveys and account for some the differences between survey estimates.

Mississippi:

Dr. Mickle reviewed Mississippi's differences with other areas of the Gulf, its survey (TnS), and it's proposed calibrations. TnS has observed compliance rates in angler reporting in excess of 95%. MDMR expressed concern that the number of survey intercepts by MRIP's APAIS does not appear to have any correlation with the estimates of catch; such a correlation is present with TnS, and may be due to inconsistent and/or insufficient sampling by MRIP. MDMR used a ratio-based re-weighting procedure to weight survey PSEs for creating its calibration; however, this method was not accepted by the NMFS consultants. Dr. Mickle said that MDMR will continue working on its calibration.

The SSC asked how Mississippi was quantifying both in-and out-of-season discards. Mr. Trevor Moncrief stated that discards are difficult to measure but that an in-season metric of discards/angler can be generated from in-season data to identify outliers. He also indicated that out-of-season discards are not observed by TnS. Dr. Patterson asked about how MDMR was able to generate a near-census of private recreational red snapper fishing effort. Dr. Mickle described the channeling of effort due to limited ingress/egress points to offshore waters through barrier island passes, and Mississippi's high degree of enforcement. Further, though TnS doesn't run year-round, non-compliance outside of the MDMR-established season is estimated to be low.

SSC Discussion and Recommendations

The SSC discussed the necessity for a commensurate way of determining catch and effort, while also recognizing the differences inherent between the states and how they survey their anglers. The assertion in the NMFS white paper on the use of recreational data for management and stock assessments (*Recommended Use of the Current Gulf of Mexico Surveys of Marine Recreational Fishing in Stock Assessments*) that MRIP-FES represents the best scientific information available was debated. The SSC also agreed that scaling a state's data to MRIP-FES is not the same as calibrating those data, and that scaling to MRIP-FES is tantamount to using the MRIP-FES data.

Some SSC members concurred that it is possible that, perhaps in some cases, the state surveys are doing a better job of quantifying catch and effort than MRIP-FES

Dr. Barbieri postulated developing an integrated approach of including the state data in MRIP, thereby supplementing MRIP with the state surveys, which were specifically designed to improve upon catch and effort estimation over MRIP-FES. Dr. Mickle called the SSC's attention to the background materials for this meeting, with particular attention to the summary of the fourth red snapper calibration workshop (*Item VIIIa: Red Snapper IV Workshop Summary from September 2018*). This document describes multiple ways of approaching calibrating the recreational red snapper catch and effort data Gulf-wide for quota monitoring and stock assessments, including proposals for various modeling efforts.

It was suggested that the spatiotemporal application of the state surveys may be more appropriate than MRIP-FES for monitoring recreational red snapper catch and effort. However, the SSC has previously, for other species, noted that MRIP-FES represented the best scientific information available, and that the disparities between the state surveys and MRIP-FES vary by state due to fundamental differences in survey design. SSC members discussed whether the calibration approach was the best option available in the short-term, as it would result in a commensurate data currency for fisheries management and stock assessment purposes.

Results of Individual State Calibrations and State Specific Annual Catch Limits

Mr. Jeff Pulver from the NMFS Southeast Regional Office (SERO) presented the methodology used to calculate the MRIP FES:CHTS calibrations ratios for Alabama, Louisiana, Mississippi, and Florida. The current red snapper catch limits (overfishing limit, acceptable biological catch, and ACLs) were established using MRIP-CHTS data; further, quota monitoring is currently performed using MRIP-FES. Therefore, a calibration from MRIP-FES to CHTS is necessary for quota monitoring in the same data currency as the current catch limits. For Alabama and Louisiana, a single ratio was calculated between the state and MRIP-CHTS surveys. Florida and Mississippi required a ratio between MRIP-FES to the respective state surveys, and a ratio from MRIP-FES to MRIP-CHTS. The ratio calculated for Alabama was updated from the one presented during the August 5, 2020, workshop to now include finalized MRIP-CHTS landings from 2019.

Alabama's Snapper Check to MRIP-CHTS ratio was calculated from the ratio of the means of the 2018-2019 pounds, and was equal to 0.4875, which reduced the state's ACL from 1,122,662 pounds (lbs) whole weight (ww) to 550,104 lbs ww. Louisiana's LA Creel ratio to MRIP-CHTS was equal to 1.06, which increased Louisiana's ACL from 816,223 lbs ww to 865,207 lbs ww.

