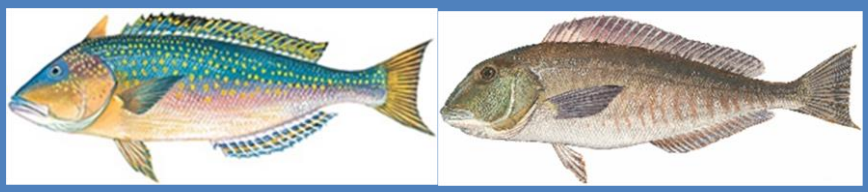

Amendment 52

to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Catch Level Adjustments and Allocations for Golden Tilefish; Management and Accountability Measures for Golden Tilefish and Blueline Tilefish

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

May 26, 2023

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Amendment 52
to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Proposed actions: The actions in Amendment 52 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region would modify management of South Atlantic golden tilefish and blueline tilefish. Actions would: revise the golden tilefish acceptable biological catch, total annual catch limit, and annual optimum yield; revise sector allocations and sector annual catch limits for golden tilefish; modify the fishing season for the commercial longline component for golden tilefish; modify recreational accountability measures for golden tilefish; modify blueline tilefish recreational bag limit; and modify recreational accountability measures for blueline tilefish.

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This Environmental Assessment (EA) is being prepared using the 2020 CEQ NEPA Regulations as modified by the Phase I 2022 revisions. The effective date of the 2022 revisions was May 20, 2022, and reviews begun after this date are required to apply the 2020 regulations as modified by the Phase I revisions unless there is a clear and fundamental conflict with an applicable statute. This EA began on [Date] and accordingly proceeds under the 2020 regulations as modified by the Phase I revisions.

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Why is the South Atlantic Fishery Management Council (Council) considering action?

Golden Tilefish
Current catch levels of South Atlantic golden tilefish are based on an update of the Southeast Data, Assessment and Review (SEDAR) 25 stock assessment completed in 2016 with an assessment period of 1962 through 2014 (SEDAR Update 2016). This amendment addresses the SEDAR 66 standard assessment for golden tilefish, which was completed in 2021, and includes recreational landings estimates using the Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES). Revised catch levels would be specified based on the Scientific and Statistical Committee's (SSC) recommended acceptable biological catch (ABC) and this most recent assessment.

The Council received the results of the assessment and the SSC's recommendations for the overfishing limit and ABC at their June 2021 meeting. The SSC determined the stock is no longer experiencing overfishing, but there is a high degree of uncertainty in the stock status determination since the stock is being fished at or close to maximum sustainable yield. The Council directed staff to begin work on a plan amendment to adjust catch levels based on the SSC recommendations and SEDAR 66 (2021).

The Council is also responding to an industry request to modify when the fishing season begins for the longline component of the commercial golden tilefish sector, to avoid oversupplying the market in the first part of January and allow commercial longline vessels to remain fishing for golden tilefish during the Lenten season when prices tend to be relatively high.

An overview of the golden tilefish portion of the snapper grouper fishery, including management history, landings, and assessment information, can be found here: https://safmc-shinyapps.shinyapps.io/SA_FisheryDataTilefish/.

Blueline Tilefish
From 2017 through 2020, landings of blueline tilefish in the South Atlantic region often exceeded the recreational sector annual catch limit (ACL) (see Table 3.2.2.1 in Chapter 3). The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) National Standard 1 Guidelines contain the following language: *If the catch exceeds the ACL for a given stock, or stock complex, more than once in the last four years, the system of ACLs and AMs should be reevaluated and modified if necessary to improve its performance and effectiveness.* Therefore, the Council is revising accountability measures (AM) to render them more effective at maintaining recreational landings at or below the ACL.

Currently, the recreational sector for blueline tilefish has a four-month season, May 1 through August 31, which was established in 2015 through the final rule for Amendment 32 (SAFMC 2014) to the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP).

That final rule also established a 1 fish per vessel limit during the open season. The bag limit was increased to the current 3 fish per person per day through implementation of Regulatory Amendment 25 to the Snapper Grouper FMP in 2016 (SAFMC 2016a). The Council considered modifying the recreational season in this amendment.

The in-season recreational AM currently in place is triggered when recreational landings meet, or are projected to meet, the recreational ACL. Despite overages of the recreational ACL since 2015, this AM has not been triggered and implemented except for 2022 due to in-season landings estimates being unavailable. The post-season AM is triggered by an overage of the recreational ACL, an overage of the total (commercial and recreational) ACL, and an overfished determination for the stock. If those criteria are met, a payback of the overage and a reduction in next year's fishing season are implemented. Overages of the recreational ACL have not been corrected because blueline tilefish are currently not overfished. Hence, the Council is re-evaluating the system of AMs for the recreational sector and considering modification to recreational management measures.

An overview of the blueline tilefish portion of the snapper grouper fishery, including management history, landings, and assessment information, can be found here: https://safmc-shinyapps.shinyapps.io/SA_FisheryDataBluelineTilefish/

Purpose and Need

Purpose: The purpose is to revise the acceptable biological catch, annual optimum yield, total annual catch limit and sector allocations for golden tilefish based on the most recent stock assessment. Additionally, the purpose is to consider modifications to management measures and accountability measures for golden tilefish and blueline tilefish.

Need: The need is to base conservation and management measures on the best scientific information available and achieve optimum yield, consistent with the Magnuson-Stevens Fishery Conservation and Management Act and its National Standards.

What actions are proposed in this plan amendment?

Amendment 52 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region proposes six actions. Below are the Council's preferred alternatives for Actions 1 through 6.

Action 1: Revise the acceptable biological catch, total annual catch limit, and annual optimum yield for golden tilefish

Purpose of Action: The golden tilefish total ACL is being revised to incorporate the new ABC recommendations of the SSC, based on the SEDAR 66 (2021) stock

assessment, as well as the updated recreational landings from the Marine Recreational Information Program's Fishing Effort Survey.

Preferred Alternative 2. Revise the acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them **equal to the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Year	ABC (lbs gw)	Annual OY (lbs gw)	Total ACL (lbs gw)
2023	435,000	435,000	435,000
2024	448,000	448,000	448,000
2025	458,000	458,000	458,000
2026+	466,000	466,000	466,000

Action 2: Revise sector allocations and sector annual catch limits for golden tilefish

Purpose of Action: The Council's Allocation Review Trigger Policy (Appendix J) states the Council will review sector allocations upon completion of a stock assessment. In addition, recreational landings estimates used in the recent stock assessment have been revised based on the new MRIP FES methodology (Section 1.6). This action allows the Council to consider how to allocate the total ACL between the commercial and recreational sectors from 2023 onwards under the revised catch levels.

Preferred Alternative 2. Allocate 96.70% of the revised total annual catch limit for golden tilefish to the commercial sector and 3.30% of the revised total annual catch limit for golden tilefish to the recreational sector. Within the commercial sector 25% is allocated to the hook and line (HL) component and 75% to the longline (LL) component.

Year	Total ACL= ABC	Commercial ACL (lbs gw) (96.7% of Total ACL)			Recreational ACL (numbers of fish) (3.3% of Total ACL)
		Total	HL (25%)	LL (75%)	
2023	435,000	420,645	105,161	315,484	2,559
2024	448,000	433,216	108,304	324,912	2,635
2025	458,000	442,886	110,722	332,165	2,694
2026+	466,000	450,622	112,656	337,967	2,741

Note: Recreational ACL in numbers of fish was calculated using the average weight (5.61lbs) from recreational samples in SEDAR 66 data from 2016 through 2018.

Action 3. Modify the fishing season for the commercial golden tilefish hook and line and longline components

Purpose of Action: The Council is responding to an industry request to modify when the fishing season begins for the longline component of the commercial golden tilefish sector to avoid oversupplying the market in the first part of January and allow commercial longline vessels to remain fishing for golden tilefish during Lent, when prices tend to be relatively high.

Preferred Alternative 3. Modify the fishing season for the commercial longline component.

Preferred Sub-Alternative 3a. Modify the fishing season to start January 15.

Action 4. Modify recreational accountability measures for golden tilefish

Purpose of Action: Modifications to recreational accountability measures for golden tilefish are being considered to prevent recreational landings from exceeding the ACL and correcting for overages if they occur.

Preferred Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on January 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

Action 5. Modify blueline tilefish recreational bag limit

Purpose of Action: The Council is considering lowering the recreational bag limit to lower the chance of the sector exceeding its ACL. From 2017 through 2020 landings of blueline tilefish in the South Atlantic region often exceeded the sector and total ACL.

Preferred Alternative 2. Reduce recreational blueline tilefish bag limit to 2 fish per person per day.

Preferred Alternative 4. Do not allow retention of blueline tilefish by captain and crew.

Action 6. Modify recreational accountability measures for blueline tilefish

Purpose of Action: The Council is considering modifying the recreational accountability measures to ensure recreational landings remain at or below the recreational ACL and to prevent overages. During the time-period 2017-2020, landings of blueline tilefish in the South Atlantic region have often exceeded the sector and total ACL.

Preferred Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will

annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on May 1 and end on the date the National Marine Fisheries Service projects the recreational annual catch limit will be met.

Chapter 1. Introduction

1.1 What actions are being proposed in this plan amendment?

The actions in Amendment 52 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) would modify management of South Atlantic golden tilefish and blueline tilefish. For golden tilefish, actions include revising the acceptable biological catch (ABC), total annual catch limit (ACL), annual optimum yield (OY), sector allocations, sector ACLs, recreational accountability measures (AM), and management measures for the commercial sector. For blueline tilefish, actions include revising recreational bag limits and recreational AMs.

