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Modifications to the Size Limit for Gulf Lane Snapper

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

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Type of Action

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
AM	accountability measures
BiOp	Biological Opinion
Council	Gulf of Mexico Fishery Management Council
CFpA	Cash flow per angler
CS	Consumer surplus
CZMA	Coastal Zone Management Act
DPS	Distinct Population Segment
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EIS	environmental impact statement
EJ	environmental justice
ESA	Endangered Species Act
FES	Fishing Effort Survey
FL	Fork Length
FMP	Fishery Management Plan
GDP	Gross domestic product
GMFMC	Gulf of Mexico Fishery Management Council
HAPC	Habitat Areas of Particular Concern
IA	interim analysis
IFQ	Individual fishing quota
IPCC	Intergovernmental Panel on Climate Change
LA Creel	Louisiana Department of Wildlife and Fisheries' recreational creel survey
lb	pounds
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MPA	Marine Protected Area
MRFSS	Marine Recreational Fishery Statistic Survey
MRIP	Marine Recreational Information Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NODC	National Oceanographic Data Center
OY	Optimum Yield
PS	Producer surplus
PW	Product weight
Reef Fish FMP	Fishery Management Plan (FMP) for the Reef Fish Resources in the Gulf
RFA	Regulatory flexibility analysis
RIR	Regulatory impact review (RIR)
RQ	Regional Quotient

Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional office
SOI	Segments of interest
SRHS	Southeast Regional Headboat Survey
SSRG	Social Sciences Research Group
SF	Sustainable Fisheries
TIP	Trip interview program
TL	Total Length
TNR	Trip Net Revenue
TPWD	Texas Parks and Wildlife Department's Marine Sport-Harvest
WTP	Willingness to pay
ww	Whole Weight

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CHAPTER 1. INTRODUCTION

1.1 Background

Gulf of America[1] lane snapper is managed under the Fishery Management Plan (FMP) for the Reef Fish Resources in the Gulf (Reef Fish FMP), and catch limits are set for the stock, with no allocation between the commercial and recreational sectors. The National Marine Fisheries Service (NMFS) manages harvest of the Gulf lane snapper stock by monitoring the commercial and recreational landings and preventing further harvest when the total annual catch limit (ACL) is projected to be met. In 2021, NMFS implemented a framework action that modified the lane snapper overfishing limit (OFL), acceptable biological catch (ABC), and stock ACL, and modified the accountability measure (AM) provision to require a prohibition on harvest for the remainder of the fishing year if lane snapper landings meet or are projected to meet the stock ACL (GMFMC 2021b). Prior to this change in the AM, if the stock ACL was exceeded in a given year, NMFS prohibited harvest in the subsequent year when landings were met or were projected to meet the ACL. The lane snapper stock ACL was exceeded in all but one year (2021) between 2016 and 2023. In October 2024, NMFS implemented a framework action to increase the lane snapper OFL, ABC, and stock ACL in response to the 2023 Southeast Data, Assessment, and Review (SEDAR) 49 interim analysis (IA) for Gulf lane snapper (GMFMC 2024). Although the lane snapper stock ACL was increased in 2024, the stock ACL was still projected to be harvested early and lane snapper was closed to harvest for the remainder of the year on November 26.

This framework action considers modifications to the lane snapper size limits and recreational bag limits in an effort to slow harvest of the stock ACL, extend the fishing season by reducing the likelihood of a closure, and to reduce the likelihood of exceeding the stock ACL and the OFL. The current size limit for Gulf lane snapper is 8 inches total length (TL). Lane snapper does not currently have a species-specific bag limit, but is included in the reef fish aggregate bag limit of 20 fishes.

Landings for the commercial and recreational sectors from 2003 through 2023 in both pounds (lb) whole weight (ww), and as a percentage of the total landings, are shown in Table 1.1.1. Recreational landings were monitored Marine Recreational Fishery Statistics Survey (MRFSS) units prior to 2021 and Marine Recreational Fishing Program (MRIP) Fishing Effort Survey (FES) units from 2021 to now[2]. In terms of poundage, the commercial sector's landings have shown a slight decreasing trend since 2003; the recreational sector's landings have shown an increase beginning in 2016, with some fluctuations (Figure 1.1.1). The fishery experienced

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

[2] Although both MRFSS and MRIP-FES generate estimates measured in pounds of fish, these estimates are not directly comparable because FES generates larger estimates than MRFSS. The references to "MRFSS units" and "MRIP-FES units" signify that the estimates use different scales.

closures in 2019 (December 13), 2021 (closed October 18 and reopened December 23[3]), 2022 (November 15), and 2024 (November 26).

Table 1.1.1. Landings of lane snapper (lb ww) by sector from 2012-2023, by weight (lb ww), and ACL values. Prior to 2021, recreational landings were managed using MRFSS units.

Year	Recreational Landings (lb ww)	Commercial Landings (lb ww)	Total Landings	ACL MRFSS (lb ww)	ACL FES (lb ww)
2012	149,233	28,928	178,161	301,000	
2013	223,136	23,189	249,325	301,000	
2014	234,729	30,164	264,893	301,000	
2015	233,702	46,016	279,718	301,000	
2016*	266,733	34,678	301,411	301,000	
2017*	536,396	42,617	579,013	301,000	
2018*	312,882	26,435	339,317	301,000	
2019*	358,682	24,058	382,740	301,000	
2020*	334,938	23,700	358,638	301,000	
2021	381,360	24,352	405,712		1,028,973
2022*	1,113,580	16,180	1,129,760		1,028,973
2023*	1,125,173	28,217	1,153,390		1,028,973

*Denotes years with landings exceeding ACL

[3] In 2021, the fishery reopened on December 23 upon implementation of a higher ACL.

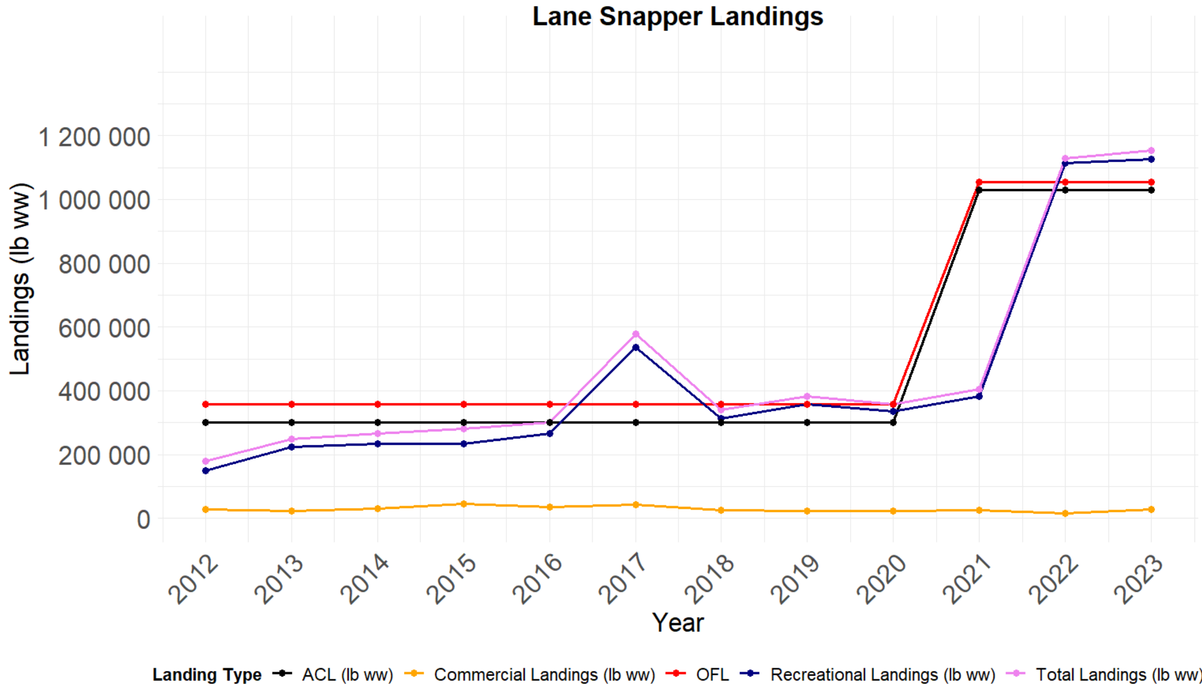

Figure 1.1.1. Recreational, commercial, and total landings in lb ww of Gulf lane snapper from 2012 to 2023. Values are in MRFSS units from 2012-2020 and in FES units from 2021-2023.

1.2 Purpose and Need

The purpose of this framework action is to modify the lane snapper size limit to better constrain harvest to the stock ACL. Additionally, this framework action is intended to prevent in-season closures by reducing lane snapper landings.

The need is to decrease the likelihood of overfishing the Gulf lane snapper stock consistent with National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act.

1.3 History of Management

The original Reef Fish FMP, implemented in November 1984, was designed to rebuild declining reef fish stocks. It included prohibitions on the use of fish traps, roller trawls, and powerhead-equipped spear guns within an inshore stressed area, and data reporting requirements.

Amendment 1 (GMFMC 1990), implemented in February 1990, set objectives to stabilize long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age fish to achieve at least 20% spawning stock biomass per recruit by January 1, 2000. It also set a 10-snapper recreational bag limit on snappers in aggregate, excluding red, lane, and vermilion snapper; allowed a two-day possession limit for charter vessels and headboats on trips that extend beyond 24 hours; established a commercial reef fish vessel permit, set size limits for some reef fish species, including an 8-inch total length minimum size for lane snapper, and implemented several other measures related to the commercial reef fish fishery..

The Generic ACL/AM Amendment (GMFMC 2011a), established a lane snapper OFL (358,000), ABC (301,000 lb), and stock ACL, which was set equal to the ABC based on the Council's ACL/ACT Control Rule. It also established the post-season AM that required NMFS to monitor landings the year following an overage of the ACL and prohibited harvest when landings met or were projected to meet the ACL.

In 2021, NMFS implemented a framework action that increased the lane snapper OFL to 1,053,834 lb, and the ABC and stock ACL to 1,028,973 lb (GMFMC 2021b). These increases were based on the results of the SEDAR 49 Update (2020), which showed an increase in stock abundance and used MRIP-FES estimates for recreational landings. The AM was modified to require an in-season closure in any year upon NMFS' projection that the ACL has been met.

In 2024, NMFS implemented a framework action that increased the OFL to 1,116,331 lb, and increased the ABC and stock ACL to 1,088,873 lb (GMFMC 2024). This resulted in an overall increase in the allowable harvest of 59,900 lb. These increases in the catch limits were based on the results of the SEDAR 49 IA.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 - Modify the size limit for recreational and commercial Gulf lane snapper

Alternative 1: No Action. Maintain the current recreational and commercial size limit of 8-inch total length (TL) for Gulf lane snapper.

Preferred Alternative 2: Modify the recreational and commercial size limit to 10-inch TL for Gulf lane snapper.

Alternative 3: Modify the recreational and commercial size limit to 12-inch TL for Gulf lane snapper.

Discussion:

Landings of Gulf lane snapper exceeded the stock annual catch limit (ACL) in seven of the eight years between 2016 and 2023, and the species has experienced overfishing in 2022 and 2023. As a result, the Gulf of Mexico Fishery Management Council (Council)[4] is considering management measures to reduce the likelihood of exceeding the stock ACL and the overfishing limit (OFL). Stakeholders have expressed an interest in a year-round open season for Gulf lane snapper while constraining landings to the stock ACL. An increase in the minimum size limit may achieve the Council's intended goal to slow the harvest rate and reduce the likelihood of in-season closures and exceedance of catch limits.

Data from 2021-2023 from the Texas Parks and Wildlife Department's Marine Sport-Harvest Monitoring Program (TPWD), Louisiana Department of Wildlife and Fisheries' recreational creel survey (LA Creel), National Marine Fisheries Service (NMFS) Southeast Region Headboat Survey (Headboat), and NMFS Marine Recreational Information Program (MRIP) were utilized (Appendix B) to analyze Gulf lane snapper landings by size. Across all Gulf states, recreational landings of lane snapper between 8- and 10-inches TL were highest; with lower percentages of catch above 12 inches (Figure 2.1.1). In contrast, lane snapper landed by the commercial sector are generally larger than the current minimum size limit of 8-inches TL. Only approximately 5% of total landings from 2021 to 2023 were below 10 inches (Figure 2.1.2, Table 4.2.2).

[4] This framework action retains the name of the Council as established by the Magnuson-Stevens Act. See 16 U.S.C. § 1852(a)(1)(E).

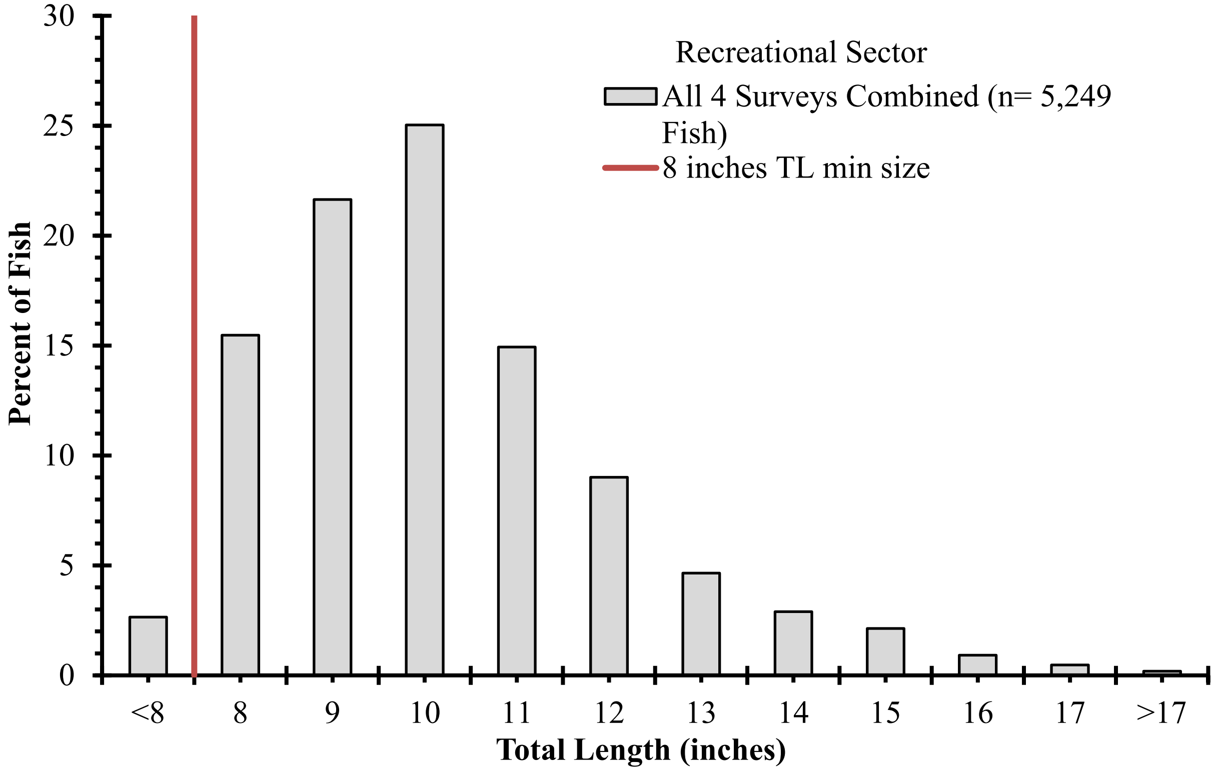

Figure 2.1.1. Distribution of the Gulf lane snapper harvested by the recreational sector by size. Source: Data come from the recreational intercept data from TPWD, LA Creel, SRHS, and MRIP from 2021 through 2023. The red line denotes the current minimum size limit of 8 inches TL.

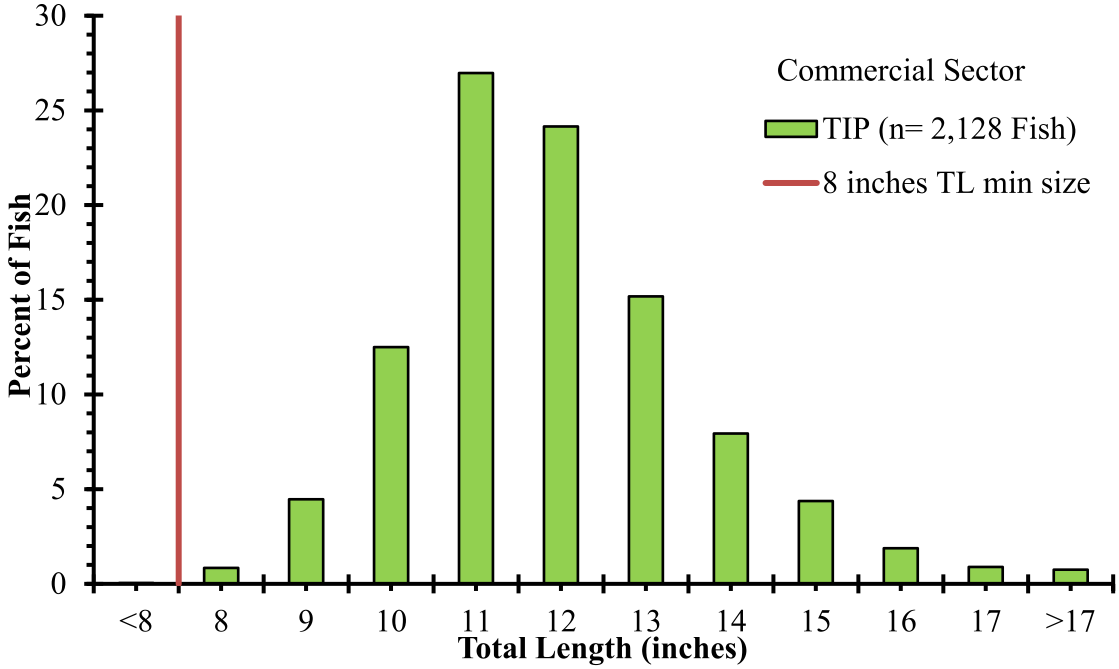

Figure 2.1.2. Distribution of the Gulf commercial lane snapper harvested by size. Source: Data come from the trip interview program (TIP) program from 2021 through 2023. The red line is the current minimum size limit of 8 inches TL.

Alternative 1 would maintain the current 8-inch TL minimum size limit. Southeast Data, Assessment, and Review 49 (SEDAR 49) used 9.1 inches TL as the length at which 50% of females achieved sexual maturity (L50) based on Freitas et al. (2014). Recent literature estimated L50 for females at 27 cm or ~10.7 in TL (Fernandez et al, 2022). **Preferred Alternative 2** (10-inch TL) and **Alternative 3** (12-inch TL) consider larger size limits that increase the age and likelihood of individuals reaching sexual maturity before allowable harvest by the fishery. Increasing the minimum size limit may also reduce the proportion of retained catch and thereby slow the harvest rate for the recreational sector.