For Florida and Mississippi, estimates were developed from preliminary state to MRIP:FES ratios, followed by calculating the FES:CHTS ratios. Average annual landings from two time periods were used to develop preliminary FES:CHTS ratios: three-year (i.e., 2015-2017) and five-year (i.e., 2015-2019) averages. Mr. Pulver also presented the number of MRIP-FES completed surveys for Alabama, Louisiana, Mississippi, and Florida. Overall, the number of surveys has increased during the last five years. The MRIP-FES response rate for the mail survey was approximately 30-35% for the four states. Comparatively, the MRIP-CHTS response

rate decreased during the years 2015-2017, while the number of surveys attempted remained stable. Between Alabama, Florida, and Mississippi, the latter had the least number of primary mode intercepts with red snapper (average of 43 intercepts). Alabama had an average of 196, and Florida an average of 153 intercepts from 2015-2019.

The FES:CHTS ratios estimated for Florida were: 2.79 (2015-2017) and 2.99 (2015-2019). The FES:CHTS ratios estimated for Mississippi were: 2.25 (2015-2017) and 2.03 (2015-2019). Mr. Pulver noted that the PSE for Mississippi landings in 2015 was greater than 50, but that it decreased in subsequent years. Mr. Pulver then presented calculations for state quotas based on their ratio estimates. Florida, with a GRFS:FES ratio of 0.38, had an ACL increase from 1,913,451 lbs ww to 2,028,641 lbs ww (2015-2017 average) or 2,174,062 lbs ww (2015-2019 average). Mississippi's ACL was recalculated using the preliminary MRIP-FES to TnS of 5.86, resulting in a decrease from 151,550 lbs ww to 58,189 lbs ww (2015-2017) or 52,499 lbs ww (2015-2019).

The SSC inquired if the difference in coastal areas between the states had an influence in the number of surveys conducted. Dr. Mickle spoke of the level of detail in the TnS survey, which includes surveying anglers using both public and private access points. The SSC recognized that the difference in methodology by the state and federal surveys should be explored further, as to not penalize a state when the difference after calibration greatly reduce the state's quota. The SSC also recommended exploring sources of bias related to season duration, as well as the influence of out-of-state anglers.

SSC Discussion and Recommendations

Dr. Mickle cautioned treating TnS and MRIP-FES, or any of the state surveys, as being equal in terms of each survey's precision in its estimates of catch and effort. The state surveys have been designed by each state for each state, and as such perform differently compared to each other and to MRIP-FES. SSC members thought that simply scaling the state surveys to MRIP-FES didn't seem to be the answer, and supported further studies to investigate alternative methods of calibration. Dr. Cody identified another potential unknown in all of the surveys, which is the private access component, which is not captured by APAIS intercepts. Mr. Mareska countered that the requirement to report every trip in Alabama and Mississippi is a fundamental difference in those states' surveys versus MRIP-FES, which is capturing a portion of the private vessel catch and effort. Dr. Mickle added further that Mississippi will operate a program by where dockside samplers visit private access points at anglers' homes to count and measure fish when allowed.

Workshop Summary of Tasks for Gulf Transition Team

Revisiting and Updating Calibrations

Dr. Cody reviewed the participants on the MRIP transition team, and thought that a subgroup of that body would be appropriate for continually reviewing the calibrations. This includes revisiting and updating preliminary calibrations.

Transparency in Data Delivery, Management, Accessibility, and QA & QC

A primary concern for the transition team needs to be transparency and quality assurance when navigating this process. The involvement of the Gulf States Marine Fisheries Commission in this transition is strongly suggested as they already house some state data and have a history of working with state agencies; this may also maximize efficiency through more direct state involvement.

Future Research

The SSC thought that the MRIP transition team should consider integrative research approaches. Several ongoing pilot studies could affect survey estimates; changes to these recreational fishing surveys need to be coordinated to minimize disruptions in stock assessments and management processes. The MRIP transition team may be useful in tackling these tasks in a more formal process that still allows for collaboration.

Examining Drivers for Differences between Survey Estimates

The SSC reiterated the importance to elucidate the differences in survey methodology among states, in addition to the differences between state and federal surveys. Dr. Cody reminded the SSC that the calibration process should include determining the drivers behind the differences in the various survey methods and also mentioned that this will likely not be the last calibration process; as more data become available, they can be used to revisit calibration procedures to see how well data streams match. He also added that MRIP is not a static survey.