1.2 Who is proposing the amendment?

The South Atlantic Fishery Management Council (Council) is responsible for managing snapper grouper species in the South Atlantic region. The Council develops the amendment and submits it to the National Marine Fisheries Service (NMFS) who determines whether to approve the amendment and publish a rule to implement the amendment on behalf of the Secretary of Commerce. NMFS is an agency of the National Oceanic and Atmospheric Administration within the Department of Commerce. Guided by the Magnuson-Stevens Act, the Council works with NMFS and other partners to sustainably manage fishery resources in the South Atlantic.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks in the South Atlantic Region.
- Consists of 13 voting members and 4 non-voting members; voting members include 1 representative from each of the 4 South Atlantic state fishery management agencies, 8 members appointed by the Secretary of Commerce, and the Southeast Regional Administrator of NMFS.
- Responsible for developing fishery management plans and amendments under the Magnuson-Stevens Act; recommends actions to NMFS for implementation.
- Management area is from 3 to 200 nautical miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West, except for Mackerel which is from New York to Florida, and Dolphin-Wahoo, which is from Maine to Florida.

The Council and NMFS are also responsible for making this document available for public comment. The draft environmental assessment (EA) was made available to the public during the scoping process, public hearings, and Council meetings. The EA/amendment will be made available for comment during the rulemaking process.

1.3 Where is the project located?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone (EEZ) is conducted under the Snapper Grouper FMP (SAFMC 1983) (Figure 1.3.1). There are 55 species managed by the Council under the Snapper Grouper FMP.

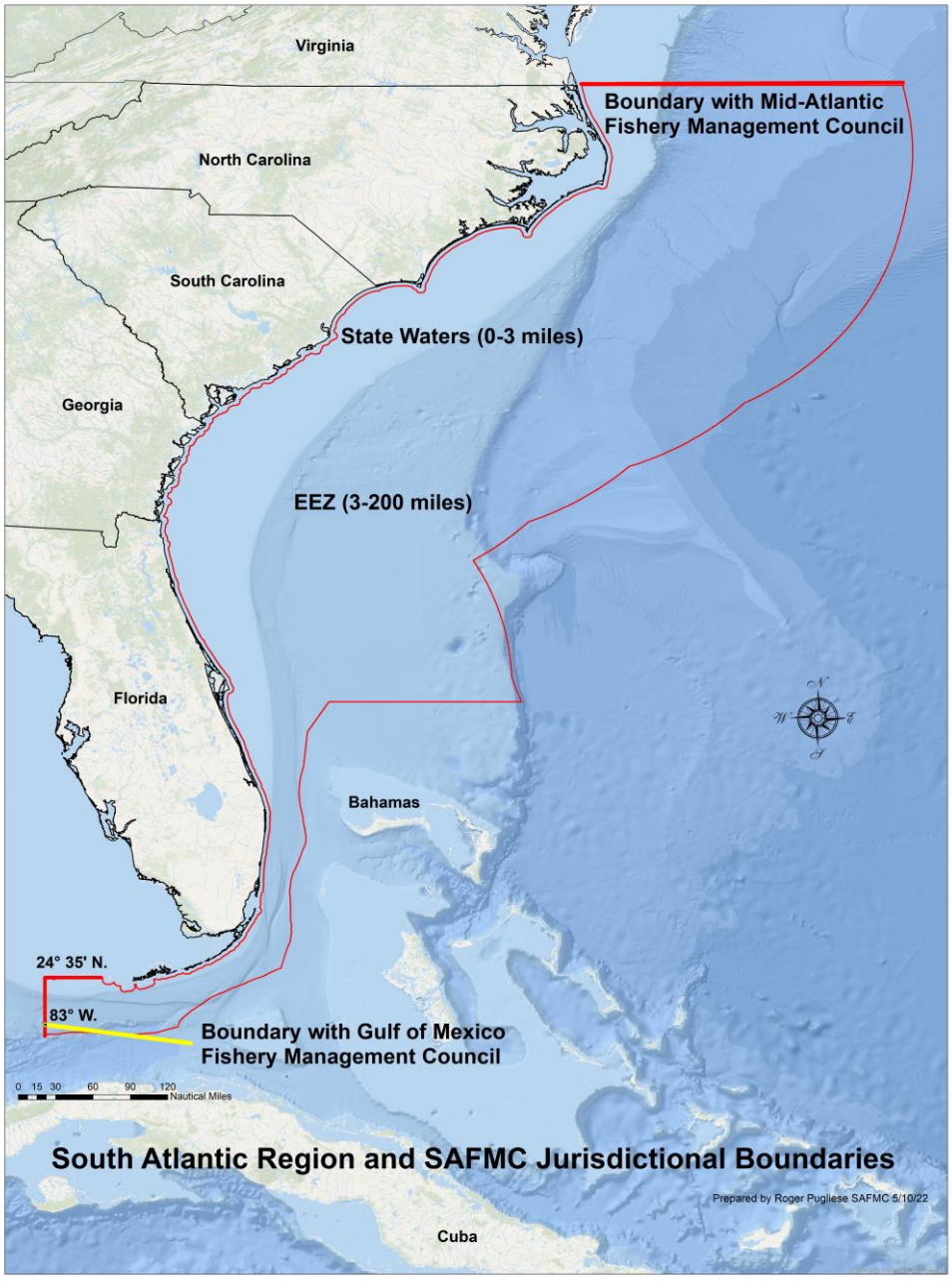

Figure 1.3.1. Jurisdictional boundaries of the Council.

1.4 Why is the Council considering action (Purpose and Need Statement)?

Purpose for Action
The purpose is to revise the acceptable biological catch, annual optimum yield, total annual catch limit and sector allocations for golden tilefish based on the most recent stock assessment. Additionally, the purpose is to consider modifications to management measures and accountability measures for golden tilefish and blueline tilefish.

Need for Action
The need is to base conservation and management measures on the best scientific information available and achieve optimum yield, consistent with the Magnuson-Stevens Act and its National Standards.

Golden Tilefish

Current catch levels of South Atlantic golden tilefish are based on an update of the Southeast Data, Assessment and Review (SEDAR) 25 stock assessment completed in 2016 with an assessment period of 1962 through 2014 (SEDAR 25 Update 2016). This amendment addresses the SEDAR 66 standard assessment for golden tilefish, which was completed in 2021 using data through 2018, and includes recreational landings estimates using the Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES). Revised catch levels would be specified based on the Scientific and Statistical Committee's (SSC) recommended acceptable biological catch (ABC) and this most recent assessment.

The Council received the results of the assessment and the SSC's recommendations for the overfishing limit and ABC at their June 2021 meeting. The SSC determined the stock is no longer experiencing overfishing, but there is a high degree of uncertainty in the stock status determination since the stock is being fished at or close to maximum sustainable yield. The Council directed staff to begin work on a plan amendment to adjust catch levels based on the SSC recommendations and SEDAR 66 (2021).

The Council is also responding to an industry request to modify when the fishing season begins for the longline component of the commercial golden tilefish sector, to avoid oversupplying the market in the first part of January and allow commercial longline vessels to remain fishing for golden tilefish during the Lenten season when prices tend to be relatively high.

An overview of the golden tilefish fishery, including management history, landings, and assessment information, can be found here: https://safmc-shinyapps.shinyapps.io/SA_FisheryDataTilefish/.

Blueline Tilefish

From 2017 through 2020, landings of blueline tilefish in the South Atlantic region often exceeded the recreational sector annual catch limit (ACL) (see Table 3.2.2.3.1 in Chapter 3). The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)

National Standard 1 Guidelines contain the following language: *If the catch exceeds the ACL for a given stock, or stock complex, more than once in the last four years, the system of ACLs and AMs should be reevaluated and modified if necessary to improve its performance and effectiveness.* 50 C.F.R. § 600.310(g)(7). Therefore, the Council is revising accountability measures (AM) to render them more effective at maintaining recreational landings at or below the ACL.

Currently, the recreational sector for blueline tilefish has a four-month season, May 1 through August 31, which was established in 2015 through the final rule for Amendment 32 (SAFMC 2014) to the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). That final rule also established a 1 fish per vessel limit during the open season. The bag limit was increased to the current 3 fish per person per day through implementation of Regulatory Amendment 25 to the Snapper Grouper FMP in 2016 (SAFMC 2016a). The Council considered modifying the recreational season in this amendment.

The in-season recreational AM currently in place is triggered when recreational landings meet, or are projected to meet, the recreational ACL. Despite overages of the recreational ACL since 2015, this AM has not been triggered and implemented except for 2022 due to in-season landings estimates being unavailable. The post-season AM is triggered by an overage of the recreational ACL, an overage of the total (commercial and recreational) ACL, and an overfished determination for the stock. If those criteria are met, a payback of the overage and a reduction in next year's fishing season are implemented. Overages of the recreational ACL have not been corrected because blueline tilefish are currently not overfished. Hence, the Council is re-evaluating the system of AMs for the recreational sector and considering modification to recreational management measures.

An overview of the blueline tilefish portion of the snapper grouper fishery, including management history, landings, and assessment information, can be found here: https://safmc-shinyapps.shinyapps.io/SA_FisheryDataBluelineTilefish/ .

1.5 What are the Acceptable Biological Catch and Overfishing Limit recommendations for golden tilefish?

The SSC reviewed the golden tilefish stock assessment (SEDAR 66 2021) at their April/May 2021 meeting. The SSC determined that the assessment addressed the terms of reference appropriately, was conducted using the best scientific information available, was adequate for determining stock status and supporting fishing level recommendations and addressed uncertainty consistent with expectations and available information. The SSC applied the ABC control rule and recommended OFLs and ABCs for golden tilefish (Table 1.5.1). Recommendations were in total removals and were adjusted for discards, so they are expressed in landings. Projections that resulted in the recommendations are included in Appendix K. The Council is adopting the SSC's recommendations for ABC and OFL.