Preferred Alternative 2 is likely to slightly reduce commercial landings given the small percentage of harvest under 10 in TL, ~5% (Figure 2.1.2). The recreational sector is likely to experience a larger percent reduction in landings given the size distribution of landings observed between 2021-2023 under **Preferred Alternative 2**. In the recreational sector, ~15% of fish landed were 8-inches TL, and ~22% of fish landed were 9-inches TL from 2021-2023 (Figure 2.1.1). The reduction in landings for both the commercial and recreational sector under **Preferred Alternative 2** is estimated to reduce the likelihood of in-season closures and constrain harvest to the ACL (Table 4.2.1 and Table 4.2.3). **Alternative 3** would result in much larger reduction in landings for recreational and commercial sectors (Table 4.2.2 and Table 4.2.3). The percent of landings and fish harvested over 12-inches TL for both the recreational and commercial sector are much lower than those in the 10-12 inch TL size range. **Alternative 3** would meet the intended goal of reducing in-season closures and constrain harvest to the ACL.

Preferred Alternative 2 and **Alternative 3** would increase the minimum size limit relative to **Alternative 1**, and may constrain harvest to the stock ACL which would reduce the likelihood of in-season closures. Reduction in landings under **Alternative 3** are estimated to be much larger than the reduction in landings under **Preferred Alternative 2**.

Increase in size limit of lane snapper under **Preferred Alternative 2** and **Alternative 3** would likely increase regulatory discards. However, lane snapper experiences a low discard mortality rate (0.05-0.15; SEDAR 49) because this species is generally caught in shallow water and therefore does not experience barotrauma or injury caused by a change in air pressure (SEDAR 49 2016). The likelihood of increased discards under **Preferred Alternative 2** and **Alternative 3** is not anticipated to have a substantial impact to the stock given the depths at which they are generally caught and the low discard mortality rate.

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Description of the Affect 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 (National Oceanographic Data Center [NODC], 2012[5]). Daily mean temperatures in the Gulf ranged from approximately 70º F--88º F from 1984 – 2023, with an average annual temperature ranging from approximately 79º F--81º F with no discernable trend over the same time period (NOAA Physical Oceanography Division of the Atlantic Oceanographic and Meteorological Laboratory, data from June 13, 2023). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

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

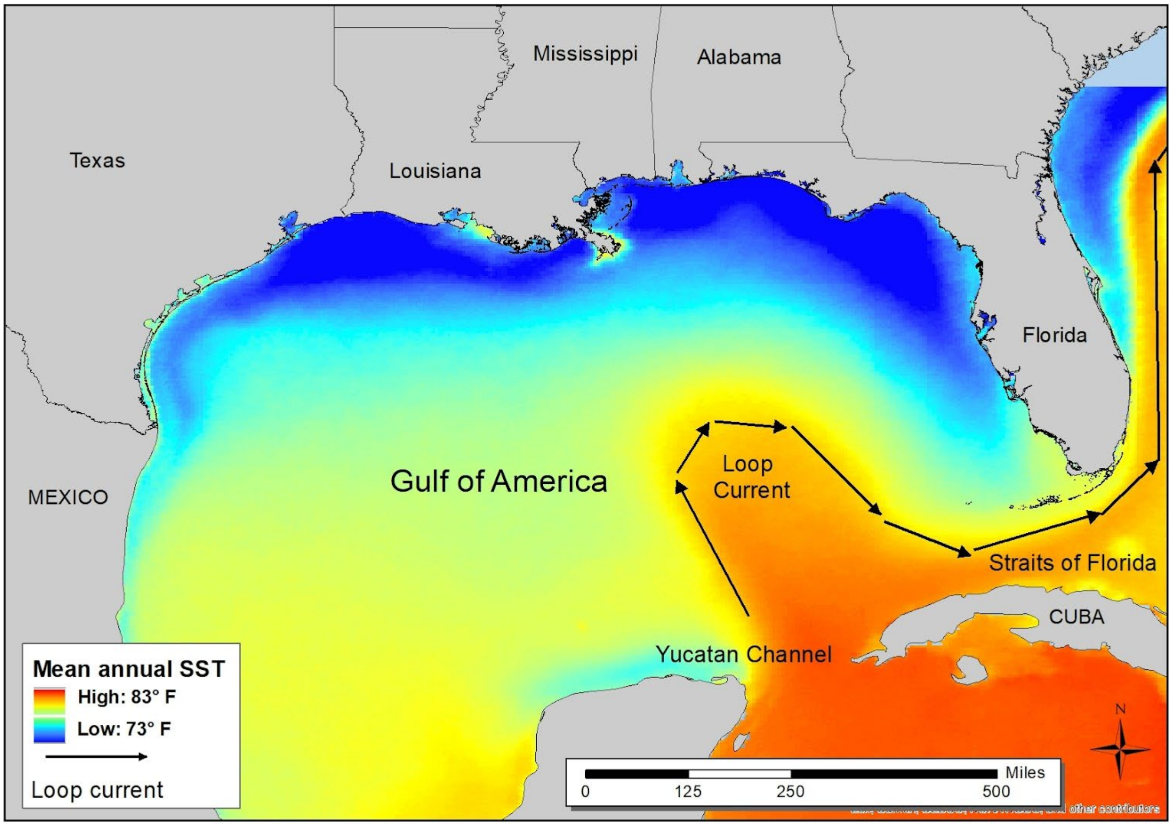

Figure 3.1.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High-Resolution Radiometer Pathfinder Version 5 sea surface temperature data set http://accession.nodc.noaa.gov/0072888.

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). Included in these are the Madison-Swanson and Steamboat Lumps (219 square nautical miles combined) marine protected areas (MPAs), which are sited on gag spawning aggregation areas. A 2021 framework action to the Reef Fish FMP (GMFMC 2020) and final rule prohibited all fishing year-round in 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[6], see Section 3.2.2 below.

3.2 Description of the Affected Biological Environment

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

3.2.1 Lane Snapper Life History and Biology

Distribution

Lane snapper occurs off the east coast of the United States from North Carolina down to the southern coast of Brazil, and is found throughout the Caribbean and Gulf (Allen 1985). Lane snapper is common in a variety of habitats, ranging from coral reefs to brackish waters near shore. It typically frequents waters between 30 m and 120 m of depth (Thompson and Munro 1974). Juveniles are often found inshore near seagrass beds that they utilize as a nursery habitat. Adults utilize a variety of habitats including natural and artificial reefs both in coastal and offshore waters (Bortone and Williams 1986). Spawning occurs offshore from March through September, with a peak in activity from June through August (Manooch and Mason 1984). Females typically produce up to about one million pelagic eggs (Rodriguez-Pino 1962). Larvae are planktonic, and peak abundance is seen in July through September when

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6 http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm

water temperatures are the highest (D'Alessandro et al. 2010). Post-larval stage fish move into estuarine habitat and are commonly found over seagrass beds.

Age/Growth

Aiken (2001) estimated a maximum age of at least 12 years for lane snapper. However, regional differences in size and age structure have been observed (SEDAR 49 2016), and further studies have documented individuals reaching ages up to 19 years. A growth curve, based on fractional ages and observed fork lengths (FL) at capture, was modeled using the von Bertalanffy growth model for the SEDAR 49 stock assessment.

Reproduction

Lane snapper spawns from March through September (D'Alessandro et al. 2010). Fifty percent of individuals are estimated to attain maturity by 268 mm FL (11 inches FL) for males and 221 mm FL (9 inches FL) for females (Aiken 2001). The SEDAR 49 stock assessment used a similar measurement of 9.1 inches TL as the length at which 50% of females achieved sexual maturity (L50) based on Freitas et al. 2014. However, that estimate is lower than from a recent study (Fernandez et al. 2022) which estimated L50 for females at 27 cm or ~10.7 in TL.

Natural Mortality

The life history working group convened as part of the SEDAR 49 assessment recommended natural mortality estimate where M = 0.33.

Distribution and Status of the Lane Snapper Stock

Lane snapper is managed as a single stock in the Gulf. The majority of Gulf lane snapper are landed in shallow waters, where there is high survivorship of discards, and the discard mortality is estimated to be low at between 0.05-0.15% (SEDAR 49 2016). A review of the stock identification and delineation was conducted as part of the stock assessment (SEDAR 49). There is evidence of two genetically distinct stocks in the northern Gulf based on microsatellite alleles: a western stock which includes individuals from the northwestern and northcentral Gulf and an eastern stock that includes individuals from the west coast of Florida, the Florida Keys, and the Atlantic coast of Florida (Karlsson et al. 2009). However, the authors observed no significant difference in stock structure for two closely related lutjanids, Gulf red snapper (*L. campechanus*) (Pruett et al. 2005; Saillant and Gold 2006) and gray snapper (*L. griseus*) (Gold et al. 2009) and found no further compelling evidence indicating that Gulf stocks should be managed separately. Results from the 2019 SEDAR 49 Update indicated that Gulf lane snapper is not overfished and is not undergoing overfishing.

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[7] on a quarterly basis utilizing the most current stock assessment information.

There are currently 31 species managed under the Reef Fish FMP. Stock assessments and status determinations have been conducted and designated for 14 stocks and can be found on the Council[8] and SEDAR[9] websites. Of the 14 stocks for which stock assessments have been conducted and accepted by the SSC, the 2024 Quarter 4 Update Summary of Stock Status for non-FSSI stocks classifies two stocks as overfished (greater amberjack and gag), and two additional stocks (in addition to greater amberjack and gag) as undergoing overfishing (cobia and lane snapper). The status of both assessed and unassessed stocks, as of the writing of this framework is provided on NMFS' Fishery Stock Status Updates webpage[10].

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 (note that the Reef Fish FMP is not part of this 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 2008b, GMFMC 2008b, GMFMC 2011a, GMFMC 2011b), and greater amberjack and gray triggerfish (GMFMC 2008a). 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. For lane snapper, SEDAR 49 (2016) did not estimate bycatch for vertical line and longline gears because of the low assumed discard mortality rate (5-15%). As such, it is expected that bycatch related to this action would be outweighed by the benefit of more fish being discarded due to the size-limit increase.

Protected

Twenty-one species of cetaceans (i.e., whales and dolphins) and the West Indian manatee (*Trichechus manatus*) are known to routinely inhabit the US waters of the GOM. All marine mammals in U.S. waters are protected under the MMPA. Two of the cetacean species, sperm and Rice's whales are listed as endangered under the ESA. Sperm whales are the largest toothed

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[7] http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html
[8] www.gulfcouncil.org
[9] http://sedarweb.org/
[10] https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates

whale species in the world and are found in deep ocean waters far offshore (>200 m). Rice's whales are the only resident baleen whales in the Gulf and one of the rarest marine mammals in the world. Most sightings of Rice's whales have been concentrated in 100–400-meter water depths in the northeastern Gulf off Alabama and the west coast of Florida. Sightings have been documented less frequently in the western Gulf, offshore of Louisiana and Texas. Manatees, which are also listed as threatened under the ESA and the only marine mammal species in the Gulf managed by the U.S. Fish and Wildlife Service, prefer shallow coastal waters.

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

The most recent biological opinion (BiOp) for the Reef Fish FMP was completed on September 30, 2011. The BiOp determined the operation of the Gulf reef fish fishery as managed under the Reef Fish FMP is not likely to adversely affect ESA-listed marine mammals or *Acropora* corals, and was not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish. Additional species, DPSs listed or reclassified, and/or their critical habitat designations since the 2011 BiOp was issued include Northwest Atlantic Ocean loggerhead sea turtle DPS ( ), four species of corals (lobed star, mountainous star, boulder star, and rough cactus) (88 FR 54026), green sea turtle North Atlantic DPS (81 FR 20057), Nassau grouper (81 FR 42268) giant manta ray (83 FR 2916), oceanic whitetip shark (83 FR 4153). NMFS has reinitiated consultation on the FMP to address the other listings and critical habitat designations and determined that fishing under the Reef Fish FMP during the ongoing re-initiation period is not likely to jeopardize any of these species or critical habitats designated 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 also reinitiated consultation on the FMP to address the 2016 listings of the North Atlantic DPS of green sea turtles and Nassau grouper, the 2018 listings of giant manta ray and oceanic whitetip shark, and the 2019 listing of the Gulf Bryde's whale (now Rice's whale, see footnote 13 above). NMFS determined that fishing under the Reef Fish FMP during the re-initiation period is not likely to jeopardize the continued existence of any of these species.

There is no information to indicate marine mammals and birds rely on lane snapper for food, and they are not generally caught by fishermen harvesting lane snapper. The primary gear in the Gulf Reef Fish fishery used to harvest lane snapper is hook-and-line, and they may be occasionally captured on bottom longlines and with spearfishing gear. These gear types are classified in the 2025 Marine Mammal Protection Act Proposed List of Fisheries as a Category III fishery (89 FR 77789; September 24, 2024), meaning the annual mortality and serious injury of a marine mammal resulting from the fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Additionally, there is no evidence that the Gulf lane snapper portion of the reef fish fishery as a whole is adversely affecting seabirds. Dolphins are the only species documented as interacting with the reef fish fishery. Bottlenose dolphin prey upon bait, catch, and/or discarded fish from the reef fish fishery.

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][11]). 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[12] predicts the average sea surface temperature in the Gulf will increase by approximately 2ºC for 2006-2100 compared to the average sea surface temperature from 1956-2005. 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 (Fujiwara et al. 2019) and common snook (Purtlebaugh et al. 2020) are examples of species for which there has been a distributional trend to the north in the Gulf. 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.

3.3 Affected Economic Environment

Additional details on the economic environment of the recreational and commercial sectors of the reef fish fishery are provided in Amendment 48 to the Reef Fish FMP and Amendment 5 to the FMP for the Red Drum Fishery of the Gulf (GMFMC 2021c). Additional details on the economic environment of the recreational and commercial sectors of the lane snapper component

[11] http://www.ipcc.ch/
[12] https://www.esrl.noaa.gov/psd/ipcc/

of the Gulf reef fish fishery are provided in the Modification of the Gulf lane Snapper Catch Limits and Accountability Measures Framework Action (GMFMC 2021b).

Sections 3.3.1 and 3.3.2 contain additional information on the economic environment of the commercial sector and the for-hire and private recreational components of the recreational sector in the Gulf reef fish fishery, with a specific focus on the lane snapper portion of the fishery. This amendment contains management measures that would indirectly affect Gulf lane snapper dealers, and thus additional details on the economic environment of that component of the commercial sector are also provided.

3.3.1 Commercial Sector

Any fishing vessel that harvests and sells lane snapper from the Gulf exclusive economic zone (EEZ) must have a valid Gulf reef fish commercial permit. Commercial Gulf reef fish permits are a limited access permit. After a permit expires, it can be renewed or transferred up to one year after the date of expiration. As of August 26, 2021, there were 814 valid or renewable commercial Gulf reef fish permits. As shown in Table 3.3.1.1, the number of permits that were valid at any point in a given year decreased steadily from 2016-2020. There were approximately 2% fewer valid permits in 2020 relative to 2016.

Table 3.3.1.1. Number of valid Gulf commercial permits for reef fish, 2016-2020.

Year	Number of Permits
2016	852
2017	850
2018	845
2019	842
2020	837

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

Vessels

Not all holders of Gulf commercial permits for reef fish are active each year. The information in Tables 3.3.1.2 and 3.3.1.3 describe the landings and revenue for vessels which, during the 2019-2023 timeframe, possessed a valid or renewable commercial Gulf reef fish permit and were actively fishing. Tables 3.3.1.2 and 3.3.1.3 show the landings and revenue from all reef fish and other species. Additionally, landings and revenue from species harvested in the South Atlantic by these vessels is shown to provide a full accounting of the commercial fishing activity of commercial Gulf reef fish permitted vessels.

The number of permitted commercial Gulf reef fish vessels actively fishing each year has declined overall from 2019-2023, with an 16% decline in active vessels in 2023, relative to 2019. Total landings of reef fish species also declined during this time period, by 5% in 2023 relative to 2019. Landings of jointly caught species on reef fish trips (i.e., trips that harvested any reef fish species) declined by 33% in 2023 relative to 2019. Total landings of all species by permitted commercial Gulf reef fish vessels declined by 8% in 2023, relative to 2019. On average from 2019-2023, reef fish species accounted for 91% of total landings by permitted commercial Gulf reef fish vessels.

Table 3.3.1.2. Number of vessels and landings (lb whole weight [ww]), by year for permitted commercial Gulf reef fish vessels.

Year	Number of Vessels	Gulf Reef Fish Species Landings (ww)	Other jointly caught Species	Other Gulf Landings	Other SATL Landings	Total Landings
2019	517	12,798,571	402,224	639,916	398,620	14,239,331
2020	496	12,188,977	291,988	598,071	220,187	13,299,223
2021	466	12,920,310	323,100	636,864	453,436	14,333,710
2022	439	12,222,101	475,696	517,741	353,830	13,569,368
2023	433	12,146,605	271,428	474,239	264,900	13,157,172
AVG	**470**	**12,455,313**	**352,887**	**573,366**	**338,195**	**13,719,761**

Source: Southeast Fisheries Science Center (SEFSC) Social Science Research Group (SSRG) Socioeconomic Panel (Oct 2024 version).

Overall dockside revenue of reef fish species landed by permitted commercial Gulf reef fish vessels increased slightly during this time period, but by less than a percent in 2023 relative to 2019. Revenue from jointly caught species on Gulf reef fish trips decreased by 27% in 2023, relative to 2019. Revenue from other Gulf species not caught on reef fish trips declined by 5% in 2023, relative to 2019. Revenue from South Atlantic trips decreased by 21% in 2023, relative to 2019. Total gross revenue by permitted commercial Gulf reef fish vessels decreased by 15% overall during this time period. The maximum total revenue earned by a single vessel from all landings during this time period was approximately $3.76 million. On average from 2019-2023, reef fish species accounted for 95% of the total revenue by permitted commercial Gulf reef fish vessels.

Table 3.3.1.3. Number of vessels and revenues (2023$) by year for permitted commercial Gulf reef fish vessels.

Year	Number of Vessels	Reef Fish Revenue	Other jointly caught species w/ Reef Fish Revenue	Other Gulf Revenue	Other SATL Revenue	Total Gross Revenue
2019	517	$69,177,049	$895,720	$1,457,549	$1,556,397	$85,921,581
2020	496	$63,454,497	$651,539	$1,401,527	$872,277	$77,020,166
2021	466	$68,131,145	$764,797	$1,650,027	$1,642,908	$80,088,108
2022	439	$68,102,753	$808,690	$1,220,755	$1,563,938	$74,309,390
2023	433	$69,382,401	$654,656	$1,384,482	$1,234,563	$72,656,102
AVG	**470**	**$67,649,569**	**$755,080**	**$1,422,868**	**$1,374,017**	**$77,999,069**

Source: Southeast Fisheries Science Center (SEFSC) Social Science Research Group (SSRG) Socioeconomic Panel (Oct 2024 version).