SSC Discussion and Recommendations

Dr. Patterson preferred separating the idea of scaling the state survey estimates to the federal estimates from the idea of survey certification, adding that what survey "certification" means should be made clear. Further, Mississippi's survey, which appears to be a near-census of that state's in-season catch and effort, should be examined for opportunities to carry forward in future survey efforts.

Dr. Barbieri stated that the Council is requesting guidance from the SSC on how to proceed with monitoring and management of private recreational red snapper. Progress on the issue of these data calibrations will be necessary to satisfy management requirements. SSC members discussed and dismissed the inclusion of consideration of Texas in any recommendations, since no ability to calibrate Texas' survey to MRIP currently exists. The ratios and years of data used for the state-specific ratios were also discussed, with consideration given to consistency in time series.

> **Motion:** The SSC considers the methods proposed to generate conversion ratios between Gulf state surveys and MRIP data as appropriate for quota monitoring of the red snapper state specific ACLs. Specifically, these methods consist of:
>
> FL: GRFS to CHTS ratio of 1.0602 (2015-2017)

AL: Snapper Check to CHTS ratio of 0.4875 (CHTS data for 2018-2019)[22]
MS: Tails n' Scales to CHTS ratio of 0.3840 (2015-2017)
LA: LA Creel to CHTS ratio of 1.06 (2015)

Motion carried with 1 abstention.

Mr. Blanchet noted that the original version of "*Recommended Use of the Current Gulf of Mexico Surveys of Marine Recreational Fishing in Stock Assessments*" (NMFS white paper) was intended to be updated as new information became available. Dr. Cody replied that an updated version of the document is complete but had not yet been published as of this meeting; this updated version corrects errors identified previously by Louisiana and Florida.

Public Comment

None received.

Other Business

No other business was brought before the SSC.

The meeting was adjourned at 3:45 pm on August 11, 2020. Because all agenda items were completed on August 11, the SSC did not reconvene on August 12.

A list of all meeting participants can be viewed here.

[22] Alabama's ratio is based on pounds of fish

APPENDIX B. SUMMARY OF PUBLIC COMMENTS RECEIVED

APPENDIX C. OTHER APPLICABLE LAWS

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for management of stocks included in fishery management plans in federal waters of the exclusive economic zone. However, management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making include the Endangered Species Act and Marine Mammals Protection Act (Section 3.3), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Section 3.5.2). Other applicable laws are summarized below.

Administrative Procedure Act

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

Coastal Zone Management Act

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

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

Data Quality Act

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

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

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

Fish and Wildlife Coordination Act

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

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

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, (Public Law 89-665; 16 U.S.C. 470 *et seq.*) is intended to preserve historical and archaeological sites in the United States of America. Section 106 of the NHPA requires federal agencies to evaluate the impact of all federally funded or permitted projects for sites listed on, or eligible for listing on, the National Register of Historic Places and aims to minimize damage to such places.
Typically, fishery management actions in the Gulf are not likely to affect historic places with exception of the *U.S.S. Hatteras*, located in federal waters off Texas, which is listed in the National Register of Historic Places. Lane snapper fishing does occur off Texas; therefore, the proposed actions are a part of the normal fishing activities that occur at this site. Thus, no additional impacts to the *U.S.S. Hatteras* would be expected.

Executive Orders (E.O.)

E.O. 12630: Takings

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

E.O. 12962: Recreational Fisheries

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

E.O. 13089: Coral Reef Protection

The E.O. on Coral Reef Protection requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems and, to the extent permitted by law, ensure actions that they authorize, fund, or carry out do not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).
Regulations are already in place to limit or reduce habitat impacts within the Flower Garden Banks National Marine Sanctuary. Additionally, NMFS approved and implemented Generic Amendment 3 for Essential Fish Habitat (GMFMC 2005), which established additional habitat areas of particular concern (HAPC) and gear restrictions to protect corals throughout the Gulf. There are no implications to coral reefs by the actions proposed in this amendment.

E.O. 13132: Federalism

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

No Federalism issues were identified relative to the action to modify the management of lane snapper. Therefore, consultation with state officials under E.O. 12612 was not necessary.

E.O. 13158: Marine Protected Areas

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