Table 1.5.1. South Atlantic golden tilefish OFL and ABC recommendations in pounds gutted weight (lbs gw) and numbers of fish (Source: SSC Report May 2021). Note: Any changes to catch levels would be effective in 2023 and the 2026 level would remain in place until modified.

OFL RECOMMENDATIONS		
Year	**Landings (lbs gw)**	**Landings (numbers of fish)**
2023	562,000	69,000
2024	552,000	68,000
2025	543,000	67,000
2026+	535,000	66,000
ABC RECOMMENDATIONS		
Year	**Landings (lbs gw)**	**Landings (numbers of fish)**
2023	435,000	53,000
2024	448,000	54,000
2025	458,000	55,000
2026+	466,000	56,000

The Council is not changing the stock status criteria or formulas for determining the associated stock status values in Amendment 52 to the Snapper Grouper FMP. In this amendment, the Council is adopting the values as determined by the SEDAR 66 assessment and recommended by the SSC using the existing criteria and formulas (Deterministic value in Table 1.5.2).

Table 1.5.2. South Atlantic golden tilefish status criteria recommendations based on the results of SEDAR 66 2021 (SSC Meeting Report, May 2021).

Criteria	Deterministic	Probabilistic
Overfished evaluation (SSB/SSB_{msy})	0.927	0.803
Overfishing evaluation	0.947	1.122
MFMT (F_{msy})	0.282	0.249
SSB_{MSY} (mt)	19.9	22.4
MSST (mt)	14.9	16.8
MSY (1000 lbs.)	541.6	531.6
Y at 75% F_{MSY} (1000 lbs.)	534	522.7

SSB = spawning stock biomass, SSB_{MSY} = spawning stock biomass at the maximum sustainable yield, MFMT = maximum fishing mortality threshold, F_{MSY} = fishing mortality at the maximum sustainable yield, MSST = minimum stock size threshold, MSY = maximum sustainable yield.

1.6 How has recreational data collection changed in the southeast?

The Marine Recreational Fisheries Statistics Survey (MRFSS) was created in 1979 by the National Marine Fisheries Service (NMFS). The program included the Access Point Angler Intercept Survey (APAIS), which consists of onsite interviews at marinas and other points where recreational anglers fish, to determine catch. MRFSS also included Coastal Household Telephone Survey (CHTS), which used random-digit dialing of homes in coastal counties to contact anglers to determine fishing effort. In 2000, the For-Hire Survey (FHS) was

implemented to incorporate for-hire effort due to lack of coverage of charter boat anglers by the CHTS. The FHS used a directory of all known charter boats and a weekly telephone sample of the charter boat operators to obtain effort information.

The Marine Recreational Information Program (MRIP)[1] replaced MRFSS in 2013 to meet increasing demand for more precise, accurate, and timely recreational catch estimates. MRIP is a more scientifically sound methodology for estimating catch because it reduces some sources of potential bias as compared to MRFSS resulting in more accurate catch estimates. Specifically, CHTS was improved to better estimate private angling effort. Instead of random telephone calls, MRIP-CHTS used targeted calls to anglers registered with a federal or state saltwater fishing registry. The MRIP also incorporated a new survey design for APAIS in 2013. This new design addressed concerns regarding the validity of the survey approach, specifically that trips recorded during a given time period are representative of trips for a full day (Foster et al. 2018). The more complete temporal coverage with the new survey design provides for consistent increases or decreases in APAIS angler catch rate statistics, which are used in stock assessments and management, for at least some species (NMFS 2021a). MRIP also transitioned from the legacy CHTS to a new mail survey (FES) beginning in 2015, and in 2018, the FES replaced the CHTS.

A detailed explanation and description of the changes may be found at https://www.fisheries.noaa.gov/recreational-fishing-data/effort-survey-improvements.

Both survey methods collect data needed to estimate marine recreational fishing effort (number of fishing trips) by shore and private/rental boat anglers on the Atlantic and Gulf of Mexico coasts. The new mail-based MRIP-FES uses angler license and registration information as one way to identify and contact anglers (supplemented with data from the U.S. Postal Service, which includes virtually all U.S. households). Because the MRIP-FES and MRIP-CHTS are substantially different, the catch estimates produced from the data obtained through the two methods are not directly comparable, i.e., an estimated number of fish harvested by one method is not equivalent to the same estimated number of fish harvested by the other method. Consequently, NMFS conducted side-by side testing of the two methods from 2015 to 2018 and developed calibration procedures to convert the historical catch estimates (MRFSS, MRIP-CHTS, MRIP-APAIS [collectively MRFSS]) into MRIP-FES. In general, landings estimates are higher using the MRIP-FES as compared to the MRFSS estimates. This is because the MRIP-FES is designed to more accurately measure fishing activity than the MRIP-CHTS, not because there was a sudden rise in fishing effort. NMFS developed a calibration model to adjust historic effort estimates so that they can be accurately compared to new estimates from the FES. The new effort estimates alone do not lead to definitive conclusions about stock size or status in the past or at current. NMFS determined that the MRIP-FES data, when fully calibrated to ensure comparability among years and across states, produced the best available data for use in stock assessments and management (NMFS 2021). Golden tilefish were assessed (SEDAR 66) in 2021 using MRIP-FES landings. Therefore, the OFL, ABC, and ACLs for golden tilefish from SEDAR 66 include MRIP-FES landings. Blueline tilefish were last assessed in 2017 (SEDAR 50), which used MRIP-CHTS landings.

[1] A description of MRIP may be found https://www.fisheries.noaa.gov/recreational-fishing-data/about-marine-recreational-information-program.

1.7 What is the history of management for golden and blueline tilefish?

Snapper grouper regulations in the South Atlantic were first implemented in 1983. The reader is referred to the following link for the management history, summary of changes under each amendment, implementation dates, an up-to-date list of amendments under development and more, for all of the species in the Snapper Grouper FMP: https://safmc.net/fishery-management-plans/snapper-grouper/ . Below are amendments to the Snapper Grouper FMP addressing golden tilefish and blueline tilefish within the South Atlantic EEZ.

Snapper Grouper FMP (SAFMC 1983)
The Snapper Grouper FMP included provisions to prevent growth overfishing in thirteen species in the snapper grouper complex and established a procedure for preventing overfishing in other species; established minimum size limits for red snapper, yellowtail snapper, red grouper, Nassau grouper, and black sea bass; established a 4-inch trawl mesh size to achieve a 12-inch total length (TL) minimum size limit for vermilion snapper; and included additional harvest and gear limitations.

Amendment 1 (SAFMC 1988)
Prohibited trawls to harvest snapper grouper species south of Cape Hatteras, North Carolina and north of Cape Canaveral, Florida. The amendment defined a directed fishery as a vessel with trawl gear and at least 200 pounds of snapper grouper species on board.

Amendment 4 (SAFMC 1991)
Prohibited fish traps, entanglement nets, and longline gear within 50 fathoms, required landing with heads and fins attached; permits - income requirement and required to exceed bag limits; and established 5 grouper aggregate. The amendment established a total allowable catch (TAC) for golden tilefish and adjust the annual TAC downward by reserving a portion based on bycatch. It included a phase-in reduction over 3 years and established a 5,000 pound (lbs) gutted weight (gw) golden tilefish trip limit while the directed golden tilefish quota is open, then reduce to 300 lbs.

Amendment 6 (SAFMC 1993)
Included tilefish species in the 5-grouper aggregate bag limit; prohibited transfer at sea for snowy grouper and golden tilefish regardless of where the fish were caught (i.e., state vs. federal waters); established 100% logbook coverage upon renewal of permit; created the *Oculina* Experimental Closed Area; and data collection needs were specified for evaluation of possible individual fishing quota system.

Amendment 8 (SAFMC 1997)
Established the limited entry program for the commercial sector: unlimited transferable permits and 225-lbs non-transferable permits.

Amendment 9 (SAFMC 1998b)

Required vessels with longline gear aboard to only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish; specified that within the 5-fish aggregate grouper bag limit (which currently includes tilefish and excludes goliath grouper and Nassau grouper), no more than 2 fish may be gag or black grouper (individually or in combination); established MSY proxy for snapper grouper species (other than Nassau and goliath) = 30% static spawning potential ratio (SPR); established OY: hermaphroditic groupers = 45% static SPR and all other species = 40% static SPR.

Amendment 10 (SAFMC 1998c)
Comprehensive EFH Amendment: Identified essential fish habitat (EFH) and established EFH-habitat areas of particular concern (HAPC) for managed species in the South Atlantic.

Amendment 11 (SAFMC 1998c)
Overfished/overfishing evaluations: Golden tilefish: overfished (could not update existing static SPR of 21% SPR). Council concluded measures in Amendments 7, 8 and 9 were sufficient to rebuild golden tilefish above the overfished level; and defined overfishing level for sg species other than Nassau and goliath as F>F30% static SPR, MSST = [(1-M) or 0.5 whichever is greater]*B_{MSY}. MFMT = F_{MSY}.

Amendment 13A (SAFMC 2003)
Extended prohibition on bottom fishing for snapper grouper species in the Oculina Experimental Closed Area and on retaining such species in or from the area.