The information in Tables 3.3.1.4 and 3.3.1.5 describe the landings and revenue for vessels that harvested Gulf lane snapper in each year from 2019 through 2023, and their revenue from other species. Vessel participation declined 10% from 2019-2023. Total landings of lane snapper, however, increased during this time period by 2%. Landings of other species caught on lane snapper trips increased by 17% in 2023 relative to 2019. Landings of other species not caught on lane snapper trips decreased by 3% in 2023 relative to 2019. Landings in the South Atlantic by Gulf reef fish vessels increased by 65% in 2023 relative to 2019. Lane snapper accounted for less than one percent of total landings by commercial vessels harvesting Gulf lane snapper.

Table 3.3.1.4. Number of vessels and landings (lb ww), by year for Gulf lane snapper vessels.

Year	Number of Vessels	Gulf Lane Snapper Species Landings (ww)	Other jointly caught Species	Other Gulf Landings	Other SATL Landings	Total Landings
2019	296	20,481	3,606,280	5,936,622	83,514	9,646,897
2020	297	20,277	3,964,543	5,738,860	31,909	9,755,589
2021	274	18,994	3,653,167	6,921,517	108,061	10,701,739
2022	228	13,391	3,195,442	6,177,917	107,392	9,494,142
2023	265	20,794	4,217,441	5,739,390	137,942	10,115,567
AVG	**272**	**18,787**	**3,727,375**	**6,102,861**	**93,764**	**9,942,787**

Source: Southeast Fisheries Science Center (SEFSC) Social Science Research Group (SSRG) Socioeconomic Panel (Oct 2024 version).

Dockside revenue of lane snapper increased by 7% from 2019-2022. Revenue from other species caught on Gulf lane snapper trips increased 24% between 2018 and 2022. Revenue from other Gulf species not caught on lane snapper trips increased during this time period by 2%. Revenue from South Atlantic species landings by Gulf lane snapper vessels decreased by 60% during this time period, counter to the increase of South Atlantic species revenue for all Gulf reef fish vessels. The maximum total revenue for a vessel that harvested lane snapper during this time period was approximately $3.76 million (2023$). On average from 2019-2023, lane snapper accounted for less than a percent of the total revenue by commercial vessels harvesting Gulf lane snapper, suggesting there is little financial dependency specifically on Gulf lane snapper landings.

Table 3.3.1.5. Number of vessels and revenues (2022$) by year for Gulf lane snapper vessels. Average (mean) and maximum (max) are of per vessel landings for the year.

Year	Number of Vessels	Lane Snapper Revenue	Other jointly caught species w/ Lane Snapper Revenue	Other Gulf Revenue	SATL Revenue	Total Gross Revenue
2019	296	$71,116	$19,681,104	$30,754,682	$756,165	$51,263,067
2020	297	$67,694	$21,060,801	$28,570,820	$834,157	$50,533,473
2021	274	$62,030	$19,627,751	$35,244,861	$630,738	$55,565,381
2022	228	$48,551	$17,963,703	$33,312,229	$461,508	$51,785,992
2023	265	$75,835	$24,351,070	$31,313,480	$303,493	$56,043,878
AVG	**272**	**$65,045**	**$20,536,886**	**$31,839,215**	**$597,212**	**$53,038,358**

Source: Southeast Fisheries Science Center (SEFSC) Social Science Research Group (SSRG) Socioeconomic Panel (Oct 2024 version).

Economic Value

Changes in commercial lane snapper landings may result in economic effects because of potential changes in ex-vessel prices due to less (or more) domestic lane snapper being available in markets. In turn, if the ex-vessel price is expected to change, gross revenue and thus consumer surplus (CS) would also be expected to change. The potential effects on ex-vessel price, gross revenue, and CS can be estimated utilizing the work by Asche (2020). According to the results of the inverse almost ideal demand system, Asche (2020) estimated a Marshallian own-price flexibility for "other snappers," inclusive of lane snapper, of -0.340. The own-price flexibility is the percentage change in a product's price relative to the percentage change of a product's quantity sold, and thus estimates the responsiveness of a product's price to the quantity being sold. The own-price flexibility estimate in Asche (2020) is not compensated for income. An income-compensated estimate would likely be lower, which would in turn yield smaller changes in the ex-vessel price and thus smaller changes in gross revenue and producer surplus (PS)[13]. Thus, any estimates based on their analysis should be considered maximum expected changes in ex-vessel price, gross revenue, and CS in the commercial sector.

Estimates of economic returns are not directly available for the lane snapper commercial sector in the Gulf. The most recent analysis, which calculated estimates of economic returns for Gulf commercial fishing vessels was performed by Liese (2023). Liese (2023) calculated economic returns for commercial Gulf reef fish vessels and other segments of interest (SOI). In most cases, these SOIs are at the species or species group and/or at the gear-level, such as lane snapper

[13] Producer surplus is the difference between total annual revenue and variable costs.

or longline trips. Liese (2023) produced estimates for a Gulf Reef Fish[14] SOI, which can be used as a proxy for lane snapper estimates. These estimates are specific to economic performance in 2014-2018. The analysis also provides average estimates of economic returns across 2014-2018, which are the most useful for this purpose. Estimates in the analysis are based on a combination of Southeast Coastal Logbook data, a supplemental economic add-on survey to the logbooks, and an annual economic survey at the vessel level. The economic surveys collect data on gross revenue, variable costs, fixed costs, and some auxiliary economic variables (e.g., market value of the vessel). The analysis provides estimates of critical economic variables for the commercial sector in the Gulf reef fish fishery. In addition, estimates are provided at the trip level and the annual vessel level, of which the latter are most important for this purpose. Findings from the analysis are summarized below.

Table 3.3.1.6 illustrates the economic "margins" generated on Gulf reef fish trips, i.e., trip net cash flow and trip net revenue as a percentage of trip revenue. As shown in this table, 16% and 33.3% (or 49.3% in total) of the average revenues generated on Gulf reef fish trips were used to pay for fuel/supplies costs and crew labor costs, while the remaining 38% was net cash flow back to the owner(s). The margin associated with trip net revenue is about 51%. Thus, trip cash flow and trip net revenue were both positive on average from 2014 through 2018, generally indicating that Gulf reef fish trips were profitable during this time.

From an economic returns perspective, the two most critical results at the trip level are the estimates of trip net cash flow and trip net revenue. Trip net cash flow is trip revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and purchases of annual allocation from other allocation holders. Thus, this estimate represents the amount of cash generated by a typical Gulf reef fish trip over and above the cash cost of taking the trip (i.e., variable costs of the trip). Trip net revenue is trip revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and the opportunity cost of the owner's time as captain. By including opportunity cost of the owner's time and excluding purchases of annual allocation, trip net revenue is a measure of the commercial fishing trip's economic profit.

[14] Per Liese (2023) the Reef Fish SOI "consists of all logbook trips by permitted vessels where at least one pound of a reef fish species managed by the Gulf Reef Fish FMP was landed."

Table 3.3.1.6. Economic characteristics of Gulf Reef Fish trips 2014-2018 (2023$).

	2014	2015	2016	2017	2018	Average
Number of Observations	1,237	1,787	1,955	1,943	1,448	
Response Rate (%)	78%	85%	94%	95%	94%	
Trips						
Owner-Operated	73%	65%	68%	61%	70%	67.4%
Fuel Used per Day at Sea (gallons/day)	46	46	40	49	46	45
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	6.8%	4.9%	4.3%	5.1%	5.8%	5.4%
Bait	3.1%	3.4%	3.6%	4.1%	3.9%	3.6%
Ice	1.4%	1.5%	1.7%	1.6%	1.6%	2%
Groceries	2.4%	2.4%	3.1%	3.2%	2.7%	2.8%
Miscellaneous	2.5%	2.4%	3.0%	2.5%	2.5%	2.6%
Hired Crew	28.2%	25.9%	27.0%	27.6%	23.8%	26.5%
IFQ Purchase	15%	27%	19%	19%	20%	20%
Owner-Captain Time	6.5%	6.2%	7.4%	6.4%	7.1%	6.7%
Trip Net Cash Flow	41%	33.0%	38.8%	36.8%	39.5%	38%
Trip Net Revenue	49%	53.2%	49.8%	49.5%	52%	51%
Labor - Hired & Owner	35%	32.1%	34.4%	33.9%	30.9%	33.3%
Fuel & Supplies	16%	14.7%	15.7%	16.6%	16.6%	16%
Input Prices						
Fuel Price (per gallon)	$4.66	$3.33	$2.65	$2.86	$3.20	$3.35
Hire Crew Wage (per crew-day)	$436	$367	$325	$364	$291	$357
Productivity Measures						
Landings/Fuel Use (lb/gallon)	13.3	12.6	11.4	10.7	10.5	12
Landings/Labor Use (lbs/crew-day)	221	204	169	196	176	193

Source: Liese (2023).

Table 3.3.1.7 provides estimates of the important economic variables at the annual level for all vessels that had Gulf reef fish landings from 2014 through 2018. Similar to the trip level, the three most important estimates of economic returns from a financial perspective are net cash flow, net revenue from operations, and economic return on asset value. Of these measures, net revenue from operations most closely represents economic profits to the owner(s). Net cash flow is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, loan payments, and purchases of annual allocation. Net revenue from operations is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner's time as captain, and the vessel's depreciation. Economic return on asset value is calculated by dividing the net revenue from operations by the vessel value.

Net cash flow and net revenue from operations at the annual vessel level were both positive from 2014-2018, generally indicating that commercial Gulf reef fish vessels were profitable during this time. Specifically, net cash flow and net revenue from operations averaged 26% and 32%, respectively.

In general, producer surplus (PS) is the difference between total annual revenue and variable costs. PS is a measure of net economic benefits to producers. Liese (2023) state the following about individual fishing quota (IFQ) allocation: "sale of IFQ allocation or shares is also not accounted for, as these transactions cannot be associated with a vessel." If revenue from the sale of allocation is not accounted for, then the cost of buying allocation should also not be considered in the calculation of PS. Although lane snapper are not part of an IFQ program, many vessels that participate in the commercial sector of the lane snapper component of the reef fish fishery also participate in the Gulf IFQ programs. Therefore, a more accurate estimate of PS in percentage terms would be 51.0% of gross revenue based on estimates of variable costs in Table 3.3.1.7[15].

[15] PS = 100% - (Labor% + Fuel&Supplies%)

Table 3.3.1.7. Economic characteristics of Gulf Reef Fish vessels from 2016-2018 (2023$).

	2014	2015	2016	2017	2018	Average
Number of Observations	84	105	121	132	110	
Response Rate (%)	62%	75%	82%	78%	79%	
Vessels						
Owner-Operated	78%	69%	78%	65%	70%	72%
For-Hire Active	9%	17%	16%	22%	15%	16%
Vessel Value	$159,721	$134,395	$111,461	$139,132	$128,297	$134,601
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	8.4%	6.1%	6.7%	6.8%	8.1%	7.2%
Other Supplies	9.6%	9.4%	10.8%	11.0%	11.8%	10.5%
Hired Crew	26.9%	25.3%	24.5%	25.3%	23.4%	25.1%
Vessel Repair & Maintenance	7.7%	6.9%	8.5%	11.2%	10.6%	9.0%
Insurance	1.1%	0.8%	1.0%	1.2%	1.1%	1.0%
Overhead	5.6%	5.5%	5.1%	6.5%	4.8%	5.5%
Loan Payment	1.0%	1.4%	1.3%	1.3%	1.4%	1.3%
IFQ Purchase	11.1%	24.1%	14.0%	10.6%	15.0%	15.0%
Owner-Captain Time	5.6%	5.4%	6.6%	5.5%	6.6%	5.9%
Net Cash Flow	29.0%	20.6%	28.1%	26.0%	23.8%	26.0%
Net Revenue for Operations	31.0%	37.6%	33.5%	28.4%	29.3%	32.0%
Depreciation	3.7%	3.1%	3.2%	4.0%	4.4%	3.7%
Fixed Costs	14.0%	13.2%	14.7%	18.9%	16.6%	15.0%
Labor - Hired & Owner	33.0%	30.7%	31.1%	30.9%	29.9%	31.0%
Fuel & Supplies	18.0%	15.4%	17.5%	17.9%	19.8%	18.0%
Economic Return (on asset value)	42.1%	60.2%	51.8%	35.8%	33.5%	44.7%

Source: Liese (2023).

Dealers

The information in Table 3.3.1.8 illustrates the purchasing activities of dealers that bought Gulf lane snapper landings from vessels from 2019 through 2023. Additionally, the purchasing activities from species harvested in the South Atlantic by these dealers is shown to provide a full accounting of the purchasing of dealers that bought Gulf lane snapper landings. The total number of dealers purchasing lane snapper declined each year from 2019-2023 and averaged 79 dealers per year. In 2023, the total number of dealers purchasing lane snapper was approximately 20% fewer relative to 2019. Total annual lane snapper purchases by dealers varied during this time period, with a decrease of 39% in 2023 relative to 2019. Purchases of Gulf lane snapper per dealer were approximately $795 (2023$) during this time frame. Purchases of Gulf lane snapper per dealer decreased by 12% in 2023, relative to 2019.

Value of other species purchased decreased by 5% in 2023, relative to 2019. South Atlantic species average value increased by about 4% in 2023, relative to 2019. Total purchases for all species by dealers purchasing Gulf lane snapper averaged approximately $116.4 million (2023$) from 2019-2023. Lane snapper made up approximately less than 1% of total purchases by lane snapper dealers, indicating that there is a very low financial dependency on lane snapper landings. Additionally, because of federal dealers' ability to switch to purchasing other species, changes to those values as a result of the management measures considered in this amendment are likely to be relatively small. Similarly, any additional PS and profit generated from lane snapper sales further up the distribution chain to wholesalers/distributors, grocers, and restaurants is likely minimal, given the vast number of seafood and other products they handle and their even greater ability to shift to purchasing other products.

Estimates on the mark-ups between the ex-vessel price and dealer sales price of lane snapper are unavailable. Keithly and Wang (2016) estimated the most recent mark-ups between the ex-vessel price and dealer sales price. However, those estimates only apply to grouper and tilefish. Further, these are insufficient to estimate PS or profit for lane snapper dealers, or changes to such as a result of regulatory changes, in part because costs other than the raw fish costs (which are equivalent to the ex-vessel value) are not considered. NMFS does not have estimates of those other costs for lane snapper dealers or seafood dealers more broadly, and thus does not have estimates of net cash flow or net revenue from operations for lane snapper dealers comparable to those in the commercial harvesting sector. Thus, while it is likely that the harvest of lane snapper generates some PS and profit for lane snapper dealers, NMFS does not possess the data to estimate PS and profit.

Table 3.3.1.8. Dealer statistics for dealers that purchased Gulf lane snapper landings by year, 2019-2023. All dollar estimates are in 2023$.

Year	Number Dealers	Statistic	Lane Snapper Purchases	Other Gulf Species Purchases	Other SA Species Purchases	Total Purchases
2019	92	Maximum	$8,016	$11,774,272	$4,252,869	$11,774,768
		Mean	$794	$1,090,063	$122,726	$1,213,583
		Total	$73,043	$100,285,788	$11,290,828	$111,649,659
2020	88	Maximum	$9,269	$10,541,741	$4,711,230	$10,542,526
		Mean	$791	$1,084,470	$164,253	$1,249,514
		Total	$69,626	$95,433,398	$14,454,225	$109,957,249
2021	75	Maximum	$6,723	$11,876,694	$5,136,897	$11,876,760
		Mean	$857	$1,528,789	$183,871	$1,713,517
		Total	$64,252	$114,659,188	$13,790,348	$128,513,788
2022	66	Maximum	$6,512	$11,503,713	$4,975,576	$11,503,778
		Mean	$830	$1,480,778	$178,097	$1,659,705
		Total	$62,235	$111,058,384	$13,357,270	$124,477,889
2023	74	Maximum	$6,658	$11,293,996	$7,976,816	$14,022,692
		Mean	$702	$1,514,732	$187,176	$1,702,610
		Total	$44,248	$95,428,108	$11,792,095	$107,264,451

Source: SEFSC Fishing Communities Web Query Tool, Version 1. Accessed 02/10/2025.

Imports

Imports of foreign seafood products compete in the domestic seafood market and have dominated many segments of the domestic seafood market. Imports aid in determining the price for domestic seafood products and tend to set the price in the market segments in which they dominate. Seafood imports can have downstream effects on the local fish market. At the harvest level, imports can affect ex-vessel prices fishermen receive for landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. Imports that directly compete with domestic snapper grouper including lane snapper are described in this section.

Snappers

According to NMFS' foreign trade data, South Atlantic lane snapper and other snapper species are not exported from the U.S. to other countries. Imports of fresh and frozen snapper products, which directly compete with domestic harvest of snapper species are described in this section. As shown in Table 3.3.1.9, imports of fresh snapper products were 32.8 million lb product weight (pw) in 2019. They peaked at 36.0 million lb pw in 2021. Total revenue from snapper imports increased to a five-year high of $164.9 million in 2021 (2023$). The average price per pound for fresh snapper products was $4.39 from 2019-2023 and was increasing, but declined by 9% in 2023, relative to 2021 and 2022. Imports of fresh snapper products primarily originated in Mexico, Nicaragua, or Panama, entering the U.S. through the port of Miami.

Table 3.3.1.9. Annual pounds and value of fresh snapper imports and share of imports by country, 2019-2023. All monetary estimates are in 2023$.

	2019	2020	2021	2022	2023
Pounds of fresh Snapper imports (product weight, million pounds)	32.8	32.4	36.0	32.2	32.1
Value of fresh Snapper imports (millions $, 2023$)	128.3	126.2	164.9	147.4	139.2
Average price per lb (2023$)	$4.06	$4.04	$4.75	$4.75	$4.34
Share of Imports by Country					
Mexico	34.9	40.4	32.8	31.2	32.3
Nicaragua	13.9	15.1	13.3	14.9	14.4
Panama	14.6	11.0	14.0	10.6	10.3
All others	36.6	33.5	39.9	43.4	42.8

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

As shown in Table 3.3.1.10, total revenue from imports of frozen snapper increased from $40.8 million (2023$) in 2019 to a five-year high of $73.9 million in 2021 (2023$) followed by a 44% decrease in 2023. The average price per pound for frozen snapper products was $3.84, down nearly $1.00 per lb from 2021-2022. Frozen snapper product imports primarily originated in Brazil or Suriname, and entered through the port of Miami.

Table 3.3.1.10 Annual pounds and value of frozen snapper imports and share of imports by country, 2019-2023.

	2019	2020	2021	2022	2023
Pounds of frozen Snapper imports (product weight, million pounds)	11.4	15.9	18.2	16.9	11.7
Value of frozen Snapper imports (millions $, 2023$)	40.8	53.8	73.9	69.2	41.5
Average price per lb (2023$)	$3.71	$3.51	$4.20	$4.23	$3.55
Share of Imports by Country					
Brazil	54.6	55.4	58.6	64.1	60.6
Suriname	13.5	10.3	10.5	5.5	12.3
Indonesia	6.8	5.4	3.9	8.0	7.0
All others	25.0	28.9	27.0	22.4	20.1

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

Groupers

According to NMFS' foreign trade data[16], grouper are not exported. Imports of fresh and frozen grouper products, which also directly compete with domestic harvest of snapper grouper species are described in this section. As shown in Table 3.3.1.11, imports of fresh grouper products peaked in 2023. Total value of fresh grouper imports has been increasing in recent years, and averaged $60.0 million annually. The average price per pound for fresh grouper products was $5.27 from 2019-2023 and these products primarily originated from Mexico, Panama, and Brazil.