Amendment 13C (SAFMC 2006)
Established a commercial quota for golden tilefish at 295,000 lbs gw, established a commercial trip limit for golden tilefish of 4,000 lbs gw until 75% of quota is taken then a reduction to 300 lbs (trip limit adjustment only if 75% of quota was landed on or before September 1); and established a recreational bag limit of 1 golden tilefish/person/day included within the 5-grouper aggregate bag limit.

Amendment 14 (SAFMC 2007)
Established eight deep-water marine protected areas in which fishing for or possession of South Atlantic snapper grouper are prohibited.

Amendment 15B (SAFMC 2008)
Prohibited sale of bag-limit caught snapper grouper species, reduced the effects of incidental hooking on sea turtles and smallmouth sawfish, changed the commercial permit renewal period and transferability requirements, implemented a plan to monitor and address bycatch, and established management reference points, such as MSY and OY for golden tilefish. MSY equals the yield produced by F_{MSY}. MSY and F_{MSY} are defined by the most recent SEDAR. Reduced grouper aggregate (including tilefishes) from 5 to 3.

Amendment 17A (SAFMC 2010a)
Required use of non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural bait north of 28 deg. N latitude in the South Atlantic EEZ.

Amendment 17B (SAFMC 2010b)
Defined allocations for commercial golden tilefish to be 97% commercial/3% recreational; established total ACL = 326,554 lbs whole weight (ww) or 291,566 lbs gw) commercial ACL (282,819 lbs gw), and recreational ACL (1,578 fish); established commercial and recreational AM; specified recreational ACL; implemented a closure to commercial and recreational harvest of 6 deep-water species (snowy grouper, blueline tilefish, yellowedge grouper, misty grouper, queen snapper, and silk snapper); and established a longline endorsement for the commercial component of golden tilefish.

Comprehensive ACL Amendment (SAFMC 2011a)
Implemented measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. Long-term measures included implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species, designation of ecosystem component species, and the development of species groups; 2) establish acceptable biological catch (ABC) control rules; 3) ACLs and annual catch targets (ACTs); 4) jurisdictional and sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets.

Regulatory Amendment 11 (SAFMC 2011c)
Removed closure for deep water species (snowy grouper, blueline tilefish, yellowedge grouper, misty grouper, queen snapper, and silk snapper) beyond 240 ft (73 m) implemented through Amendment 17B.

Regulatory Amendment 12 (SAFMC 2012)
Revised the golden tilefish ABC based on projections from Southeast Fisheries Science Center (January 27, 2012) and established ACL = yield at 75%F_{MSY} when stock is at equilibrium = 625,000 lbs ww (558,036 lbs gw); revised commercial and recreational ACLs based on existing allocations: commercial ACL = 606,250 lbs ww (541,295 lbs gw) and recreational ACL = 3,019 fish; revised the recreational annual catch target and AMs; and reopened commercial harvest under 300 lbs trip limit for 2012 fishing year.

Amendment 18B (SAFMC 2013a)
Allocated the golden tilefish commercial ACL between gear groups: 75% to longline and 25% to hook-and-line; and established a commercial trip limit of 4,000 for longline endorsement holders and 500 pounds for hook and line (longliner endorsement holders not eligible to fish under hook-and-line allocation after longline quota is landed).

Amendment 34 (SAFMC 2015)
Modified AMs for snapper grouper species, including golden tilefish.

Amendment 35 (SAFMC 2016b)
Clarified regulations governing the use of golden tilefish longline endorsements.

Regulatory Amendment 28 (SAFMC 2019a)
Ended overfishing of golden tilefish by reducing the ACL based on the most recent stock assessment The total annual catch limit and annual optimum yield for golden tilefish were set equal to the acceptable biological catch (342,000 gw). Total golden tilefish commercial ACL was set at 331,740 lbs gw with 248,805 lbs. gw for the longline component and 82,935 lbs gw for the hook and line component. The recreational ACL was set at 2,316 fish.

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1. Revise the acceptable biological catch, total annual catch limit, and annual optimum yield for golden tilefish

2.1.1 Alternatives

Alternative 1 (No Action). The total annual catch limit and annual optimum yield for golden tilefish are equal to the current acceptable biological catch (342,000 pounds gutted weight). The current acceptable biological catch and overfishing level are inclusive of recreational estimates from the Marine Recreational Information Program's Coastal Household Telephone Survey.

Preferred Alternative 2. Revise the acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them **equal to the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Year	ABC (lbs gw)	Annual OY (lbs gw)	Total ACL (lbs gw)
2023	435,000	435,000	435,000
2024	448,000	448,000	448,000
2025	458,000	458,000	458,000
2026+	466,000	466,000	466,000

Alternative 3. Revise the acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them **equal to 95% of the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Year	ABC (lbs gw)	Annual OY (lbs gw)	Total ACL (lbs gw)
2023	435,000	413,250	413,250
2024	448,000	425,600	425,600
2025	458,000	435,100	435,100
2026+	466,000	442,700	442,700

Alternative 4. Revise the acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to **90% of the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Year	ABC (lbs gw)	Annual OY (lbs gw)	Total ACL (lbs gw)
2023	435,000	391,500	391,500
2024	448,000	403,200	403,200
2025	458,000	412,200	412,200
2026+	466,000	419,400	419,400

Discussion:

A revised annual catch limit (ACL) would be specified based on the most recent assessment and the Scientific and Statistical Committee's (SSC) recommended acceptable biological catch (ABC) levels being adopted by the South Atlantic Fishery Management Council (Council). SEDAR 66 (2021) included recreational landings estimates using the MRIP Fishing Effort Survey (FES) rather than the previously used Marine Recreational Information Program's Coastal Household Telephone Survey (CHTS) data (see Section 1.6 for details).

Per the guidance provided at 50 C.F.R. § 600.310(f)(4)(iv), the Council has chosen to specify optimum yield (OY) for golden tilefish on an annual basis. The Council has also chosen to set OY equal to the total ACL. All the action alternatives would result in higher ACLs than the status quo. The ABC, total ACL, and annual OY would increase annually until 2026 and remain in place after 2026 until modified.

2.1.2 Comparison of Alternatives:

Alternative 1 (No Action) would no longer be based on the best scientific information available (BSIA) and, therefore, is not a viable alternative for consideration in this plan amendment because of the results from SEDAR 66 (2021) and the recommendations from the SSC.

Biological benefits increase as the buffer between the ABCs and the total ACLs increase. Under **Preferred Alternative 2** there would be no buffer between the ABCs and the total ACLs. **Alternatives 3** and **4** have larger buffers between ABC and ACL and would be expected to have greater biological benefits than **Preferred Alternative 2**. Although **Preferred Alternative 2** would allow the greatest amount of harvest of the action alternatives considered, it is also based on the SSC's ABC recommendation, it is BSIA, and it represents a catch level that does not result in overfishing.

Preferred Alternative 2 would provide the highest potential net economic benefits of the viable alternatives being considered followed by **Alternative 3** and **Alternative 4. Alternative 4** would provide the lowest total ACL, thus would be expected to most severely limit harvest and there would be elevated negative economic effects anticipated from this alternative. **Alternative 3** offers a comparatively higher ACL and **Preferred Alternative 2** would provide the highest

ACL. From a net economic benefits perspective, **Preferred Alternative 2** would provide the highest potential net economic benefits of the viable alternatives being considered followed by **Alternative 3** and **Alternative 4.**

In general, a higher ACL would lower the chance of triggering a recreational or commercial AM and result in the lowest level of negative social effects on the recreational and commercial sectors. Additionally, higher ACLs may provide opportunity for commercial and recreational fishermen to expand their harvest, providing social benefits associated with increased income to fishing businesses within the community and higher trip satisfaction. Among the action alternatives, **Preferred Alternative 2** would be the most beneficial for fishermen, followed by **Alternative 3**, and **Alternative 4**.

The overall administrative effects are likely to be minimal and the same across the viable alternatives.

2.2 Action 2. Revise sector allocations and sector annual catch limits for golden tilefish

2.2.1 Alternatives

Note: The revised sector ACLs in Alternatives 1 (No Action) and 2 reflect the revised total ACL in Preferred Alternative 2 of Action 1, which uses recreational landings estimates from the MRIP using the FES method, as well as updates to commercial and headboat landings used in the latest assessment (SEDAR 66). The commercial ACL is allocated between two gear sectors: 25% is allocated to the hook and line sector and 75% to the longline sector based on Amendment 18B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2013a).

Alternative 1 (No Action). Retain the current commercial allocation of 97% of the total annual catch limit for golden tilefish and the current recreational allocation of 3% of the total annual catch limit for golden tilefish. Within the commercial sector, 25% of the total ACL is allocated to the hook and line (HL) component and 75% to the longline (LL) component.

Year	Total ACL= ABC	Commercial ACL (lbs gw) (97% of Total ACL)			Recreational ACL (numbers of fish) (3% of Total ACL)
		Total	HL (25%)	LL (75%)	
2023	435,000	421,950	105,488	316,462	2,326
2024	448,000	434,560	108,640	325,920	2,396
2025	458,000	444,260	111,065	333,195	2,449
2026+	466,000	452,020	113,005	339,015	2,492

Note: Recreational ACL in numbers of fish was calculated using the average weight (5.61lbs) from recreational samples in SEDAR 66 data from 2016 through 2018.

Preferred Alternative 2. Allocate 96.70% of the revised total annual catch limit for golden tilefish to the commercial sector and 3.30% of the revised total annual catch limit for golden tilefish to the recreational sector. Within the commercial sector 25% is allocated to the hook and line (HL) component and 75% to the longline (LL) component.