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

Table 3.3.1.11. Annual pounds and value of fresh grouper imports and share of imports by country, 2019-2023.

	2019	2020	2021	2022	2023
Pounds of fresh Grouper imports (product weight, million pounds)	11.3	10.4	12.2	11.7	12.6
Value of fresh Grouper imports (millions $, 2023$)	59.0	45.2	63.8	65.4	66.6
Average price per lb (2023$)	$5.40	$4.49	$5.40	$5.79	$5.29
Share of Imports by Country					
Mexico	57.9	67.6	54.4	44.0	45.0
Brazil	16.9	12.3	18.1	23.9	19.8
Panama	8.1	8.0	10.9	13.4	12.7
All others	17.0	12.2	16.6	18.7	22.4

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

As shown in Table 3.3.1.12, imports of frozen grouper products peaked at 3.5 million lb pw in 2019 declining to a low of 0.8 million lb. pw in 2020. Total revenue from frozen grouper decreased from 2019 to 2020, but increased to $2.51 million in 2021. The average price per pound for frozen grouper products was $2.04 from 2019-2023. Imports of frozen grouper products primarily originated in Brazil, Suriname, and Indonesia.

Table 3.3.1.12. Annual pounds and value of frozen grouper imports and share of imports by country, 2019-2023.

	2019	2020	2021	2022	2023
Pounds of frozen Grouper imports (product weight, million pounds)	3.5	0.8	2.2	1.3	1.2
Value of frozen Grouper imports (millions $, 2023$)	4.7	1.5	5.3	2.9	2.6
Average price per lb (2023$)	$1.40	$1.91	$2.51	$2.22	$2.17
Share of Imports by Country					
Brazil	79.2	33.7	23.5	26.2	14.0
Suriname	11.2	25.9	30.6	16.2	0.0
Indonesia	3.0	1.1	22.2	5.9	0.0
All others	6.5	39.3	23.7	51.7	86.0

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

Economic Impacts

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

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

Estimates of the U.S. average annual business activity associated with the commercial harvest of all Gulf reef fish species and Gulf lane snapper specifically were derived using the model developed for and applied in NMFS (2024)[17] and are provided in Tables 3.3.1.13 and 3.3.1.14. Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of all Gulf reef fish species and Gulf Lane snapper from 2019 through 2023. This business activity is characterized as jobs (full- and part-time equivalents), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

The results provided should be interpreted with caution. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models specific to individual species such as lane snapper are not available.

Between 2019 and 2023, landings of all Gulf reef fish species resulted in approximately $67.7 million dollars (2023$) in gross revenue on average. In turn, this revenue generated

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

employment, income, value-added, and output impacts of 7,300 jobs, $246.4 million, $348.1 million, and $670.9 million per year, respectively, on average (Table 3.3.1.11).

Table 3.3.1.13. Average annual economic impacts from the commercial harvest of snappers and groupers in the Gulf. All monetary estimates are in thousands of 2023$, and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	1,273	198	262	1,732
Income impacts	$36,524	$6,781	$16,398	$59,704
Total value-added impacts	$38,933	$24,414	$28,057	$91,404
Output Impacts	$67,650	$55,039	$54,468	$177,156
Primary dealers/processors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	265	106	184	555
Income impacts	$11,917	$10,983	$10,388	$33,288
Total value-added impacts	$12,703	$14,014	$19,557	$46,274
Output impacts	$38,357	$28,891	$38,229	$105,477
Secondary wholesalers/ distributors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	123	27	119	269
Income impacts	$7,100	$2,112	$7,467	$16,678
Total value-added impacts	$7,568	$3,542	$12,754	$23,864
Output impacts	$19,016	$6,933	$24,804	$50,754
Grocers	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	527	60	117	704
Income impacts	$14,604	$4,853	$7,330	$26,787
Total value-added impacts	$15,567	$7,819	$12,410	$35,797
Output impacts	$24,960	$12,700	$24,364	$62,024
Restaurants	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	3,284	219	536	4,039
Income impacts	$58,584	$17,768	$33,557	$109,909
Total value-added impacts	$62,448	$31,760	$56,540	$150,748
Output impacts	$114,187	$49,700	$111,570	$275,458
Harvesters and seafood industry	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	5,472	609	1,219	7,300
Income impacts	$128,730	$42,496	$75,140	$246,366
Total value-added impacts	$137,220	$81,549	$129,318	$348,087
Output impacts	$264,171	$153,263	$253,434	$670,868

Between 2019 and 2023, landings of Gulf lane snapper resulted in approximately $65,045 (2023$) in annual gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 7 jobs, $237 thousand, $335 thousand, and $645 thousand per year, respectively, on average, as seen in Table 3.3.1.12.

Table 3.3.1.14. Average annual economic impacts from the commercial harvest or lane snapper in the Gulf. All monetary estimates are in thousands of 2023$, and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	1	0	0	2
Income impacts	$35	$7	$16	$57
Total value-added impacts	$37	$23	$27	$88
Output Impacts	$65	$53	$52	$170
Primary dealers/processors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	0	0	0	1
Income impacts	$11	$11	$10	$32
Total value-added impacts	$12	$13	$19	$44
Output impacts	$37	$28	$37	$101
Secondary wholesalers/ distributors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	0	0	0	0
Income impacts	$7	$2	$7	$16
Total value-added impacts	$7	$3	$12	$23
Output impacts	$18	$7	$24	$49
Grocers	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	1	0	0	1
Income impacts	$14	$5	$7	$26
Total value-added impacts	$15	$8	$12	$34
Output impacts	$24	$12	$23	$60
Restaurants	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	3	0	1	4
Income impacts	$56	$17	$32	$106
Total value-added impacts	$60	$31	$54	$145
Output impacts	$110	$48	$107	$265
Harvesters and seafood industry	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	5	1	1	7
Income impacts	$124	$41	$72	$237
Total value-added impacts	$132	$78	$124	$335
Output impacts	$254	$147	$244	$645

3.3.2 Recreational Sector

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

Landings

This section contains landings data from the Southeast Fisheries Science Center (SEFSC) Marine Recreational Information Program (MRIP) ACL monitoring data set, and landings estimates provided by the Louisiana Department of Wildlife and Fisheries, and the Texas Parks and Wildlife Department.

Recreational Gulf lane snapper landings have been highly variable from 2019-2023 (Table 3.3.2.1). Total recreational landings of Gulf lane snapper averaged approximately 937,000 lb ww. Landings remained relatively constant from 2022 to 2023. Private vessels on average from 2019-2023 accounted for 69% of Gulf lane snapper landings, charter vessels 22%, and headboats and shore mode making up the remaining 5% and 4% respectively. The majority of landings on average occurred in Florida (98%) (Table 3.3.2.2). Waves 3 and 4, which includes the months May through August, accounted for the majority of landings on average from 2019-2023 (Table 3.3.2.3).

Table 3.3.2.1. Recreational landings (lb whole weight [ww]) and percent distribution of Gulf lane snapper across all states by mode for 2019-2023.

	Landings (pounds ww)					Percent Distribution			
	Charter vessel	Headboat	Private	Shore	Total	Charter vessel	Headboat	Private	Shore
2019	83,873	26,003	757,103	169,302	1,036,281	8%	3%	73%	16%
2020	228,711	21,209	602,810	0	852,730	27%	2%	71%	0%
2021	183,732	69,946	294,545	6,689	554,911	33%	13%	53%	1%
2022	215,712	46,883	814,594	36,391	1,113,580	19%	4%	73%	3%
2023	252,928	38,517	833,728	0	1,125,173	22%	3%	74%	0%
AVG	**192,991**	**40,512**	**660,556**	**42,477**	**936,535**	**22%**	**5%**	**69%**	**4%**

Source: MRIP FES ACL dataset (Dec24 version).

Table 3.3.2.2. Recreational landings (lb ww) and percent distribution of Gulf lane snapper by state* for 2019-2023.

	Landings (pounds ww)					Percent Distribution			
	AL	FL	LA/MS	TX	Total	AL	FL	LA/ MS	TX
2019	7,510	1,018,692	7,391	2,688	1,036,281	1%	98%	1%	0%
2020	10,077	839,102	583	2,968	852,730	1%	98%	0%	0%
2021	4,582	541,721	4,937	3,671	554,911	1%	98%	1%	1%
2022	15,775	1,092,582	3,057	2,167	1,113,580	1%	98%	0%	0%
2023	9,782	1,111,532	1,086	2,772	1,125,173	1%	99%	0%	0%
AVG	**9,545**	**920,726**	**3,411**	**2,853**	**936,535**	**1%**	**98%**	**0%**	**0%**

Source: MRIP FES ACL dataset (Dec 2024 version).
*Louisiana and Mississippi's landings are reported together for confidentiality purposes.

Table 3.3.2.3. Recreational landings (lb ww) and percent distribution of Gulf lane snapper by MRIP wave for 2019-2023.

Landings (pounds ww)						
	Wave 1	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**	**Wave 6**
2019	155,568	99,363	246,327	352,523	123,050	59,450
2020	175,826	109,477	174,309	146,015	157,453	89,650
2021	113,792	55,617	164,824	157,726	34,318	28,634
2022	151,296	199,847	270,523	403,897	54,812	33,205
2023	177,511	245,251	165,425	151,789	75,127	310,070
AVG	**154,799**	**141,911**	**204,282**	**242,390**	**88,952**	**104,202**
Percent Distribution						
	Wave 1	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**	**Wave 6**
2019	15%	10%	24%	34%	12%	6%
2020	21%	13%	20%	17%	18%	11%
2021	21%	10%	30%	28%	6%	5%
2022	14%	18%	24%	36%	5%	3%
2023	16%	22%	15%	13%	7%	28%
AVG	**17%**	**14%**	**23%**	**26%**	**10%**	**10%**

Source: MRIP FES ACL dataset (Dec 2024 version).

Angler Effort

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

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

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

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

Other measures of effort are possible, such as directed trips (the number of individual angler trips that either targeted or caught a particular species). Estimates of lane snapper target or catch effort for additional years, and other measures of directed effort, are available[18].

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

Tables 3.3.2.4 – 3.3.2.5 describe the recreational target and catch trips for lane snapper in the Gulf from 2019-2023. There are no recorded target trips in Texas or Mississippi for lane snapper in the Gulf. Private vessels represent 66% of target effort in the recreational sector. The overall majority of target effort occurs in Florida (98%) by the private vessel mode. Target effort for Gulf lane snapper from the shore mode was only recorded in Florida from 2019-2023. Target effort for Gulf lane snapper decreased by well over 100% in 2023, relative to 2019.

Private vessels are also responsible for the majority of catch effort for Gulf lane snapper (58%). However, unlike target effort, the shore mode was responsible for an average of 29% of overall catch effort during this time period. Catch effort by charter vessels represents about 16% of the total catch effort. Private vessels in Florida account for the majority of catch effort for Gulf lane snapper. The trends in catch effort mimic the trends in landings, with the peaks occurring in 2022 and 2019.

Table 3.3.2.4. Gulf lane snapper recreational target trips, by mode and state,* 2019-2023.

Year	Alabama	Florida	Louisiana	Total
Charter				
2019	0	0	263	263
2020	0	0	31	31
2021	0	7,735	0	7,735
2022	135	8,301	291	8,727
2023	0	16,138	0	16,138
Average	27	6,435	117	6,579
Private				
2019	6,616	597,702	7,492	611,810
2020	14,278	376,059	2,063	392,400
2021	5,620	308,355	8,546	322,521
2022	17,630	618,086	6,194	641,910
2023	5,413	86,678	0	92,091
Average	9,911	397,376	4,859	412,146
Shore				
2019	0	171,497	0	171,497
2020	0	294,358	0	294,358
2021	0	295,507	0	295,507
2022	0	270,979	0	270,979
2023	0	12,286	0	12,286
Average	0	208,925	0	208,925
All				
2019	6,616	769,199	7,755	783,570
2020	14,278	670,417	2,094	686,789
2021	5,620	611,597	8,546	625,763
2022	17,765	897,366	6,485	921,616
2023	5,413	115,102	0	120,515
Average	9,938	612,736	4,976	627,651

Sources: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreationalfishing-data-downloads. Louisiana recreational effort estimates came from the Louisiana Department of Wildlife and Fisheries Recreational Creel Survey.

*No reported target trips for Texas or Mississippi

Table 3.3.2.5. Lane snapper recreational catch trips, by mode and state, 2019-2023.

Year	Mississippi	Alabama	Florida	Louisiana	Texas	Total
Charter						
2019	0	7,285	106,821	1,202	215	115,523
2020	0	4,171	164,768	138	184	169,261
2021	0	5,996	146,208	957	694	153,855
2022	0	6,513	119,572	1,729	289	128,103
2023	0	1,223	83,329	0	0	84,552
Average	0	5,991	134,342	1,007	345	141,685
Private						
2019	0	6,616	597,702	7,492	1,202	613,012
2020	0	14,278	376,059	2,063	1,534	393,934
2021	4,029	5,620	308,355	8,546	1,429	327,979
2022	1,465	17,630	618,086	6,194	1,318	644,693
2023	0	12,802	586,884	255	0	599,941
Average	1,099	11,389	497,417	4,910	1,097	515,912
Shore						
2019	0	0	171,497	0	0	171,497
2020	0	0	294,358	0	0	294,358
2021	0	0	295,507	0	0	295,507
2022	0	0	270,979	0	0	270,979
2023	0	0	302,023	0	0	302,023
Average	0	0	258,085	0	0	258,085
All						
2019	0	13,901	876,020	8,694	1,417	900,032
2020	0	18,449	835,185	2,201	1,717	857,552
2021	4,029	11,616	750,070	9,503	2,123	777,341
2022	1,465	24,143	1,008,637	7,923	1,608	1,043,776
2023	0	14,025	972,236	255	0	986,516
Average	1,374	17,027	867,478	7,080	1,716	894,675

Sources: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing- data/recreationalfishing-data-downloads. Effort estimates for Texas are from the Texas Parks and Wildlife Department's Marine Sport-Harvest Monitoring Program and assumed equivalent to MRIP-FES estimates. Louisiana recreational effort estimates came from the Louisiana Department of Wildlife and Fisheries Recreational Creel Survey.

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

Headboat angler days have been variable across the Gulf States from 2019 through 2023, but increased by about 13 % in 2023, relative to average number of angler days from 2019-2022 (Table 3.3.2.6). On average (2019 through 2023), Florida accounted for the majority of headboat angler days reported, followed by Texas and Alabama; Mississippi and Louisiana combined accounted for only a small percentage (Table 3.3.2.6).

Table 3.3.2.6. Gulf headboat angler days and percent distribution by state (2018 through 2022).

	Angler Days					**Percent Distribution**			
	FL	**AL**	**MS-LA***	**TX**	**Total**	**FL**	**AL**	**MS-LA**	**TX**
2019	167,167	18,607	2,632	52,456	240,862	69.4%	7.7%	1.1%	21.8%
2020	126,794	13,091	1,728	51,498	193,111	65.7%	6.8%	0.9%	26.7%
2021	181,632	13,844	3,197	71,344	270,017	67.3%	5.1%	1.2%	26.4%
2022	149,368	14,588	3,675	62,705	230,336	64.9%	6.3%	1.6%	27.2%
2023	176,895	13,253	3,274	58,274	251,696	70.3%	5.3%	1.3%	23.2%
Average	160,371	14,677	2,901	59,255	237,204	67.5%	6.2%	1.2%	25.0%

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

Permits

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

Charter vessel/headboat vessels in the Gulf are required to have a limited access charter vessel/headboat for reef fish permit (Gulf Reef for-hire permit) to fish for or possess reef fish species. As of August 26, 2021, there were 1,273 valid or renewable charter vessel/headboat reef fish permits. The total number of valid or renewable Gulf Reef for-hire permits has been relatively stable with less than 1% change in valid or renewable Gulf Reef for-hire permits from year to year (Table 3.3.2.7).

Although the permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, if a vessel meets the selection criteria used by the Southeast Regional Headboat Survey (SRHS) and is selected to report by the Science

Research Director of the SEFSC, it is determined to operate primarily as a headboat and is required to submit harvest and effort information to the SRHS.

Table 3.3.2.7. Number of valid or renewable Gulf Reef for-hire permits, 2016-2020.

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

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

Economic Value

Economic value can be measured in the form of CS per additional lane snapper kept on a trip for anglers (the amount of money that an angler would be willing to pay for a fish in excess of the cost to harvest the fish). There is no direct available estimate of CS for lane snapper, but other estimates can serve as close proxies. Carter, Lovell and Liese (2020) used a 2014 mail survey of recreational anglers fishing in the Gulf to produce values of the CS for increasing the aggregate snapper bag limit from 5 fish to 10 fish for private boat anglers which was $19 (2023$). Carter and Liese (2022) used the same 2014 mail survey of recreational anglers to produce values of the CS for increasing the aggregate snapper bag limit from 5 fish to 10 fish for charter boat anglers which was $26 (2023$). Carter and Liese (2022) divide the option price for the 5 to 10 fish snapper bag limit increment by a factor of 0.52 to derive the expected value of a one unit snapper harvest increment of $62. This factor is based on the distribution of snapper catch per angler for charter trips. If we assume the distribution of catch per angler is similar on private boat trips, then we can also apply this factor to the option price estimate for snapper on private boats to get the expected value of a one fish change in snapper harvest of $38.

Economic value for the for-hire component of the recreational sector can be measured in many ways. According to Savolainen et al. (2012), the average charter vessel operating in the Gulf is estimated to receive approximately $105,221 (2023$) in gross revenue and $29,147 (2023$) in net income (gross revenue minus variable and fixed costs) annually. The average headboat is estimated to receive approximately $317,662 (2023$) in gross revenue and $92,411 (2023$) in net income annually. More recent estimates of average annual gross revenue for Gulf headboats are provided in Abbott and Willard (2017) and D. Carter, SEFSC, pers. comm. 2018. Abbott and Willard (2017) suggest that Savolainen, et al.'s estimate of average annual gross revenue for headboats may be an underestimate, as data in the former suggest that average gross revenue in 2009 for the vessels in their sample was about $541,653 (2023$). Further, their data suggest average annual gross revenue per vessel had increased to about $678,064 (2023$) by 2014. However, Abbott and Willard's estimates are based on a sample of 17 headboats that chose to participate in the headboat Collaborative Program in 2014, while the Savolainen, et al. estimates are based on a random sample of 20 headboats. The headboats that participated in the Collaborative may be economic highliners, in which case Abbott and Willard's estimates would overestimate average annual gross revenue for Gulf headboats. D. Carter, SEFSC, pers. comm. 2018 recently estimated that average annual gross revenue for Gulf headboats were approximately $500,005 (2023$) in 2017. This estimate is likely the best current estimate of annual gross revenue for Gulf headboats, as it is based on a relatively large sample of 63 boats, or more than 90% of the active fleet, and is more recent.