Year	Total ACL= ABC	Commercial ACL (lbs gw) (96.7% of Total ACL)			Recreational ACL (numbers of fish) (3.3% of Total ACL)
		Total	HL (25%)	LL (75%)	
2023	435,000	420,645	105,161	315,484	2,559
2024	448,000	433,216	108,304	324,912	2,635
2025	458,000	442,886	110,722	332,165	2,694
2026+	466,000	450,622	112,656	337,967	2,741

Note: Recreational ACL in numbers of fish was calculated using the average weight (5.61lbs) from recreational samples in SEDAR 66 data from 2016 through 2018.

Discussion:

The Council's Allocations Trigger Policy (Appendix J) states the Council will review sector allocations upon completion of a stock assessment. In addition, recreational landings estimates have been revised to adopt the new MRIP-FES methodology (described in Section 1.6). This action allows the Council to consider how to allocate the total ACL between the commercial and recreational sectors from 2023 onwards under the revised catch levels.

In Amendment 18B to the Snapper Grouper FMP (2013a), the Council chose to divide the commercial ACL between two gear sectors: 25% is allocated to the hook and line sector and 75% to the longline sector. The commercial gear allocation restored access to the resource for hook-and-line fishermen to proportions observed prior to 2006, and during periods when they had historically harvested golden tilefish (late summer to early fall). It was noted that, if the hook-and-line component regularly reached its ACL in the future, the Council would consider increasing the allocation to that component. The Council chose not to consider changes to the current allocation between these two gear sectors in this amendment since the hook-and-line component has not regularly reached its ACL since the allocation was established.

In Amendment 52 to the Snapper Grouper FMP, the Council is only considering two allocation alternatives for the golden tilefish recreational and commercial sectors. The update to the recreational landings stream did not substantially change the historical landings ratio between sectors. The current allocations (**Alternative 1 No Action**) for the recreational and commercial sectors are 3% and 97%, respectively. These allocation percentages were based on applying the formula: sector annual catch limit = ((mean landings 2006-2008)*0.5)) + ((mean landings 1986-2008)*0.5) to the landings dataset used in Snapper Grouper Amendment 17B (SAFMC 2010b) that included recreational estimates from MRIP-CHTS. Applying the same allocation method using MRIP-FES data would result in allocations of 96.70% and 3.30% for the commercial and recreational sectors, respectively (**Preferred Alternative 2**). The incorporation of the new MRIP-FES data for golden tilefish did not result in a large change in estimated landings from the recreational sector with the percentages shifting up in annual catch from 3% to 3.30%. The fishery for golden tilefish has historically been primarily commercial, and regulations have been imposed on both sectors to manage to the sector allocations. This has resulted in no immediate need to expand the number of years used in the allocation formula.

2.2.2 Comparison of Alternatives:

Under **Alternative 1 (No Action)**, sector allocations would remain at 97% of the ACL for the total commercial sector and 3% for the recreational sector. **Preferred Alternative 2** would shift 0.3% to the recreational sector. Because the difference between percentages for **Alternative 1 (No Action)**, and **Preferred Alternative 2** is so small, biological effects between alternatives are not expected to differ.

Allocations that allow for more fish to be landed can result in increased positive social and economic effects. For the commercial sector the highest economic and social benefits result from **Alternative 1 (No Action)**. For the recreational sector the highest economic and social benefits result from **Preferred Alternative 2.**

Administrative effects would not vary between **Alternative 1 (No Action)** and **Preferred Alternative 2** and are likely going to be minimal. Administrative burdens would relate to data monitoring, outreach, and enforcement of a short fishing season.

2.3 Action 3. Modify the fishing season for commercial golden tilefish hook and line and longline components

2.3.1 Alternatives

Note: Council may choose more than one alternative. The commercial fishing year for golden tilefish is January 1 to December 31.

Alternative 1 (No Action). Do not modify the commercial fishing season for golden tilefish (January 1- December 31).

Alternative 2. Modify the fishing season for the commercial hook and line component.

Sub-Alternative 2a. Modify the fishing season to start January 15.

Sub-Alternative 2b. Modify the fishing season to start January 22.

Sub-Alternative 2c. Modify the fishing season to start February 1.

Preferred Alternative 3. Modify the fishing season for the commercial longline component.

Preferred Sub-Alternative 3a. Modify the fishing season to start January 15.

Sub-Alternative 3b. Modify the fishing season to start January 22.

Sub-Alternative 3c. Modify the fishing season to start February 1.

Discussion:

Golden tilefish are important for the market when shallow water grouper is closed (January 1 through April 30). Under the proposed action, *the fishing year would remain the calendar year* with the start of longline fishing being delayed until January 15. With the increase in the ACL, analyses project that the longline fishing season for golden tilefish would extend into April.

2.3.2 Comparison of Alternatives:

This action is not anticipated to have negative biological impacts on golden tilefish since the commercial sector is constrained by the ACL (as determined in Action 1 and Action 2) and AMs. No difference is expected in the biological impacts of **Alternative 1 (No action)**, **Alternative 2**, and **Preferred Alternative 3** and associated sub-alternatives.

From a total harvest perspective, all the alternatives in Action 3 would likely result in all of the commercial sector ACL being landed. There may be some economic benefits for both the commercial hook and line component (**Alternative 2**) starting at a different time than the commercial longline component (**Preferred Alternative 3)** if the start times vary, which would presumably reduce the amount of golden tilefish being landed at any single time, thereby potentially avoiding oversupplying the market and leading to improved prices. Under these notions, **Sub-alternative 3c** may offer the highest economic benefits followed by **Sub-alternative 3b**, **Preferred Sub-alternative 3a, Alternative 1 (No Action)**, **Sub-alternative 2c**, **Sub-alternative 2b**, and **Sub-alternative 2a.**

The effects on commercial fishermen and related businesses would be associated with access to the golden tilefish stock during periods when the dockside price is highest, and if the commercial ACL is met and an early closure occurs. Staggering the commercial hook and line (**Alternative 2**) and commercial longline (**Preferred Alternative 3**) seasons may reduce the number of fish on the market at a given time and increase the profitability of commercial longline businesses. It would also allow the longline fishing season for golden tilefish to remain open closer to the Lenten season when prices for fish increase. Under this logic, the farther apart the two seasons the higher likelihood of avoiding low prices due to a flooded market, assuming golden tilefish are available in highly reliant communities at the time. **Sub-alternative 3c** would offset the hook and line and longline seasons the furthest, followed by **Sub-alternative 3b, Preferred Sub-alternative 3a** and **Alternative 1 (No Action).**

Administrative burdens for all alternatives would be similar and are expected to be minimal. Administrative burden would be associated with rule-making, education and outreach and enforcement.

2.4 Action 4. Modify recreational accountability measures for golden tilefish

2.4.1 Alternatives

Alternative 1 (No Action). If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Preferred Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on January 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

Discussion:

Both **Alternative 1 (No Action)** and **Alternative 2** would retain the in-season AM that closes harvest when the recreational ACL is met or is projected to be met. The two alternatives different in the post-season AM. **Alternative 1 (No Action)**, does not correct for an overage unless landings above the ACL continue to occur. If the ACL continues to be exceeded, then the length of the season is reduced, and a payback of the overage is required *but only if the species is overfished and the total ACL is also exceeded*. **Alternative 2** would remove the stock status and the total ACL from the trigger for the post-season AM. **Preferred Alternative 3** would have National Marine Fisheries Service (NMFS) calculate the length of the season based on catch rates from the previous year and announce it in advance. The start of the recreational fishing year would remain January 1.

2.4.2 Comparison of Alternatives:

Preferred Alternative 3 would result in biological benefit to the stock in that it is more likely than **Alternative 1 (No Action)** or **Alternative 2** to prevent overages of the recreational ACL since the NMFS would be projecting the length of the season ahead of time. However, this

alternative would not correct for an overage if it were to occur due to an unforeseen increase in recreational effort in-season. Biological benefits would be expected to be greater for the alternative that provides the most timely and realistic trigger to implement an AM. **Under Alternative 1 (No Action)**, an in-season closure would likely not be triggered due to need for both the total and recreational ACL to be exceeded and for the stock to be overfished. Golden tilefish are not overfished and as such the AM would not be triggered unless this status determination changes. **Alternative 2** would retain the in-season AM and correct for recreational overages of the ACL in the following fishing season but remove the stock status and total ACL triggers. **Preferred Alternative 3** would be expected to prevent overages of the recreational ACL since NMFS would be projecting the length of the season ahead of time. Biological benefits would be greater for the alternative that provides the most timely and realistic trigger to implement an AM. Therefore, **Alternative 2** would provide the most benefit, followed by **Preferred Alternative 3** and **Alternative 1 (No Action)**.

The economic effects of **Alternative 2** would likely be similar to those of **Alternative 1 (No Action)**, but the AM would occur regardless of the stock status, thus has a higher likelihood of occurring. **Preferred Alternative 3** would result in a fishing season that is announced annually with set start and end dates. This AM would limit overall long-term harvest of golden tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

In terms of potential short-term negative economic effects to the recreational sector, **Alternative 2** would have the highest potential negative economic effects since there is a payback provision that would occur regardless of stock status, followed by **Alternative 1 (No Action)**, and **Preferred Alternative 3**.

Reducing the season length is anticipated to result in direct negative social effects associated with loss of access to the resource. Inconsistent fishing seasons can make it challenging for private anglers and for-hire business to plan their fishing activities through the long-term. **Preferred Alternative 3** would have NMFS announce the length of the recreational season for golden tilefish. While the end date for golden tilefish may shift each year, announcing the length of the season at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

Under **Alternative 2** and **Preferred Alternative 3** there would be an increased administrative burden related to determining the season length as well as announcing the season length or reduction in season length in the *Federal Register*.