However, gross revenues overstate the annual economic value and profits generated by for-hire vessels. Economic value for for-hire vessels can be measured by PS per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of revenue, costs, and trip net revenue trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). They also provide estimates of trip net cash flow per angler trip, which approximate PS per angler trip. After accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 42% of revenue for Gulf charter vessels and 54% of revenue for Southeast headboats[19], or $912 and $2,119 (2023 dollars), respectively (Table 3.3.2.8). Trip net revenue (TNR), which is the return used to pay all labor wages, returns to capital. When TNR is divided by the number of anglers on a trip, it represents cash flow per angler (CFpA). The estimated CFpA value for an average Gulf charter angler trip is $166 (2023$) and the estimated CFpA value for an average Gulf headboat angler trip is $75 (2023$) (Souza and Liese 2019). Estimates of CFpA for all individual Reef Fish species target trips, in particular, are not available.

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

Table 3.3.2.8. Trip economics for offshore trips by Gulf charter vessels and Southeast headboats in 2017 (2023$).

	Gulf Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	27%	19%
Labor Costs (% of revenue)	27%	22%
Net Revenue per trip including Labor costs (% of revenue)	42%	54%
Net Revenue per Trip	$912	$2,119
Average # of Anglers per Trip	5.5	28.2
Trip Net Cash Flow per Angler Trip	$166	$75

Source: Souza and Liese (2019).

Business Activity

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

Estimates of the business activity (economic impacts) associated with recreational angling for Gulf lane snapper were calculated using average trip-level impact coefficients derived from the 2022 Fisheries Economics of the U.S. report (NMFS 2024) and underlying data provided by the National Oceanic and Atmospheric Administration Office of Science and Technology. Economic impact estimates in 2022 dollars were adjusted to 2023 dollars using the annual, not seasonally adjusted, gross domestic product (GDP) implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Business activity (economic impacts) for the recreational sector is characterized in the form of jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), output impacts (gross business sales), and value-added impacts (contribution to the GDP in a state or region). Estimates of the average annual economic impacts (2019–2023) resulting from Gulf lane snapper charter, private vessel, and shore target trips are provided in Table 3.3.2.9. To calculate the multipliers from Table 3.3.2.9, simply divide the desired impact measure (sales impact, value-added impact, income impact or employment) associated with a given state by the number of target trips for that state.

The estimates provided in Table 3.3.2.9 only apply at the state-level. Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity, because state-level impact multipliers do not account for interstate and interregional trading. It is also important to note that these economic impacts estimates are based on trip expenditures only and do not account for durable expenditures. Durable expenditures cannot be reasonably apportioned to individual species. As such, the estimates provided in Table 3.3.2.9 may be considered a lower bound on the economic activity associated with those trips that targeted lane snapper.

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

Table 3.3.2.9. Estimated average annual economic impacts (2019-2023) from Gulf charter, private vessel, and shore lane snapper target trips, by state,* using state-level multipliers. All monetary estimates are in 2023 dollars in thousands.

	FL	AL	LA
Charter Mode			
Target Trips	6,435	27	117
Value Added Impacts	$4,235	$11	$75
Sales Impacts	$6,708	$19	$131
Income Impacts	$2,887	$8	$54
Employment (Jobs)	61	0	2
Private/Rental Mode			
Target Trips	397,376	8,829	4,859
Value Added Impacts	$13,884	$336	$779
Sales Impacts	$23,192	$725	$1,681
Income Impacts	$6,808	$144	$391
Employment (Jobs)	135	3	9
Shore			
Target Trips	208,925	0	0
Value Added Impacts	$11,758	$0	$0
Sales Impacts	$19,443	$0	$0
Income Impacts	$6,275	$0	$0
Employment (Jobs)	125	0	0
All Modes			
Target Trips	612,736	8,856	4,976
Value Added Impacts	$29,877	$347	$854
Sales Impacts	$49,343	$743	$1,813
Income Impacts	$15,970	$152	$445
Employment (Jobs)	322	3	10

*No recorded target effort for lane snapper in Texas or Mississippi

The estimates provided in Table 3.3.2.9 use state-level multipliers and thus only apply at the state-level. For example, estimates of business activity in Florida represent business activity in Florida only and not to other states (for e.g., a good purchased in Florida may have been manufactured in a neighboring state) or the nation as a whole. The same holds true for each of the other states. Income impacts should not be added to output (sales) impacts because this would result in double counting. The results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species.

Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity because state-level impact multipliers do not account for interstate and interregional trading. National-level multipliers must be used to account for interstate and interregional trading. Between 2019 and 2023, and using national-level multipliers, Gulf lane snapper target effort generated employment, income, value-added, and output (sales) impacts of 147 jobs, $9.2 million, $2.0 million, and $3.5 million per year, respectively, on average.

3.4 Affected Social Environment

This framework action affects the commercial and recreational management of lane snapper in the Gulf. Commercial and recreational lane snapper landings by state, reef fish permits by state, and for-hire reef fish permits by state are included to provide information on the geographic distribution of fishing involvement. Descriptions of the top-ranking communities by the number of commercial reef fish permits are included, top communities based on commercial landings of lane snapper, commercial engagement and reliance for the top communities based on commercial landings of lane snapper, top-ranking communities by the number of for-hire reef fish permits, and top communities based on recreational engagement and reliance. Community level data are presented in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Act, which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered.

3.4.1 Commercial Sector

Permits

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

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

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

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

Source: SERO permit office, July 8, 2021.

Landings

Nearly all the commercial catch of lane snapper is landed in Florida (average of 95.3% from 2019-2023, SEFSC ACL Files). The landings for Alabama, Louisiana, Mississippi, and Texas are confidential, but the landings attributed to these states are minor.

Regional Quotient

The descriptions of communities include information about the top communities based on a "regional quotient" (RQ) of commercial landings for lane snapper. The RQ is the proportion of landings out of the total landings of that species for that region and that year, and is a relative measure. The RQ is reported individually only for the top 10 communities by total landings for the years of 2019 through 2023 and communities are presented in the order of their total landings combined for all years. All other communities that landed lane snapper are grouped as "Other Communities." Figure 3.4.1.1 shows the RQ in percentage of pounds from 2019 to 2023. A time series is presented because landings of lane snapper by community are variable by year. The top lane snapper communities are located in Florida. Several of the top communities (Madeira Beach, Largo, and St. Petersburg) are located in Pinellas County, Florida. About 26%

of the total lane snapper landings from 2019 to 2023 is landed in the top three communities of Madeira Beach, Largo, and Cortez, Florida, combined.

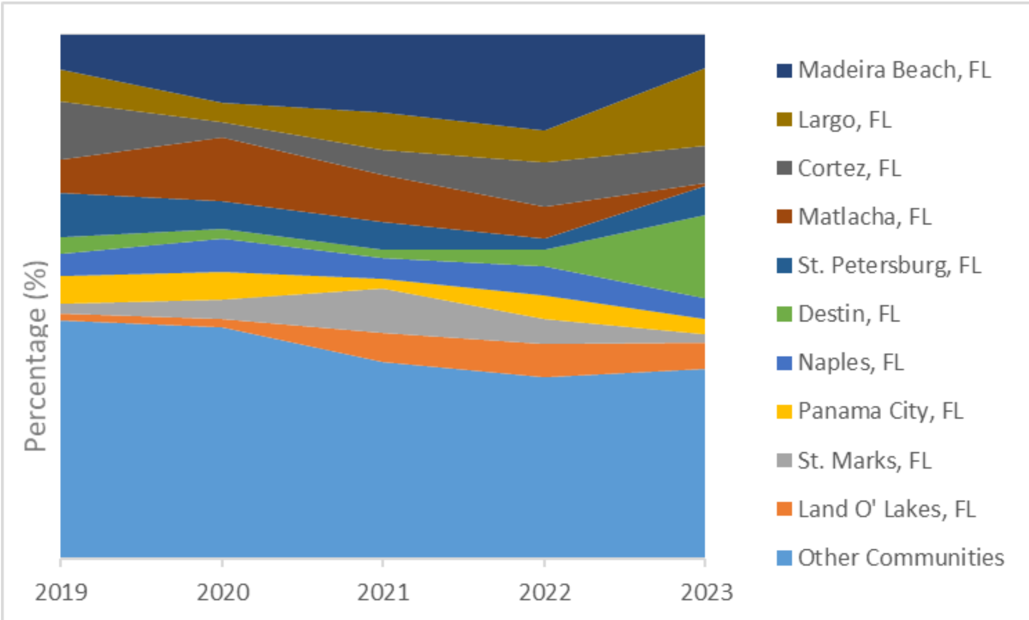

Figure 3.4.1.1. Regional Quotient (pounds) for top South Atlantic communities by lane snapper landings from 2019 through 2023. The actual RQ values (y-axis) are omitted from the figure to maintain confidentiality.
Source: SERO, Community ALS.

Engagement and Reliance

Figure 3.4.1.2 is an overall measure of a community's commercial fishing engagement and reliance and includes the communities with the strongest relationship to the commercial sector for lane snapper as depicted in Figure 3.4.1.1. Most of the communities in Figure 3.4.1.2 would be considered to be highly or moderately engaged in commercial fishing, as several are at or above 1 standard deviation of the mean factor score and a few are at or above ½ standard deviation. Matlacha, Saint Marks, and Land O' Lakes, Florida show the least amount of engagement in commercial fishing overall. Most of the included communities demonstrate low commercial reliance; however several included communities demonstrate high or moderate commercial reliance (Saint Marks, Matlacha, and Cortez, Florida).

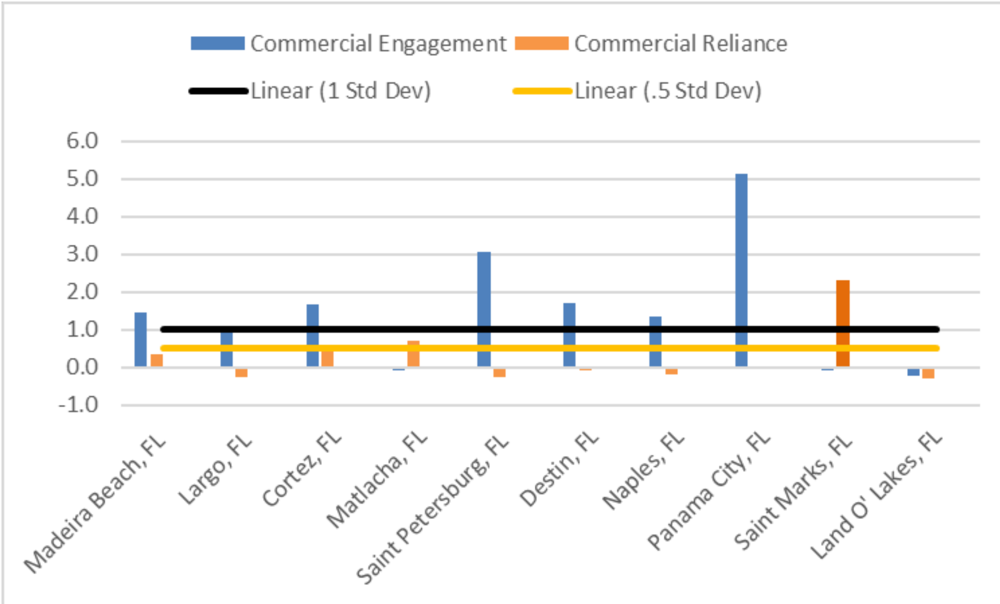

Figure 3.4.1.2. Commercial fishing engagement and reliance for top lane snapper communities.
Source: SERO, Community Social Vulnerability Indicators Database 2019.

3.4.2 Recreational Sector

Permits

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

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

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

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

Source: SERO permit office, July 8, 2021.

Landings

Nearly all recreational lane snapper landings are from the waters adjacent to the west coast of Florida (average of 98.3%% from 2019-2023), followed by Alabama (1%), Louisiana and Mississippi (0.4%), and Texas (0.3%, SEFSC MRIP-FES Recreational ACL Dataset and LA Creel Data). Louisiana and Mississippi are combined together because of the manner in which headboat landings are reported.

Engagement and Reliance

Landings for the recreational sector based on MRIP data are not an accurate representation of the species caught at the community level, making it difficult to identify communities as dependent on recreational fishing for lane snapper or reef fish in general. Because limited data are available concerning how communities are engaged and reliant on specific species in the recreational sector, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013, Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as "recreational" by homeport and owners address. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted by community.

Figure 3.4.2.1 identifies the Gulf communities located in Florida that are the top communities by engagement upon recreational fishing in general. Two thresholds of one and one-half standard deviation above the mean were plotted to help determine a threshold for significance. Communities are presented in ranked order by fishing engagement and all included communities demonstrate high levels of recreational engagement, although this is not specific to fishing for lane snapper. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the top list, suggesting a greater importance for recreational fishing in that area. The communities of Tavernier and Islamorada, Florida demonstrate the highest reliance on recreational fishing. The communities of Key West, Destin, Marathon, Crystal River, and Port Saint Joe, Florida demonstrate a moderate to high reliance.

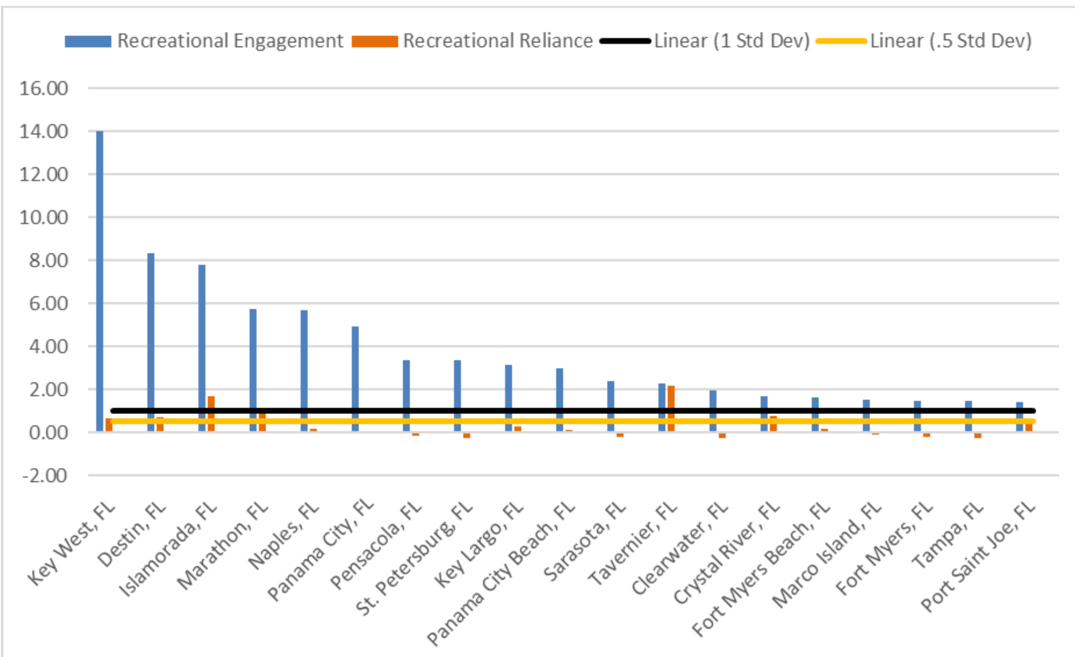

Figure 3.4.2.1. Recreational fishing engagement and reliance for top Florida communities.
Source: SERO, Community Social Vulnerability Indicators Database 2019.

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

3.5 Administrative Environment

3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ. The EEZ is defined as an area extending 200 nautical miles from the seaward boundary of each of the coastal states. The Magnuson Stevens Act also claims authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ. Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for approving those plans and promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Appendix C. In most cases, the Secretary has delegated this authority to NMFS. The Council is responsible for fishery resources in federal waters of the Gulf. For reef fish, these waters extend 200 nautical miles offshore from the seaward boundaries of Alabama, Florida, Louisiana, Mississippi, and Texas, as those boundaries have been defined by law. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline extending 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles). The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process.

3.5.2 State Fishery Management

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

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

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Direct and Indirect Effects on the Physical Environment

Participants in the commercial sector of the reef fish fishery primarily use vertical lines (i.e., electric reel, bandit rig, hook-and-line, and trolling) and longlines. However, on average (from 1999 through 2019) approximately 14% of lane snapper was landed by the commercial sector. Participants in the recreational sector (headboat, charter, and private modes) primarily use vertical line gear (hook-and-line). Bottom longline gear is deployed over hard bottom habitats using weights to keep the gear in direct contact with the bottom. The potential for this gear to adversely impact the bottom depends on the type of habitat it is set on, the presence or absence of currents and the behavior of fish after being hooked. In addition, this gear, upon retrieval, can abrade, snag, and dislodge smaller rocks, corals, and sessile invertebrates (Hamilton 2000; Barnette 2001). A study that directly observed deployed longline gear (Atlantic tilefish fishery) found no evidence that the gear shifted significantly, even when set in currents (Grimes et al. 1982). A lack of gear shifting, even in strong currents, was attributed to setting anchors at either end of the longline to prevent movement, which is the standard in the longline component of the commercial sector of the reef fish fishery. Based on direct observations, it is logical to assume that bottom longline gear would have a minor impact on sandy or muddy habitat areas. However, due to the vertical relief that hard bottom and coral reef habitats provide, it would be expected that bottom longline gear may become entangled, resulting in potential negative effects to habitat (Barnette 2001). Concentrations of many managed reef fish species are higher on hard bottom areas than on sand or mud bottoms, thus vertical line gear fishing generally occurs over hard bottom areas (GMFMC 2004a). Vertical lines include multi-hook lines known as bandit gear, handlines, and rod-and-reels. Vertical line gear is less likely to contact the bottom than longlines, but still has the potential to snag and entangle bottom structures and cause attached organisms, such as soft corals and sponges, to tear off or be abraded (Barnette 2001). In using bandit gear, a weighted line is lowered to the bottom, and then the weighted line is raised slightly off the bottom (Siebenaler and Brady 1952). The gear is in direct contact with the bottom for only a short period of time. Barnette (2001) 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 and commercial vessels that use vertical line gear are typically known to anchor more frequently over the reef sites. Spears are used by both the recreational and commercial sector to harvest reef fish, but represent a relatively minor component of both. 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).

The alternatives under **Action 1** would not significantly modify the way in which the reef fish fishery is prosecuted in terms of gear types used. **Preferred Alternative 2** and **Alternative 3** would be expected to offer a year-round fishing season, as there are minimal anticipated impacts to the physical environment. This is because the action is unlikely to alter the fishing effort or methods used in the reef fish fishery overall.