2.5 Action 5. Modify blueline tilefish recreational bag limit

2.5.1 Alternatives

Note: The Council can select more than one alternative to address bag limit modification as well as retention of blueline tilefish by captain and crew.

Alternative 1 (No Action). The current recreational blueline tilefish bag limit is 3 per person per day. Captains and crew of for-hire vessels with valid Federal South Atlantic Charter/Headboat Snapper Grouper Permits are allowed to retain bag limit quantities of all snapper grouper species during the open recreational season.

Preferred Alternative 2. Reduce recreational blueline tilefish bag limit to 2 fish per person per day.

Alternative 3. Reduce recreational blueline tilefish bag limit to 1 fish per person per day.

Preferred Alternative 4. Do not allow retention of blueline tilefish by captain and crew.

Discussion:
The Council is considering reducing the recreational bag limit to decrease the chance of the landings exceeding the recreational ACL. During the time-period 2017-2020, landings of blueline tilefish in the South Atlantic region (Table 3.2.1.3.1), have often exceeded the sector ACL.

2.5.2 Comparison of Alternatives:

The combination of **Alternative 3** and **Preferred Alternative 4**, would result in the greatest benefit to the stock, since this combination of alternatives would reduce recreational effort the most, followed by the combination of **Preferred Alternatives 2** and **4**, **Preferred Alternative 4**, and **Alternative 1 (No Action)**. Although a reduction in harvest is not needed for blueline tilefish, it is expected that this action would prevent continued overages of the recreational ACL thus imparting biological benefit to the stock.

Generally, angler satisfaction increases with the number of fish that can be harvested and the size of the fish. The smaller the bag limit the greater the probability that the satisfaction from an angler trip could be affected. Anglers tend to land 2 or fewer blueline tilefish on a single trip (Section 4.5.1). Setting the bag limit at 2 fish **(Preferred Alternative 2)** or 1 fish per person (**Alternative 3)** would have greater negative economic effects on a trip-level due to constraining harvest and related economic benefits (CS). Prohibiting captain and crew from retaining the bag limit (**Preferred Alternative 4**) may also constrain harvest leading to similar economic effects in comparison to **Alternative 1 (No Action)**. Conversely, more restrictive retention limits would allow for longer open harvest seasons.

Although there may be some benefit from implementing a reduced bag limit (**Preferred Alternative 2** and **Alternative 3**) or eliminating captain and crew bag limits (**Preferred Alternative 4**) stemming from a prolonged season or increased availability of the species, such a limitation may affect the marketability of for-hire trips if limits are set too low. Thus, a lower bag limit may lead to a decrease in producer surplus (PS) for for-hire vessels due to a decrease in

for-hire trips being booked by customers, in comparison to the for-hire trips currently occurring under **Alternative 1 (No Action)**. These potential effects cannot be quantified with current data.

In general, a reduction in the recreational bag limit (**Preferred Alternative 2** and **Alternative 3**) or prohibiting retention of fish by captain and crew (**Preferred Alternative 4**) may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded. However, as stated above, bag and vessel limits that are too low may make fishing trips inefficient and lower angler satisfaction. The higher bag limit under **Alternative 1 (No Action)** would likely have little effect on recreational fishermen in the short-term but could result in negative effects in the future if the recreational ACL is regularly exceeded. Slowing the rate of harvest and ensuring sustainable harvest of the blueline tilefish stock would provide long-term social benefits. If slowing the rate of harvest and lengthening the season provides additional fishing opportunities to the recreational fishing communities, **Alternative 3** (35.1% reduction in landings) would be the most beneficial, followed by **Preferred Alternative 2** (8.5%), **Preferred Alternative 4** (3.7%), and **Alternative 1 (No Action)**.

Administrative burdens for **Alternative 1 (No Action)**, **Preferred Alternative 2**, **Alternative 3** and **Preferred Alternative 4** would be similar and are expected to be minimal. Administrative burden would be associated with rulemaking, education and outreach, and enforcement.

2.6 Action 6. Modify recreational accountability measures for blueline tilefish

2.6.1 Alternatives

Alternative 1 (No Action). If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Preferred Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on May 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

Discussion:

Under **Alternative 1 (No Action),** three triggers (recreational ACL and total ACL exceeded, and the stock being overfished) have to be met for the post-season to be triggered. **Alternative 2** is similar to **Alternative 1 (No Action)** in that it would correct for an overage in the following fishing year, but it proposes to take away the requirements of the total ACL being exceeded and the overfished status for the post-season AM to be triggered. **Preferred Alternative 3** would require that NMFS project the length of the recreational season based on previous data on landings and effort. As such, the length of the season could vary from year to year but the May 1 start date would remain the same.

2.6.2 Comparison of Alternatives:

Under **Alternative 1 (No Action),** an in-season closure would likely not be triggered due to need for both the total and recreational ACL to be exceeded and for the stock to be overfished. Blueline tilefish are not overfished and thus the AM would not be triggered unless this status determination changes. **Alternative 2** would correct for recreational overages of the ACL in the following fishing season by reducing the ACL and shortening the season regardless of stock status or whether the total ACL was exceeded. As such, this alternative would provide more

biological benefits than **Alternative 1 (No Action)** as it is more likely to be triggered. **Preferred Alternative 3** would be expected to prevent overages of the recreational ACL since NMFS would be projecting the length of the season ahead of time. However, this alternative would not correct for an overage if it were to occur due to an unforeseen increase in recreational effort in-season. Biological benefits would be greater for the alternative that provides the most timely and realistic trigger to implement an AM. Therefore, **Alternative 2** would provide the most benefit, followed by **Preferred Alternative 3** and **Alternative 1 (No Action)**.

The economic effects of **Alternative 2** would likely be similar to those of **Alternative 1 (No Action)**, but the AM would occur regardless of the stock status, thus has a higher likelihood of occurring. **Preferred Alternative 3** would result in a fishing season that is announced annually with set start and end dates and would limit overall long-term harvest of blueline tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

AMs can have direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. Overall, longer seasons result in increased fishing opportunities for the recreational sector and increased revenue opportunities for the for-hire sector. Reducing the season length is anticipated to result in direct negative social effects associated with loss of access to the resource.

Alternative 2, would reduce the following fishing season in response to landings exceeding the recreational and total ACL, but it does include qualifying language stating that blueline tilefish must identified as overfished; AND the combined commercial and recreational ACL must be exceeded in the same calendar year. As such, the fishing season may vary significantly from year to year due to changes in fishing behavior or environmental conditions. Inconsistent fishing seasons can make it challenging for private anglers and for-hire business to plan their fishing activities through the long-term.

Alternatively, **Preferred Alternative 3** would have NMFS announce the length of the recreational season for blueline tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year. While the end date for blueline tilefish may shift each year, announcing at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

Under **Alternative 2** and **Preferred Alternative 3** There would be an increased administrative burden related to determining the season length as well as announcing the season length or reduction in season length in the *Federal Register*.

Chapter 3. Affected Environment

This section describes the affected environment in the proposed project area. The affected environment is divided into five major components:

- **Habitat** (Section 3.1)
- **Biological and Ecological environment** (Section 3.2)
- **Economic environment** (Sections 3.3)
- **Social environment** (Sections 3.4)
- **Administrative environment** (Section 3.5)

3.1 Habitat

Information on the habitat utilized by species in the snapper grouper fishery management unit (Snapper Grouper FMU) and managed through the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) is included in Volume II of the Fishery Ecosystem Plan (FEP; SAFMC 2009b) and the FEP II Dashboard (under revision) which are incorporated here by reference. South Atlantic Fishery Management Council (Council) designated essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) (SAFMC 1998b and SAFMC 2011b) that are described in the SAFMC User Guide. Spatial representations of EFH and other habitat related layers are accessible through the Council's SAFMC Atlas, a platform for searching and visualizing GIS data relevant to the Council's mission and downloading of GIS layers. Information on regional partners is available through the SAFMC Digital Dashboard.

3.1.1 Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Act as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Under the Magnuson-Stevens Act, FMPs are required to describe and identify EFH and to minimize the adverse effects of fishing on such habitat to the extent practicable. EFH for species in the Snapper Grouper FMU includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 ft (but to at least 2000 ft for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up

to and including settlement. In addition, the Gulf Stream is an EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper grouper species, EFH includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

3.1.2 Habitat Areas of Particular Concern

An EFH-HAPC designation adds an additional layer to the EFH designation. Under the Snapper Grouper FMP, EFH-HAPCs are designated based upon ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of habitat type. EFH-HAPCs for species in the snapper grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; nearshore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic Sargassum; Hoyt Hills for wreckfish; the Oculina Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs). Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, post-larval, juvenile, and adult stages).

EFH-HAPCs for golden tilefish includes irregular bottom comprised of troughs and terraces inter-mingled with sand, mud, or shell hash bottom. Mud-clay bottoms in depths of 150-300 meters are HAPC. Golden tilefish are generally found in 80-540 meters, but most commonly found in 200-meter depths.

EFH-HAPC for blueline tilefish includes irregular bottom habitats along the shelf edge in 45-65 meters depth; shelf break; or upper slope along the 100-fathom contour (150-225 meters); hardbottom habitats characterized as rock overhangs, rock outcrops, manganese-phosphorite rock slab formations, or rocky reefs in the South Atlantic Bight; and the Georgetown Hole (Charleston Lumps) off Georgetown, SC.