4.2 Direct and Indirect Effects on the Biological/Ecological Environment

Preferred Alternative 2 and **Alternative 3** are expected to meet the purpose of this framework action to reduce landings; however, **Alternative 3** would result in a higher overall reduction in landings given a great majority of landings are less than 12 inches TL. Table 4.2.1 details the estimated percent reduction in landings. These landings estimates require the assumption that fishing effort for lane snapper will not change from the rate observed in 2021-2023, and that effort will not be shifted based on the new size limit (e.g. anglers fish longer to catch bigger fish to keep). Neither of these caveats are assured, and thus Table 4.2.1 likely contains an optimistic estimate of the reduction that would occur with the size limit increase. Percent reduction calculations can be found in Appendix B. **Preferred Alternative 2** would result in a smaller reduction in estimated total landings (31.83%) in comparison to **Alternative 3** (76.46%). **Preferred Alternative 2** may result in an estimated ~32% reduction in landings for Headboat and MRIP-reporting states; while an estimated 13.8% reduction in landings may occur for Texas, should landings be similar to those observed in 2021-2023. The recreational sector typically targets lane snapper off Florida, where there would likely be the highest impact due to a minimum size change. **Alternative 3**, a minimum size limit of 12 inches TL, may result in a large percent reduction in landings (76.46%) because most of the lane snapper harvested had lengths less than 12 inches TL. It is important to note that these estimations are utilizing data from 2021-2023, where landings have been historically high. Should overall landings be less than those averaged from 2021-2023, the estimated reduction in landings as a result of an increased size limit are likely lower.

Table 4.2.1. Estimated percent reduction in Gulf lane snapper landings for the four recreational surveys from increasing the minimum size limit from 8 to 10- or 12-inches total length.

Size Limit	TPWD	LA Creel	Headboat	MRIP	Total Reduction in Landings
8 inches TL (Status Quo)	0.0%	0.0%	0.0%	0.0%	0.0%
10 inches TL	13.8%	0.0%	32.7%	32.6%	31.83%
12 inches TL	48.4%	0.0%	60.6%	79.2%	76.46%

Source: Data come from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The current minimum size limit is 8 inches total length.

For the commercial sector, a 10-inch TL size limit may reduce landings by an estimated 2.3% if landings are consistent with 2021-2023 values in the future (Table 4.2.2). Approximately 45% of commercial landings were below 12 inches, and a 12 inch TL size limit during this time may reduce commercial landings by ~31.3% (Table 4.2.2).

Table 4.2.2. Estimated percent reduction in lane snapper commercial landings from increasing the minimum size limit from 8 to 10- or 12-inches TL. Source: Data come from the TIP program from 2021 to 2023. The current minimum size limit is 8 inches TL.

Size Limit	Percent Reduction in Landings
8 inches TL (Status Quo)	0.0%
10 inches TL	2.3%
12 inches TL	31.1%

Source: Data come from the TIP program from 2021 to 2023. The current minimum size limit is 8 inches TL.

Preferred Alternative 2 or **Alternative 3** are expected to reduce landings enough to extend season length and prevent an in-season closure (Table 4.2.2).

Table 4.2.3. Predicted closure dates when the ACL is expected to be met for the Gulf lane snapper stock with changes to the size limits. Closure dates are when the stock ACL (1,088,873 lb ww) is expected to be met.

Regulation	Closure Date
20 Lane Snapper Bag Limit (Status Quo)	
8 inches TL (Status Quo)	29-Nov
10 inches TL	No Closure
12 inches TL	No Closure

This analysis assumes the high Gulf lane snapper stock landings that were observed in 2023 and 2024 will continue. If future landings are lower and similar to the 2020, 2021, and 2022 Gulf lane snapper stock landings then the ACL is not expected to be met even without any changes to the size limits (Appendix B).

The SEDAR49 stock assessment used 9.1 inches TL as the length at which 50% of females achieved sexual maturity (L50) based on Freitas et al. 2014. However, that estimate is lower than from a recent study (Fernandez et al. 2022) which estimated L50 for females at 27 cm or ~10.7 in TL. Both studies estimate L50 for females to be larger than the current minimum size limit under **Alternative 1**. Therefore, **Alternative 1** would not be as biologically beneficial as the alternatives considered under this action because it allows harvest of mostly reproductively immature individuals. **Preferred Alternative 2** and **Alternative 3** would increase the likelihood that landed females are mature when harvested. As such, **Preferred Alternative 2** and **Alternative 3** would be expected to provide biological benefits to the lane snapper population by allowing more individuals to reach reproductive activity before being harvested. Of these, **Alternative 3** would be more biologically beneficial than **Preferred Alternative 2** as it would presumably encompass a greater proportion of reproductively active individuals in the population. Hence, biological benefits would be greatest under **Alternative 3**.

An increase in size limit has the potential to increase discards because a large proportion of the catch is historically below the size limits proposed in **Preferred Alternative 2** and **Alternative 3**. However, the increased size limit is anticipated to decrease overall fishing mortality. As minimum size limits increase from 8 inches TL, overall discards may increase, but discard mortality is expected to remain relatively low for the reasons discussed above. Thus, it is possible that under **Preferred Alternative 2** and **Alternative 3**, there may be an increase in discards of smaller individuals but their mortality would be expected to be low, and requiring the release of those smaller fish would provide the potential for those fish to reach sexual maturity and lowering overall mortality of the stock.

4.3 Direct and Indirect Effects on the Economic Environment

Increases in size limits are expected to reduce Gulf lane snapper landings from both the recreational and the commercial sectors. As lane snapper has a stock ACL, without sector ACLs, this analysis must examine how the proposed increase in the size limit may affect the two sectors, proportionally, based on the two sectors' average historical usage of the stock ACL. Based on the commercial and recreational sector-specific landings from 2019-2023, the recreational sector has accounted for 97.42% of landings, while the commercial sector has accounted for 2.58% of landings. Based on recreational components from 2019-2023, the for-hire component has accounted for 27% of landings, while the private angler component has accounted for 73% of landings. As seen in Table 4.2.2, a 10 inch TL size limit is expected to result in a 2.3% reduction in commercial landings, while a 12 inch TL size limit is expected to result in a 31.1% reduction in commercial landings. Within the recreational sector, a 10 inch TL size limit is expected to result in a 7.5% reduction in for-hire landings and a 25.9% reduction in private angler landings, while a 12 inch TL size limit is expected to result in a 18.8% reduction in for-hire landings and a 56.3% reduction in private angler landings (M. Larkin, SERO pers. comm. 2025) These estimates are based on the assumption that fishing effort for lane snapper will not change from the rate observed in 2021-2023, and that effort will not be shifted based on the new size limit.

Recreational Sector

Estimated increases in economic value to recreational fishermen are approximated by multiplying the expected change in the number of fish harvested by a CS estimate. The most recent proxy for a CS estimate for lane snapper is the estimated value of the CS for a 1 fish change in snapper harvest, derived from increasing the aggregate snapper bag limit from 5 fish to 10 fish for private boat anglers. A value of $62.20 for the for-hire component and a value of $38.60 for the private angler component (Carter, Liese, and Lovell 2022; values updated to 2023$) reflect recreational willingness-to-pay (WTP) for 1 additional snapper harvest. This might underestimate the WTP of lane snapper for Gulf recreational fishermen as a whole, since WTP decreases as additional fish are retained and the majority of Gulf recreational fishermen are retaining one lane snapper or fewer per trip, between 2018 and 2022 (GMFMC 2024). The expected change in the number of fish harvested is calculated by dividing the change in the for-hire component's and in the private angler component's expected use of the stock ACL by 0.79078 lb ww, which is the average weight of a recreationally landed lane snapper in the Gulf from the 2019 to 2023 fishing years (M. Larkin, SERO, pers. comm. 2025). Therefore, from **Preferred Alternative 2**, the for-hire component may expect a decrease in landings of 27,163 fish, while the private angler component may expect a decrease in landings of 253,615 fish, as seen in Table 4.3.1 (These estimates require the assumption that fishing effort for lane snapper will not change from the rate observed in 2021-2023, and that effort will not be shifted based on the new size limit). From **Alternative 3**, the for-hire component may expect a decrease in landings of 68,088 fish, while the private angler component may expect a decrease in landings of 551,294 fish, as seen in Table 2.4.1. Multiplying the increase in number of fish expected to be landed by each component by each component's respective estimated value of the CS provides the expected increase in CS for each component; adding these values together provides the expected change in the recreational sector's CS, as seen in Table 4.3.2.

Table 4.3.1. Expected change in the recreational sector's landings, based on the difference between the sector expected usage of the ACL under **Alternative 1** and either **Preferred Alternative 2** or **Alternative 3**. Landings are expressed as number of fish.

Difference	Expected Change in For-Hire Landings, Expressed as Number of Fish	Expected Change in Private Angler Landings, Expressed as Number of Fish
Preferred Alternative 2 – Alternative 1	-27,163	-253,615
Alternative 3 – Alternative 1	-68,088	-551,294

Table 4.3.2. Expected change in the recreational sector's CS, based on the difference between the sector expected usage of ACL under **Alternative 1** and either **Preferred Alternative 2** or **Alternative 3**. CS values are in 2023$.

Difference	Expected Change in For-Hire Component CS	Expected Change in Private Angler Component CS	Expected Change in Rec Sector CS
Preferred Alternative 2 – Alternative 1	-$1,689,535	-$9,789,528	-$11,479,064
Alternative 3 – Alternative 1	-$4,235,102	-$21,279,940	-$25,515,042

The PS of the for-hire component of the recreational sector, composed of charter vessels and headboats, would be impacted by a change in the number of targeted trips. In the long run, factors of production, such as labor and capital, can be used elsewhere in the economy, and so only short-term changes to PS are expected. In the Gulf, headboat trips take a diverse set of anglers on a single vessel, generally advertising a diverse range of species to be caught. Therefore, an assumption that no headboat trips would be gained due to a change in size limit would be reasonable. However, charter vessel trips that are targeting lane snapper may be added by anglers and are the focus of the recreational sector PS analysis. From 2020-2024, season closures occurred in 2021, 2022, and 2024, and the ACL was exceeded in 2020, 2022, and 2023. Therefore, with the number of season closures over the past five years, the proposed size limit could be expected to lengthen the season, while ensuring the ACL is not exceeded. Furthermore, with respect to the recreational sector's expected reduction in landings due to the size limit increase, based on Table 3.3.2.1 which shows the percent distribution by mode of recreational landings, charter vessels and headboats may be expected to capture 27% of the recreational sector's landings (22% from charter vessels and 5% from headboats). This equates to -21,480 lb ww for the for-hire component, or 27,163 fish, under **Preferred Alternative 2**; this equates to -53,843 lb ww for the for-hire component, or 68,088 fish, under **Alternative 3**. In relation to the average landings from 2019-2023 for the charter vessels and headboats shown in Table 3.3.2.1, this equates to 9.20% of the historical landings under **Preferred Alternative 2** and 23.06% of the historical landings under **Alternative 3**. In addition, when accounting specifically for charter vessel landings from 2019-2023 where lane snapper may be landed either during target trips or catch trips, Table 3.3.2.4 displays that the average number of target trips was 6,579, whereas Table 3.3.2.5 displays that the average number of catch trips accounted for was 141,685. The number of lane snapper target trips were 4.64% of the number of lane snapper catch trips. The change in lane snapper size limit is unlikely to lengthen an already year-round season or to reduce the number of charter trips or have a significant effect on the number of target trips or associated landings of lane snapper, which would decrease the PS for the recreational sector. As the number of target trips for lane snapper is not expected to change, the estimated average annual economic impacts in Table 3.3.2.9 are not expected to change as a result of the proposed lane snapper size limit change.

Commercial Sector

In order to calculate expected changes in commercial CS, own-price flexibility for the Gulf lane snapper commercial sector would be required to derive the expected average price change. Asche (2020) estimated a Marshallian own-price flexibility for "other snappers," inclusive of lane snapper, of -0.340. When own-price flexibility is unavailable, price is assumed constant with changes in commercial harvest, and if the expected average price change is zero, then multiplying that by the expected harvest by the commercial sector under the proposed size limits to arrive at the expected change in commercial CS for lane snapper would result in a value of zero. However, for lane snapper, the expected change in commercial CS can be derived and is displayed in Table 4.3.3.

Table 4.3.3. Expected change in the commercial sector's consumer surplus under **Preferred Alternative 2** and **Alternative 3**. Values are in 2023$.

Option	Expected Change in Landings by Commercial Sector (lb ww)	Expected Average Price Change ($/lb)	Expected Change in CS (2023$)
Preferred Alternative 2	-647	$0.03	-$746
Alternative 3	-8,750	$0.37	-$7,113

To determine the respective expected changes in ex-vessel revenue as a result of the proposed changes to the ACL and its effects on commercial landings, the average ex-vessel price per lb ww of $3.47 for Gulf lane snapper from 2019-2023 (2023$) is multiplied by the change in the expected commercial sector's landings based on the size limit change. These expected changes in revenue are displayed in Table 4.3.4. The commercial sector's landings have declined annually from 2019-2022, with an increase in landings in 2023. Therefore, some of the expected change in commercial sector landings and commercial revenue may be realized by the recreational sector, as sector ACLs do not currently exist for lane snapper.

Table 4.3.4. Expected change in the commercial sector revenue, as the difference between **Preferred Alternative 2** and **Alternative 1** as well as between **Alternative 3** and **Alternative 1**. Values are in 2023$.

Difference	Expected Change in Comm Revenue
Preferred Alternative 2 – Alternative 1	-$2,246
Alternative 3 – Alternative 1	-$30,364

The commercial PS for vessels that harvested lane snapper in the Gulf is estimated as 51% of the ex-vessel value (Section 3.3.1). The expected change in commercial PS is shown in Table 4.3.5.

Table 4.3.5. Expected change in the commercial sector PS, as the difference between **Preferred Alternative 2** and **Alternative 1** as well as between **Alternative 3** and **Alternative 1**. Values are in 2023$.

Difference	Expected Change in Comm PS
Preferred Alternative 2 – Alternative 1	-$1,145
Alternative 3 – Alternative 1	-$15,486

The total expected change in net economic benefits for the commercial sector from **Preferred Alternative 2** and **Alternative 3**, relative to **Alternative 1** is displayed in Table 4.3.6. The total expected change in net economic benefits for both the commercial and recreational sectors are displayed in Table 4.3.7.

Table 4.3.6. Total expected change in net economic benefits for the commercial sector relative to **Alternative 1**. Values are in 2023$.

Option	Total Expected Change in Net Economic Benefits (2022$)
Preferred Alternative 2	-$1,891
Alternative 3	-$22,599

Net Economic Benefits

Table 4.3.7. Combined total expected change in net economic benefits for both the recreational and commercial sectors relative to **Alternative 1**. Values are in 2023$.

Option	Total Expected Change in Net Economic Benefits
Preferred Alternative 2	-$11,480,955
Alternative 3	-$25,537,641

Net economic benefits from the recreational and commercial sectors combined from **Preferred Alternative 2**, relative to **Alternative 1**, would be expected to decrease by $11,480,955 in 2026. Over a three-year timeframe of 2026-2028, the expected change in the discounted net present value of economic benefits to both sectors would be -$33,771,928 using a 2% discount rate. As an average annual net present value, this expected change would be -$11,257,309 with a 2% discount rate. Net economic benefits from the recreational and commercial sectors combined from **Alternative 3**, relative to **Alternative 1**, would be expected to decrease by $25,537,641 in 2026. Over a three-year timeframe of 2026-2028, the expected change in the discounted net present value of economic benefits to both sectors would be -$75,120,527 using a 2% discount rate. As an average annual net present value, this expected change would be -$25,040,176 with a 2% discount rate. This analysis uses a three-year timeframe based on the SEDAR timeline for when the OFL and ABC values for lane snapper will be analyzed again as part of a Full Assessment, although an Interim Analysis has been requested whereupon the Gulf Council may review those values sooner.

4.4 Direct and Indirect Effects on the Social Environment

Changes to the size limit for Gulf lane snapper would primarily affect landings and the likelihood of in-season closures, with varying effects on fishing participants depending on the selected alternative.

Under **Alternative 1**, the current 8-inch TL minimum size limit would remain in place, maintaining the status quo for both commercial and recreational fishers. While this would not impose new regulatory requirements, it would also not address the recent pattern of frequent ACL exceedances (Table 1.1.1). If landings continue to exceed the stock ACL, there remains a likelihood of in-season closures, similar to those in previous years. These closures may disrupt fishing plans, particularly for recreational anglers and for-hire operators who rely on consistent access to the fishery.

Under **Preferred Alternative 2**, increasing the minimum size limit to 10 inches TL could reduce landings (31.83% for the recreational sector, Table 4.2.1; and 2.3% for the commercial sector, Table 4.2.2), which would allow for a year-round fishing season (Table 4.2.3). This balance may be viewed positively by stakeholders who prefer stable access to the fishery over unpredictable closures. However, recreational anglers, particularly those fishing off Florida where landings are highest, may experience increased discards if they catch fish smaller than the new size limit. Overall, this alternative is expected to provide greater predictability for both commercial and recreational participants while requiring modest adjustments to fishing practices for the recreational sector and minimal changes for the commercial sector.

Under **Alternative 3**, increasing the minimum size limit to 12 inches TL could result in up to a 76.46% reduction in recreational landings (Table 4.2.1). This may significantly alter fishing opportunities for the recreational sector, particularly among private anglers and for-hire operations that depend on lane snapper as a reliable target species. The commercial sector is expected to see a 31.1% reduction in landings, a much larger impact than under **Preferred Alternative 2** (Table 4.2.2). While this alternative is expected to provide the greatest biological benefit by ensuring more fish reach reproductive maturity, it would also result in a significant reduction in landings, which would likely disrupt fishing operations and participation in the fishery.

In summary, **Alternative 1** would maintain the status quo, allowing continued harvest at the current size limit but increasing the likelihood of in-season closures. **Preferred Alternative 2** is expected to reduce landings enough to prevent closures while maintaining a year-round fishing season, which may provide the greatest benefit in terms of stability for stakeholders. **Alternative 3** would provide greater biological benefits but could significantly reduce harvest opportunities and increase discards. The communities most affected by these changes are described in Section 3.4.

4.5 Direct and Indirect Effects on the Administrative Environment

Action 1, Preferred Alternative 2 would modify the recreational and commercial size limit to 10 inch TL for Gulf lane snapper. Increasing the minimum size limit may reduce the proportion of retained catch and thereby slow the harvest rate, especially for the recreational sector, and it may result in increased discards. Regardless, the administrative burden of monitoring to the appropriate catch limits is not expected to change based upon a change in the size limit. Therefore, no significant administrative burden is expected. 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. A minor reduction in administrative burden may occur if the increase in size limit reduces catch to the extent that closures of the lane snapper fishery component are not necessary in future years. Some minor administrative burden is anticipated with respect to outreach as it relates to notifying stakeholders of the changes to minimum size.