EFH-HAPCs for the snapper grouper complex include the following deep-water marine protected areas (MPAs) as designated in Snapper Grouper Amendment 14: Snowy Grouper Wreck MPA, Northern South Carolina MPA, Edisto MPA, Charleston Deep Artificial Reef MPA, Georgia MPA, North Florida MPA, St. Lucie Hump MPA, and East Hump MPA.

The Council established the special management zone (SMZ) designation process in 1983 in the Snapper Grouper FMP, and SMZs have been designated in federal waters off North Carolina, South Carolina, Georgia, and Florida since that time. The purpose of the original SMZ designation process, and the subsequent specification of SMZs, was to protect snapper grouper populations at the relatively small, permitted artificial reef sites and “create fishing opportunities

that would not otherwise exist." Thus, the SMZ designation process was centered around protecting the relatively small habitats, which are known to attract desirable snapper grouper species.

Additionally, in the Comprehensive Ecosystem-Based Amendment 1 (SAFMC 2009a), the Council determined that the Council-designated SMZs met the criteria to be EFH-HAPCs for species included in the Snapper Grouper FMP. Since CE-BA 1, the Council has recently through Snapper Grouper Regulatory Amendment 34 (SAFMC 2015), designated 30 SMZs off North Carolina and an additional 4 SMZs off South Carolina. In addition, the Council through Amendment 36 (SAFMC 2016c) established 5 Spawning SMZs in the region. The SMZ and EFH-HAPC designations serve similar purposes in pursuit of identifying and protecting valuable and unique habitat for the benefit of fish populations, which are important to both fish and fishers. Therefore, the Council determined that a designated SMZ meets the criteria for an EFH-HAPC designation, and the Council intends that all SMZs designated under the Snapper Grouper FMP also be designated as EFH-HAPCs under the Snapper Grouper FMP.

3.2 Biological and Ecological Environment

The waters off the South Atlantic coast are home to a diverse population of fish. The Snapper Grouper FMU contains 55 species of fish, many of them neither "snappers" nor "groupers." These species live in depths from a few feet (typically as juveniles) to hundreds of feet. As far as north/south distribution, the more temperate species tend to live in the upper reaches of the South Atlantic management area (e.g., black sea bass, red porgy) while the tropical variety's core residence is in the waters off south Florida, Caribbean Islands, and northern South America (e.g., black grouper, mutton snapper). These are reef-dwelling species that live amongst each other. These species rely on the reef environment for protection and food. There are several reef tracts that follow the southeastern coast. The fact that these fish populations congregate dictates the nature of the fishery (multi-species) and further forms the type of management regulations proposed in this amendment. The specific components of the ecological environment affected by actions in this amendment include red porgy, other affected species, and protected species. These components are described in detail in the following sections.

3.2.1 Golden Tilefish

3.2.1.1 Life History

Life history, biological characteristics, and stock status information for golden tilefish may be found the Southeast Data, Assessment, and Review (SEDAR) report, SEDAR 66 Update (2021), which is available on the SEDAR web site and is hereby incorporated by reference (see Section 3.2.1.2 for more information on the SEDAR process). Golden tilefish are distributed throughout the Western Atlantic, occurring as far north as Nova Scotia, to southern Florida, and in the eastern Gulf of Mexico (Robins and Ray 1986). According to Dooley (1978), golden tilefish occur at depths of 80-540 meters (263-1,772 feet). Robins and Ray (1986) report a depth range of 82-275 meters (270-900 feet) for golden tilefish. It is most commonly found at about 200 meters (656 feet), usually over mud or sand bottom but, occasionally, over rough bottom (Dooley 1978). Maximum reported size is 125 centimeters (50 inches) total length and 30 kilograms (66 pounds) (Dooley 1978; Robins and Ray 1986). Maximum reported age is 40 years (Harris et al. 2001). Radiocarbon aging indicates golden tilefish may live for at least 50 years (P.

Harris, personal communication). Golden tilefish spawn off the southeast coast of the United States (U.S.) from March through late July, with a peak in April (Harris et al. 2001). Grimes et al. (1988) indicate peak spawning occurs from May through September in waters north of Cape Canaveral. Golden tilefish primarily prey upon shrimp and crabs, but also eat fishes, squid, bivalves, and holothurians (Dooley 1978).

3.2.1.2 Stock Status

The Southeast Data, Assessment, and Review (SEDAR) process is a cooperative Fishery Management Council initiative to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. SEDAR seeks improvements in the scientific quality of stock assessments, constituent and stakeholder participation in assessment development, transparency in the assessment process, and a rigorous and independent scientific review of completed stock assessments.

SEDAR is organized around three public workshops. First is the Data Workshop, during which fisheries monitoring and life history data are reviewed and compiled. Second is the Assessment Workshop, which may be conducted via a workshop and several webinars, during which assessment models are developed and population parameters are estimated using the information provided from the Data Workshop. Third and final is the Review Workshop, during which independent experts review the input data, assessment methods, and assessment products. The completed assessment, including the reports of all three workshops and all supporting documentation, are then forwarded to the Council's Scientific and Statistical Committee (SSC). The SSC considers whether the assessment represents the best available science and develops fishing level recommendations for Council consideration.

The South Atlantic stock of golden tilefish was first assessed through the Southeast Data, Assessment, and Review (SEDAR 4) in 2004. The benchmark assessment for golden tilefish, SEDAR 4, was completed in 2004 with an assessment period 1961-2002 (SEDAR 2004). SEDAR 25 was a standard assessment completed in 2011 with an assessment period spanning 1962-2010 (SEDAR 25 2011) and several important changes to input parameters (e.g., natural mortality (M), catchability or efficiency of the fishery (h), SSB units). Current management of South Atlantic golden tilefish is based on an update of SEDAR 25 completed in 2016 with an assessment period of 1962-2014 (SEDAR 25 Update 2016).

The SSC reviewed the golden tilefish stock assessment (SEDAR 66 2021) at their April/May 2021 meeting. The SSC found that the assessment addressed the terms of reference appropriately, was conducted using the best scientific information available, was adequate for determining stock status and supporting fishing level recommendations and addressed uncertainty consistent with expectations and available information. The SSC applied the acceptable biological catch (ABC) control rule and recommended the following ABCs and overfishing limits (OFL) for golden tilefish. Recommendations are based on landings and expressed in total removals.

3.2.1.3 Landings

Commercial
Commercial landings of South Atlantic golden tilefish have declined since 2017 (Table 3.2.1.3.1).

Table 3.2.1.3.1 South Atlantic golden tilefish landings and ACLs in lbs ww, 2015-2020.

Year	Commercial Longline Landings	Commercial Hook and Line Landings	Total Landings (lbs ww)	Total ACL	% ACL
2015	389,244	143,872	533,116	541,295	98.4%
2016	421,513	111,816	533,329	541,295	99%
2017	427,586	110,045	537,631	541,295	99%
2018	247,349	54,649	301,998	314,310	96%
2019	306,409	61,4071	367,817	314,310	117%
2020	273,570	70,552	344,122	314,310	109%

Sources: SEFSC Commercial ACL Database [April 5, 2021]

Recreational
Recreational landings of South Atlantic golden tilefish are monitored in numbers of fish and are presented in Table 3.2.1.3.2. The current ACL is in MRIP Coastal Household Telephone Survey (CHTS) units and, therefore, not comparable to the landings presented in the table below which are in MRIP-FES units.

Table 3.2.1.3.2 South Atlantic golden tilefish recreational landings in numbers of fish.

Year	Landings (fish)
2015	4,014
2016	14,767
2017	3,215
2018	9,079
2019	43,023
2020	6,249
2021	8,221

Sources: SEFSC MRIP FES Recreational ACL Database [April 2022]

3.2.2 Blueline Tilefish

3.2.2.1 Life History

Blueline tilefish, *Caulolatilus microps*, occurs in the Western Atlantic Ocean, North Carolina to southern Florida and Mexico, including the northern (and probably eastern) Gulf of Mexico

(Dooley 1978). Blueline tilefish are found along the outer continental shelf, shelf break, and upper slope on irregular bottom with ledges or crevices, and around boulders or rubble piles in depths of 30-236 m (98-774 ft) and temperatures ranging from 15 to 23° C (59-73.4º F) (Ross 1978; Ross and Huntsman 1982; Robins and Ray 1986; Parker and Mays 1998). Maximum reported size is 90 cm (35.4 in) FL (SEDAR 32 2013) and 7 kg (15 pounds [lbs]) (Dooley 1978). Maximum reported age is 43 years (SEDAR 32 2013). The SEDAR group estimated the natural mortality rate to be 0.1 (SEDAR 32 2013). Spawning occurs at night, from March to October, with a peak in May (SEDAR 32 2013) using information from Harris et al. (2004). Blueline tilefish primarily feeds on benthic invertebrates and fishes (Dooley 1978).

Blueline Tilefish Life History
An Overview

- Extend from North Carolina to southern Florida and Mexico, including the Gulf of Mexico
- Waters ranging from 98-774 feet
- The spawning season extends from March to October, peaking May.
- Age for oldest fish discovered is 43 years.

Several species in the snapper grouper fishery management unit, though they occupy the same time and space in the reef environment, occupy different trophic niches. For example, blueline tilefish consume a higher diversity of organisms and prey that is more closely associated with the bottom (Bielsa and Labinski 1987). In contrast, the diet of snowy grouper, a co-ocurring species in portions of the South Atlantic, is more specialized and prey items are found higher in the water column. It has been suggested that the different trophic niches reduces the interspecific competition for food items between these two species (Bielsa and Labinski 1987).