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GMFMC = Gulf of Mexico Fishery Management Council; NOAA GC = National Oceanic and Atmospheric Administration General Counsel; SEFSC = Southeast Fisheries Science Center; SERO = Southeast Regional Office of the National Marine Fisheries Service.

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APPENDIX A. OTHER APPLICABLE LAW

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for management of stocks included in fishery management plans (FMP) in federal waters of the exclusive economic zone (EEZ). However, management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making include the Endangered Species Act (Section 3.3.3), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Section 3.5). 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, unless waived.

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

Data Quality Act

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

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

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

National Historic Preservation Act

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

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

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

Executive Orders (E.O.)

E.O. 12630: Takings

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

E.O. 12962: Recreational Fisheries

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

E.O. 13089: Coral Reef Protection

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

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

E.O. 13132: Federalism

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

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

E.O. 13158: Marine Protected Areas

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

APPENDIX B. GULF LANE SNAPPER MINIMUM SIZE LIMIT, RECREATIONAL BAG LIMIT, AND SEASON PREDICTION ANALYSIS

Gulf Lane Snapper Minimum Size Limit, and Season Prediction Analysis

The Gulf of Mexico Fishery Management Council (Gulf Council) is considering changes to the lane snapper minimum size limit for both the commercial and recreational sector, and also changing the bag limit for the recreational sector. The Gulf lane snapper fishery has had some high landings in recent years which has led to closures due to the Annual Catch Limit (ACL) reached or projected to be reached. New regulations are being considered in hopes of reducing harvest and avoiding closures. The size and bag limit changes were analyzed and compared to predicted landings to determine if they will reduce landings and prevent landings from exceeding the ACL in the future.

Minimum Size Limit Analysis for the Commercial Sector

The current minimum size limit for the commercial sector is 8 inches total length (TL) and the Gulf council is considering increasing the minimum size limit to 10- and 12-inches TL. The Trip Interview Program (TIP) collects detailed commercial fisheries information at the individual trip level. TIP data has both lengths and weights for the lane snapper harvested in the commercial sector, however some lane snapper TIP samples only had length available. Weight estimates were generated for TIP lane snapper samples that only had length and no weight by applying the weight-length equation from SEDAR 49. Figure 1 provides the distribution of harvested lane snapper from the commercial sector from 2021 to 2023.

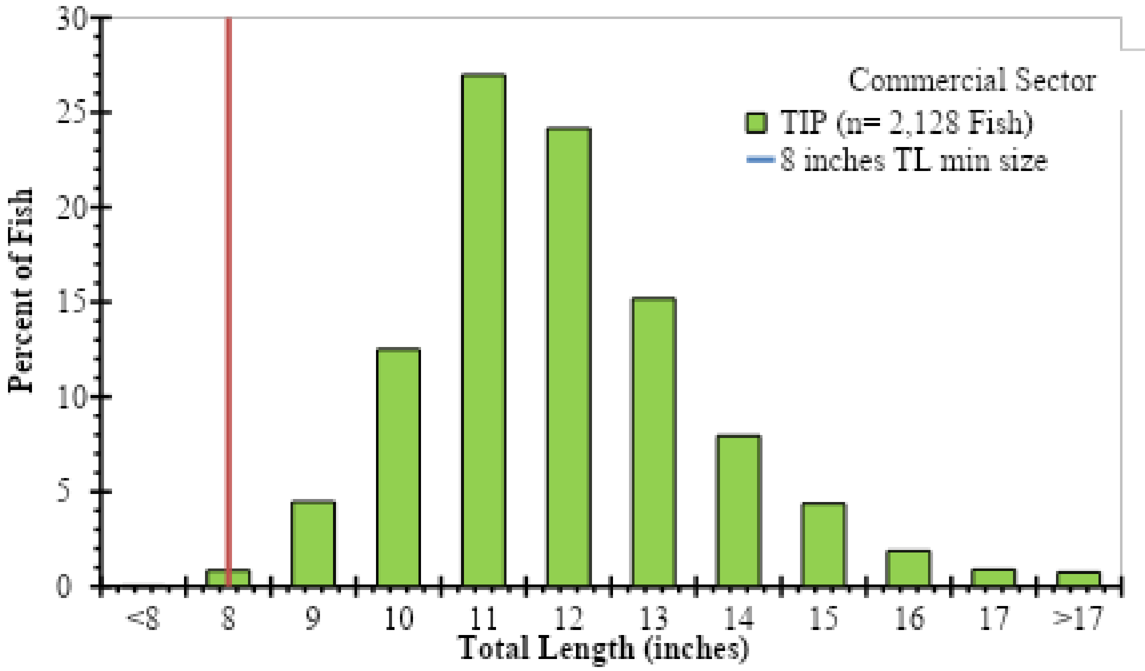

Figure 1. Distribution of the Gulf commercial lane snapper harvested by size bin. Data comes from the TIP program from 2021 through 2023. The red line is the current minimum size limit of 8 inches total length.

The commercial ACL is set in pounds so a percent reduction of landings in pounds was done to match the ACL. Percent reductions in harvest weight were calculated by imposing the two potential minimum size limits of 10- and 12-inches total length. The analysis assumed that harvest of lane snapper less than 10- or 12-inches total length would cease because these fish would be released if the 10- or 12-inch total length size limit was implemented. Percent reductions in landings came from comparing the sum of the weight of the fish weights without the fish less than 10- or 12-inches total length to the total weight of all the fish using the equation of:

$$\text{Percent Reduction} = (\text{Adjusted Weight} - \text{Total Weight})/(\text{Total Weight})$$

Where Adjusted Weight is the sum of the weight of all the lane snapper minus the weights from the lane snapper less than 10- or 12-inches total length, and Total Weight is the weight of all the lane snapper samples. The results of the percent reduction in the commercial landings for increasing the size limit from 8 to 10 and 12 inches by dataset are shown in Table 1.

Table 1. Estimated percent reduction in Gulf lane snapper commercial landings from increasing the minimum size limit from 8 to 10- or 12-inches total length. Data comes from the TIP program from 2021 to 2023. The current minimum size limit is 8 inches total length.

Size Limit	Percent Reduction in Landings
8 inches TL (Status Quo)	0.0%
10 inches TL	2.3%
12 inches TL	31.1%

Minimum Size Limit Analysis for the Recreational Sector

The current minimum size limit for the recreational sector is 8 inches total length (TL) and the Gulf council is considering increasing the minimum size limit to 10- and 12-inches TL. This potential regulation change to the recreational sector was analyzed with the Gulfrecreational datasets of Texas Parks and Wildlife Department's Marine Sport-Harvest Monitoring Program (TPWD), Louisiana Department of Wildlife and Fisheries' recreational creel survey (LA Creel), Southeast Region Headboat survey (Headboat), and Marine Recreational Information Program (MRIP). The datasets were explored to determine the size of lane snapper that were harvested. Figure 2 provides the distribution of Gulf lane snapper harvested in the recent time period of 2021 through 2023.

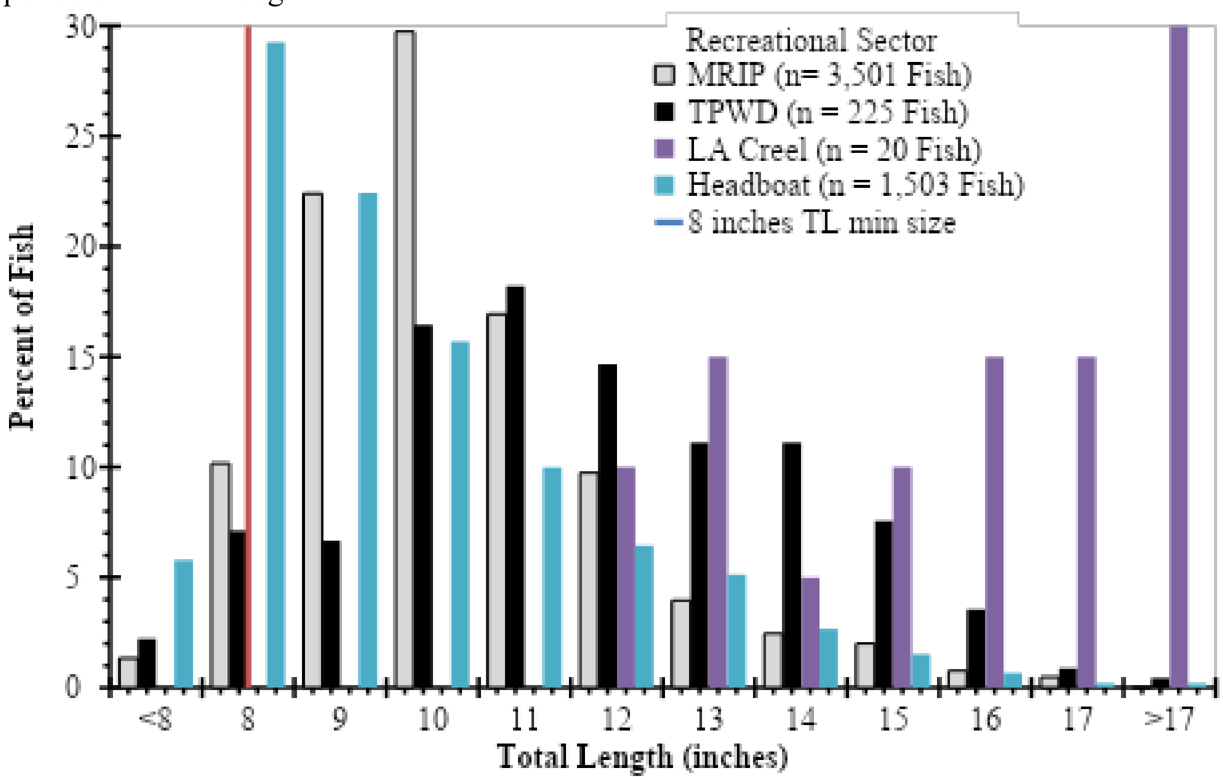

Figure 2. Distribution of the Gulf lane snapper harvested in the recreational sector by size bin. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The red line is the current minimum size limit of 8 inches total length.

The recreational ACL is set in pounds so a percent reduction of landings in pounds was done to match the ACL. The majority of the lane snapper harvest data only has lengths, so lengths were converted to weight using a lane snapper weight-length equation from SEDAR 49. Then percent reductions in harvest weight were calculated by imposing the two potential minimum size limits of 10- and 12-inches total length. The analysis assumed that harvest of lane snapper less than 10- or 12-inches total length would cease because these fish would be released if the 10- or 12-inch total length size limit was implemented. Percent reductions in landings came from comparing the sum of the weight of the fish weights without the fish less than 10- or 12-inches total length to the total weight of all the fish using the equation of:

Percent Reduction=((Adjusted Weight-Total Weight))/(Total Weight)

Where Adjusted Weight is the sum of the weight of all the lane snapper minus the weights from the lane snapper less than 10- or 12-inches total length, and Total Weight is the weight of all the lane snapper samples.

The results of the percent reduction in the recreational landings for increasing the size limit from 8 to 10 and 12 inches by dataset are shown in Table 2. LA creel had a 0% percent reduction because all of the recent lengths of lane snapper captured by this survey were greater than the size limits being considered. For the other three recreational landings surveys the minimum size limit of 12 inches is expected to have a large percent reduction in landings (>48%) because most of the lane snapper harvested had lengths less than 12 inches TL.

Table 2. Estimated percent reduction in the Gulf lane snapper landings for the four recreational surveys from increasing the minimum size limit from 8 to 10- or 12-inches total length. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The current minimum size limit is 8 inches total length.

Size Limit	TPWD	LA Creel	Headboat	MRIP
8 inches TL (Status Quo)	0.0%	0.0%	0.0%	0.0%
10 inches TL	13.8%	0.0%	32.7%	32.6%
12 inches TL	48.4%	0.0%	60.6%	79.2%

To make the size limit percent reductions by dataset easier to comprehend the size limit percent reductions were combined into one recreational sector percent reduction. This was done by weighting the percent reductions in Table 2 by the proportion of recreational landings generated by each dataset from 2021, 2022, and 2023. Table 3 has the result of the overall recreational sector lane snapper size limit reduction in landings.

Table 3. Estimated percent reduction in the Gulf lane snapper landings for the overall recreational sector from increasing the minimum size limit from 8 to 10- or 12-inches total length. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The current minimum size limit is 8 inches total length.

Size Limit	Recreational Sector
8 inches TL (Status Quo)	0.0%
10 inches TL	31.83%
12 inches TL	76.46%

Bag limit for the Recreational Sector

The current bag limit for the recreational sector has lane snapper included in the 20-reef fish aggregate bag limit. The aggregate bag limit includes lane snapper and the species of vermilion snapper, gray triggerfish, almaco jack, golden tilefish, goldface tilefish, and blueline tilefish. The Gulf council is considering reducing the bag limit for lane snapper within the aggregate bag limit with the options of only 2, 5, 10, or 15 lane snapper.

This potential bag limit regulation change to the recreational sector was analyzed with the Gulf recreational datasets of TPWD, LA Creel, Headboat, and MRIP. The datasets were explored to determine the number of lane snapper harvested per person. Figure 3 provides the distribution of Gulf lane snapper harvested per person in the recent time period of 2021 through 2023.

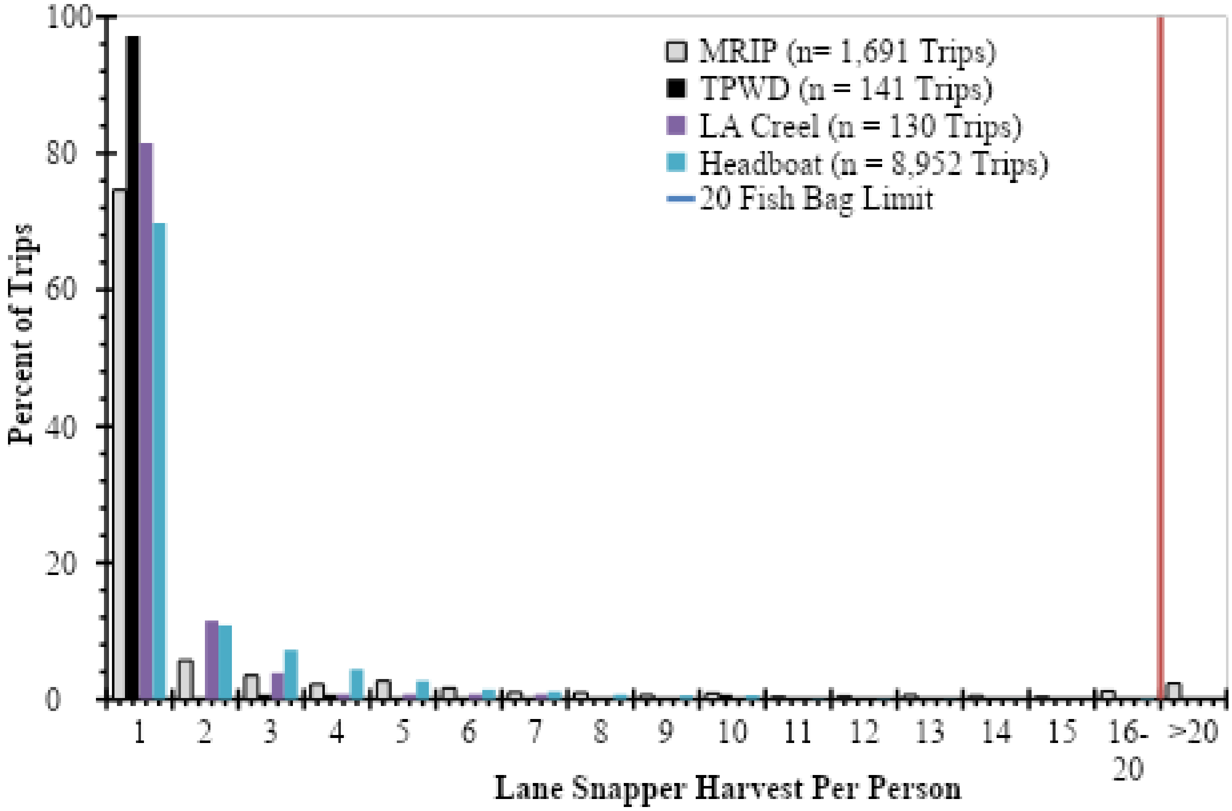

Figure 3. Distribution of the Gulf recreational lane snapper harvested per person for each recreational dataset. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 to 2023.

Lane snapper are currently part of the 20-reef fish aggregate bag limit that also includes: vermilion snapper, gray triggerfish, almaco jack, tilefish (golden), goldface tilefish, and blueline tilefish. An analysis of the 2021 through 2023 TPWD, LA Creel, Headboat, and MRIP data showed that less than 1% of the trips (n = 392 trips) reached the 20-reef fish aggregate bag limit when all seven species in the aggregate were included (Figure 4). Also, the majority of the trips (65%, 23,614 trips) harvested just 1 of the seven aggregate species on a trip. Since the current 20 fish bag limit is rarely met the other species should not be impacted by reducing the lane snapper bag limit within the 20-reef fish aggregate.

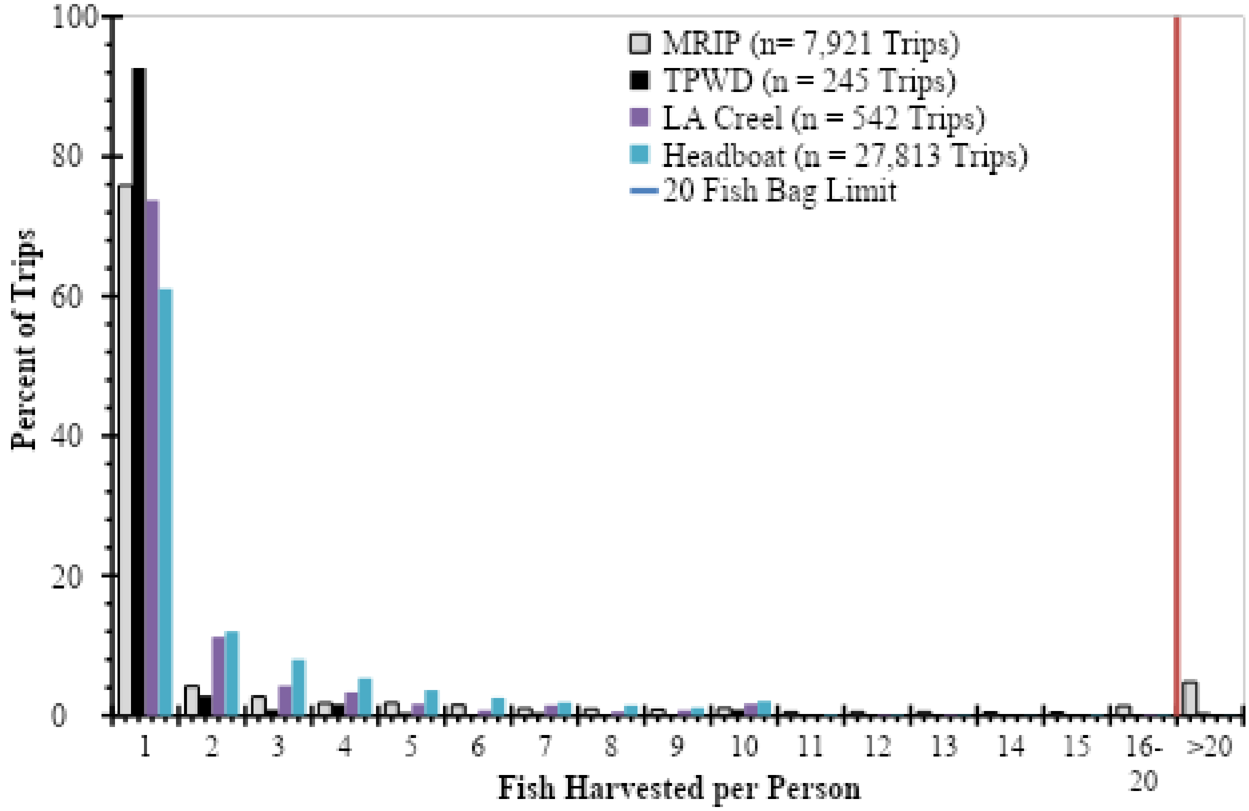

Figure 4. Number of reef fish per angler per trip (expressed as a percentage) landed within the 20-reef fish aggregate bag limit from the Gulf for each recreational dataset. The 20-reef fish aggregate consist of gray triggerfish, vermilion snapper, lane snapper, almaco jack, tilefish (golden), goldface tilefish, and blueline tilefish.

Percent reductions in recreational harvest were estimated for the potential bag limit changes ranging from 2, 5, 10, 15, and 20 lane snapper per person. The current regulation allows 20 lane snapper to be harvested per person. Percent reductions were calculated from limiting trips in recent years that exceeded the bag limit being considered. For example, for the 2-lane snapper per person bag limit all of the trips that exceeded the 2 fish bag limit but were below or at the 20 fish bag limit were reduced to only have a harvest of 2 fish. Trips that exceeded the current 20 fish bag limit were not modified since these trips were illegal, and it is assumed the same level of illegal harvest will continue in the future. Then a percent reduction was calculated by comparing the new harvest from the modified trips to the harvest without the modified trips. The results are shown in Table 4.

Table 4. Estimated percent reduction in Gulf lane snapper recreational landings for the four recreational surveys from changing the 20 fish bag limit to 2, 5, 10, and 15 lane snappers. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The current bag limit is 20 fish.

Bag Limit	TPWD	LA Creel	Headboat	MRIP
20 Lane Snapper (Status Quo)	0.0%	0.0%	0.0%	0.0%
2 Lane Snapper	10.7%	30.1%	40.0%	29.0%
5 Lane Snapper	3.8%	11.8%	14.4%	16.1%
10 Lane Snapper	0%	0%	1.6%	4.9%
15 Lane Snapper	0%	0%	<1%	<1%

To make the bag limit percent reductions by dataset easier to comprehend the bag limit percent reductions were combined into one recreational sector percent reduction. This was done by weighting the percent reductions in Table 4 by the proportion of recreational landings generated by each dataset from 2021, 2022, and 2023. Table 5 has the result of the overall recreational sector lane snapper bag limit reduction in landings.

Table 5. Estimated percent reduction in Gulf lane snapper recreational landings for the overall recreational sector from changing the 20 fish bag limit to 2, 5, 10, and 15 lane snappers. Data comes from the recreational intercept data from TPWD, LA Creel, Headboat, and MRIP from 2021 through 2023. The current bag limit is 20 fish.

Bag Limit	Recreational Sector
20 Lane Snapper (Status Quo)	0.0%
2 Lane Snapper	29.2%
5 Lane Snapper	15.7%
10 Lane Snapper	4.6%
15 Lane Snapper	<1%

Predicted Landings

The Gulf lane snapper stock is monitored by combining the commercial and recreational landings against a single ACL. This stock has been closed three out of the past four years because the ACL was met or predicted to be met. Changes to the size limit and bag limit are being considered with the hope of preventing future closures of the Gulf lane snapper stock. The percent reductions from the size limit and bag limit changes done above are applied to predicted future landings to determine if the ACL will be met. Therefore, an estimate of predicted future landings are needed.

In October of 2024, an Abbreviated Framework increased the ACL to 1,088,873 pounds whole weight (lbs ww). The combined commercial and recreational landings for each year from 2020, 2021, and 2022 were not high enough to exceed the new ACL. However, the more recent years of 2023 and 2024 have higher Gulf lane snapper stock landings. Predicted future landings came from the 2023 and available 2024 landings because this assumes future landings will reflect the most recent landings. At this time, available 2024 commercial and recreational landings are available from January 1 through August 31, 2024. The commercial landings for the past three years of available and complete data (2021, 2022, and 2023), and available 2024 landings are shown in Figure 5. The recreational landings are generated in two-month waves (e.g., January/February, April/May) but were converted to monthly landings to match the commercial landings. The recreational landings were converted from a two-month wave to monthly landings by assuming uniform landings within each individual wave. Also, the MRIP Fishing Effort Survey (FES) data was used because the most recent ACL set in the Abbreviated Framework was based on MRIP FES data. The recreational landings for the past three years of available and complete data (2021, 2022, and 2023), and available 2024 landings are shown in Figure 6.

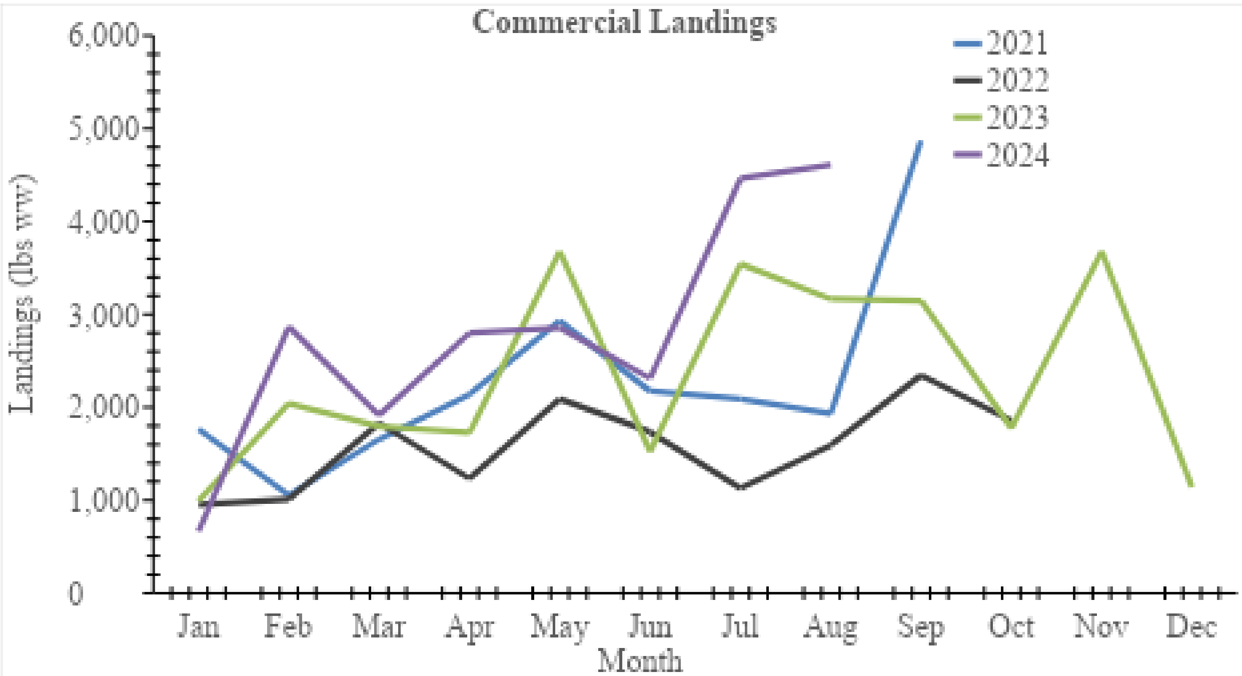

Figure 5. Gulf lane snapper commercial landings by month from 2021, 2022, 2023, and 2024. Landings in months with a closure were removed and not included in the figure. At this time 2024 landings are only available from January 1 through August 31, 2024.

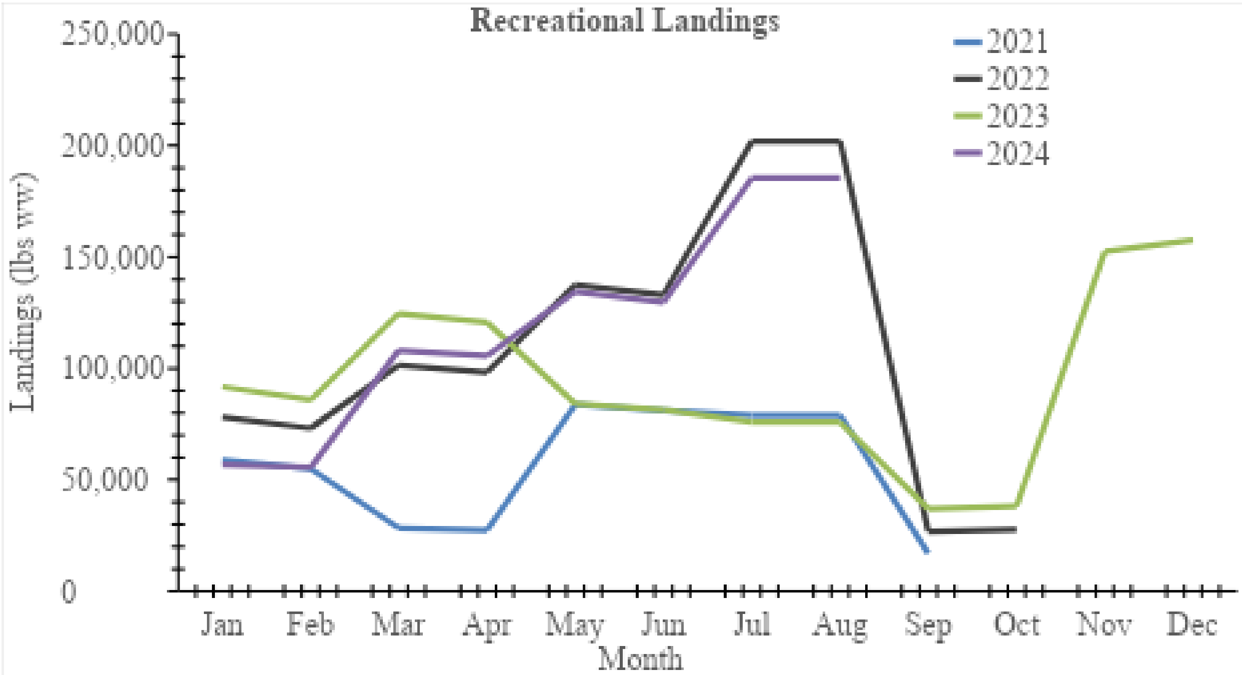

Figure 6. Gulf lane snapper recreational landings by month from 2021, 2022, 2023, and 2024. Landings in months with a closure were removed and not included in this figure. At this time the 2024 landings are only available from January 1 through August 31, 2024.

Predicted landings came from a two-year average of available monthly landings from 2023 and 2024, and just 2023 monthly landings when 2024 landings are not available. As discussed earlier, these recent years of data were chosen since the Gulf lane snapper stock is displaying higher overall landings in the 2023 and 2024 years than in past years. Gulf lane snapper stock landings from 2020, 2021, and 2022 were low and would not result in an ACL overage. The predicted monthly landing from January 1 through August 31 landings came from average monthly landings of 2023 and 2024. Predicted monthly landings form September 1 through December 31 were 2023 monthly landings. The Gulf lane snapper stock is monitored with the combined commercial and recreational landings. Figure 7 provides the combined landings and also the predicted landings.

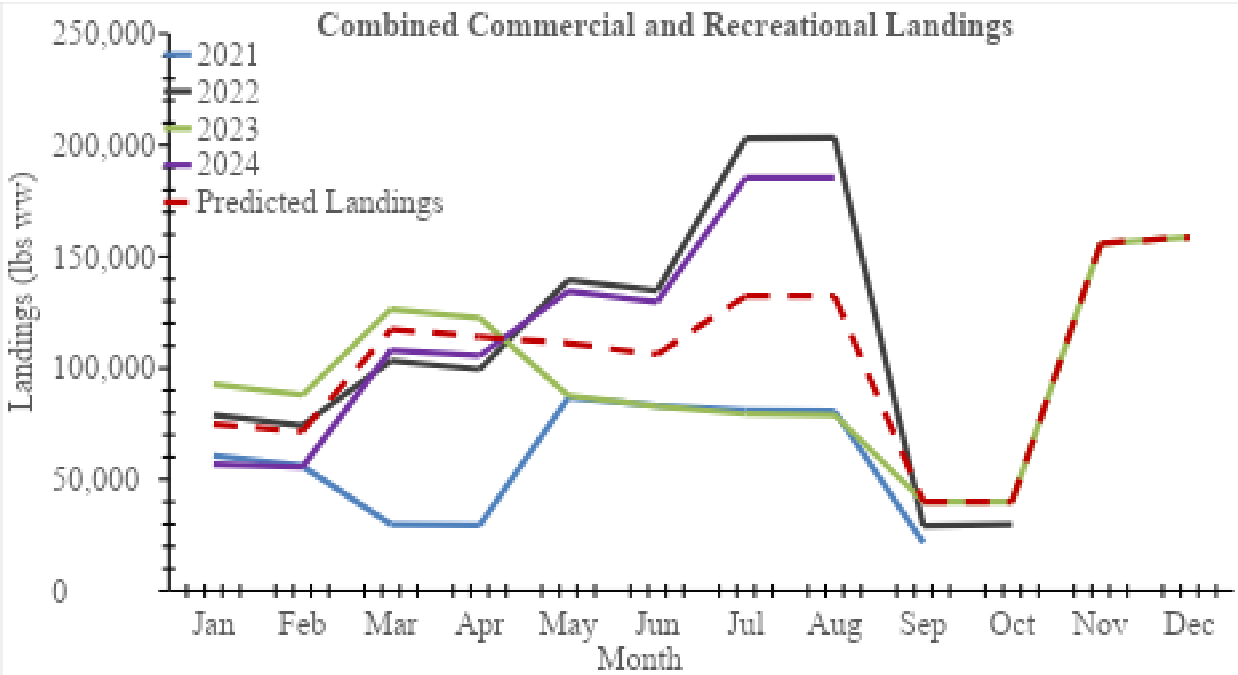

Figure 7. Gulf lane snapper commercial and recreational landings by month from 2021, 2022, 2023, 2024, and predicted landings. Landings in months with a closure were removed and not included in this figure.

Combining reductions from size and bag limits to predicted landings to evaluate if ACL will be met

The percent reductions for the size limit was done for the commercial sector and for the four recreational surveys. The weight these size limit percent reductions are applied to the predicted landings are based on the contribution the commercial sector and the four recreational surveys make to the total commercial and recreational landings. Table 4 provides the contribution the commercial sector and the four recreational surveys made to the total Gulf lane snapper landings from 2021, 2022, and 2023. The majority (>90%) of the Gulf lane snapper stock landings come from MRIP. The percent reductions from the bag limit options were only applied to the recreational landings and followed the same data weighting set in Table 6 but did not modify the commercial landings. The predicted landings per day were cumulatively summed to determine when and if the ACL (1,088,873 lbs ww) was predicted to be met. Table 7 provides the closure dates when and if the ACL was predicted to be met. The ACL is expected to be met as early as November 29 or the ACL is not expected to be met.

Table 6. Gulf lane snapper total landings (commercial and recreational) for the commercial sector and the four recreational surveys from 2021, 2022, and 2023. The landings are in pounds whole weight (lbs ww) and percent of the total landings.

Data	Landings (lbs ww)	Percent
Commercial Sector	67,625	2.4%
TPWD	3,581	<1%
LA Creel	6,916	<1%
Headboat	155,345	5.4%
MRIP	2,627,821	91.8
Total	2,861,289	100%

Table 7. Predicted closure dates when the ACL is expected to be met for the Gulflane snapper stock with changes to the size and bag limits. Closure dates are when the ACL (1,088,873 lbs ww) is expected to be met.

Regulation	Closure Date
20 Lane Snapper Bag Limit (Status Quo)	
8 inches TL (Status Quo)	29-Nov
10 inches TL	No Closure
12 inches TL	No Closure
2 Lane Snapper Bag Limit	
8 inches TL (Status Quo)	No Closure
10 inches TL	No Closure
12 inches TL	No Closure
5 Lane Snapper Bag Limit	
8 inches TL (Status Quo)	10-Dec
10 inches TL	No Closure
12 inches TL	No Closure
10 Lane Snapper Bag Limit	
8 inches TL (Status Quo)	3-Dec
10 inches TL	No Closure
12 inches TL	No Closure
15 Lane Snapper Bag Limit	
8 inches TL (Status Quo)	30-Nov
10 inches TL	No Closure
12 inches TL	No Closure

This analysis assumes the high Gulf lane snapper stock landings that were observed in 2023 and 2024 will continue. If future landings are lower and similar to the 2020, 2021, and 2022 Gulf lane snapper stock landings then the ACL is not expected to be met even without any changes to the size or bag limits. However, if future landings are similar to the landings in 2023 and 2024 then the regulation changes of 10- and 12-inch size limits for the stock and a 2 lane snapper bag limit for the recreational sector are expected to prevent the ACL from being met.

References

SEDAR 49. 2016. SEDAR 49. Gulf of Mexico Data-limited Species: Red Drum, Lane Snapper, Wenchman, Yellowmouth Grouper, Speckled Hind, Snowy Grouper, Almaco Jack, Lesser Amberjack. North Charleston, South Carolina.

APPENDIX C. CONSIDERED BUT REJECTED

January 2025 Council Meeting:

The Council chose to move Action 2, modification to the lane snapper recreational bag limit, to the Considered but Rejected Appendix. The Council determined that this action in addition to Action 1 was not necessary to achieve the Council's intent of constraining landings to the ACL and maintaining an open season year-round.

Action 2 – Modify the bag limit for recreational Gulf lane snapper

Alternative 1: No Action. Maintain Gulf lane snapper within the recreational aggregate bag limit of 20 reef fishes.

Alternative 2: Within the recreational Gulf reef fish aggregate bag limit of 20 fishes, modify the bag limit to allow for no more than 2 Gulf lane snapper.

Alternative 3: Within the recreational Gulf reef fish aggregate bag limit of 20 fishes, modify the bag limit to allow for no more than 5 Gulf lane snapper.

Alternative 4: Within the recreational Gulf reef fish aggregate bag limit of 20 fishes, modify the bag limit to allow for no more than 10 Gulf lane snapper.

Alternative 5: Within the recreational Gulf reef fish aggregate bag limit of 20 fishes, modify the bag limit to allow for no more than 15 Gulf lane snapper.