3.2.2.2 Stock Status

The most recent stock assessment for blueline tilefish was conducted in 2017 (SEDAR 50 2017). The blueline tilefish stock south of Cape Hatteras, North Carolina, was determined not to be undergoing overfishing and was not overfished. The status of the stock was unknown north of Cape Hatteras due to insufficient data. SEDAR 50 used the conclusion from a stock ID workshop that blueline tilefish constitute a single population throughout the U.S. geographic range and concluded that the main stock assessment effort should proceed with models including removals above and below Cape Hatteras, North Carolina. Therefore, the assessment panel proceeded with separate efforts to investigate the available data for the region north of Cape Hatteras, North Carolina, to provide advice for management of blueline tilefish in that region.

3.2.2.3 Landings

Recreational
Recreational landings of South Atlantic blueline tilefish have exceeded the recreational ACL and total ACL in all of the years reviewed over the time series (Table 3.2.2.3.1). The most recent stock assessment for blueline tilefish (SEDAR 50 2017) uses MRIP-CHTS landings. For the purposes of this amendment all analyses will use blueline tilefish MRIP-CHTS landings.

Table 3.2.2.3.1. South Atlantic blueline tilefish recreational and total landings and ACLs in pounds (lbs) whole weight (ww).

Year	Recreational Landings (lbs ww)	Recreational ACL	% of Recreational ACL	Date of Closure	Total Landings	Total ACL
2015	40,888	17,291	254.8	June 10, 2015	125,660	35,632
2016	185,998	87,277	197.4		272,678	174,798
2017	171,455	87,277	176.4		241,517	174,798
2018	110,463	87,277	134		209,648	174,798
2019	110,116	87,277	126		206,017	174,798
2020	402,789	116,820	336		508,816	233,968

Sources: SEFSC MRIP CHTS Recreational ACL Database [April 2022]

Table 3.2.2.3.2. South Atlantic blueline tilefish recreational landings by state and north and south of Cape Hatteras, NC. North Carolina. Landings are in lbs ww.

Year	FL East Coast	North Carolina: North Cape Hatteras	North Carolina: South Cape Hatteras	Total
2015	34,838	2,071	3,979	40,888
2016	28,381	136,338	21,279	185,998
2017	83,510	17,881	70,064	171,455
2018	31,104	68,721	10,638	110,463
2019	21,025	61,116	27,975	110,116
2020	30,454	333,791	38,544	402,789
2021	22,706	136,304	30,214	189,224

Sources: SEFSC MRIP CHTS – Mike Larkin Pers. Comm.

3.2.3 Bycatch

See the Bycatch Practicability Analysis (Appendix G) for detailed descriptions of bycatch when fishing for golden tilefish or blueline tilefish.

3.2.4 Other Species Affected

As described in the Bycatch Practicability Analyses (Appendix G) golden tilefish are most likely to be captured with species such as yellowedge grouper, warsaw grouper, snowy grouper, and silk snapper. Blueline tilefish are a deepwater species that co-occur with snowy grouper and

other tilefishes. Actions taken in this amendment to modify management of golden tilefish and blueline tilefish could impact these co-occurring species.

3.2.5 Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). There are 29 ESA-listed species or distinct population segments (DPS) of marine mammals, sea turtles, fishes, and corals managed by NMFS that may occur in federal waters of the South Atlantic or Gulf of Mexico. There are 91 stocks of marine mammals managed within the Southeast region plus the addition of the stocks such as North Atlantic right whales (NARW), humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA. The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF)[2] classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals.

Five of the marine mammal species (i.e, sperm, sei, fin, blue, and NARW) protected by the MMPA, are also listed as endangered under the ESA. In addition to those five marine mammals, six species or DPSs of sea turtles [green (the North Atlantic DPS and the South Atlantic DPS), hawksbill, Kemp's ridley, leatherback, and the Northwest Atlantic DPS of loggerhead]; nine species or DPSs of fishes (the smallmouth sawfish; five DPSs of Atlantic sturgeon; Nassau grouper; oceanic whitetip shark, and giant manta ray); and seven species of coral (elkhorn coral, staghorn coral, rough cactus coral, pillar coral, lobed star coral, mountainous star coral, and boulder coral) are also protected under the ESA and occur within the action area of the snapper grouper fishery. Portions of designated critical habitat for NARW, the Northwest Atlantic DPS of loggerhead sea turtles, and *Acropora* corals occur within the Council's jurisdiction.

NMFS completed a formal consultation and resulting biological opinion (Bi-Op) on the conservation regulations under the ESA and the authorization of the South Atlantic snapper grouper fishery in federal waters under the Magnuson-Stevens Act, including the fishery managed by the Snapper Grouper FMP, on threatened and endangered species and designated critical habitat dated December 1, 2016. NMFS concluded that the activities addressed in the consultation are not likely to jeopardize the continued existence of any threatened or endangered species.

Since completing the December 2016 Bi-Op, NMFS published several final rules that listed additional species and designated critical habitat. NMFS has reinitiated formal consultation to address these listings and concluded the authorization of the South Atlantic snapper grouper fishery in federal waters during the re-initiation period will not violate ESA Sections 7(a)(2) or 7(d). For summary information on the protected species that may be adversely affected by the snapper grouper fishery and how they are affected refer to Section 3.2.5 in Regulatory Amendment 27 (SAFMC 2019b).

[2] https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries/

3.3 Description of the Economic Environment

A description of the economic environment pertaining to the golden tilefish and blueline tilefish stocks is provided in this section. Further information on these stocks can be found in Snapper Grouper Regulatory Amendment 27 (SAFMC 2019b).

3.3.1 Commercial Sector

3.3.1.1 Golden Tilefish

Permits

Golden tilefish (*Lopholatilus chamaeleonticeps*) are one of 55 species managed by the Council's Snapper Grouper Fishery Management plan. Any fishing vessel that harvests and sells any of the snapper grouper species from the South Atlantic exclusive economic zone (EEZ) must have a valid South Atlantic commercial snapper grouper permit, which is a limited access permit. After a permit expires, it can be renewed or transferred up to one year after the date of expiration. As shown in Table 3.3.1.1.1, 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 3.3.1.1.1 Number of valid South Atlantic snapper grouper permits, 2016-2020.

Year	Unlimited Permits	225-lb Trip-limited	Total Permits
2016	565	116	681
2017	554	114	668
2018	549	110	659
2019	543	108	651
2020	535	104	639

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Vessels

The information in Tables 3.3.1.1.2 and 3.3.1.1.3 describes the landings and revenue for vessels that harvested South Atlantic golden tilefish in each year from 2016-2020, as well as their revenue from other species. Vessel participation decreased by 16% in 2017 relative to 2016, and remained relatively stable since. Landings of golden tilefish varied from 2016-2020, but fell by 37% in 2020 relative to 2016. Landings of jointly caught species on golden tilefish trips also fell by 67% in 2020 relative to 2016. On average from 2016-2020, golden tilefish accounted for only 18% of total landings and revenue by vessels harvesting South Atlantic golden tilefish.

Table 3.3.1.1.2 Number of vessels, trips, and landings (lbs gw) by year for South Atlantic golden tilefish.

Year	# of vessels that caught GTF (> 0 lbs gw)	# of trips that caught GTF	GTF landings (lbs gw)	Other species' landings jointly caught w/ GTF	# of SATL trips that only caught other species	Other species' landings on trips w/o GTF	All species landings on Gulf trips (lbs gw)
2016	119	829	524,147	394,254	3,611	2,288,173	308,234
2017	103	858	516,435	358,358	3,034	2,339,638	100,797
2018	103	586	290,284	218,412	3,589	1,410,211	190,142
2019	103	590	352,072	192,934	3,439	1,614,324	218,550
2020	102	565	329,689	128,408	3,495	1,466,412	123,075
Average	106	686	402,525	258,473	3,434	1,823,752	188,160

Source: SEFSC-Social Science Research Group (SSRG) Socioeconomic Panel (Jan 2022 version)

Overall dockside revenue of golden tilefish declined from 2016-2020. Golden tilefish dockside revenue declined by 40% in 2020 relative to 2016. Revenue from jointly caught species on golden tilefish trips also declined by 67% in 2020 relative to 2016. On average from 2016-2020, golden tilefish accounted only for only 22% of total revenue by vessels harvesting South Atlantic golden tilefish.

Table 3.3.1.1.3. Number of vessels and ex-vessel revenues by year (2020 $) for South Atlantic golden tilefish.

Year	# of vessels that caught GTF (> 0 lbs gw)	Dockside revenue from GTF	Dockside revenue from 'other species' jointly caught w/ GTF	Dockside revenue from 'other species' caught on trips w/o GTF	Dockside revenue from 'all species' caught on Gulf trips	Total dockside revenue	Average total dockside revenue per vessel
2016	119	$2,459,299	$1,494,934	$6,394,926	$1,059,819	$11,408,978	$95,874
2017	103	$2,467,773	$1,402,376	$4,485,611	$248,930	$8,604,691	$83,541
2018	103	$1,452,739	$869,038	$5,109,845	$503,916	$7,935,538	$77,044
2019	103	$1,633,789	$770,276	$5,606,993	$645,490	$8,656,548	$84,044
2020	102	$1,466,412	$496,055	$4,965,189	$308,941	$7,236,597	$70,947
Average	106	$1,896,003	$1,006,536	$5,312,513	$553,419	$8,768,470	$82,721

Source: SEFSC-Social Science Research Group (SSRG) Socioeconomic Panel (Jan 2022 version)

Estimates of economic returns are not directly available for the golden tilefish commercial sector in the South Atlantic. The most recent analysis that calculated estimates of economic returns for South Atlantic commercial fishing vessels was Liese (pers. comm. 2022). Liese (pers. comm. 2022) calculated economic returns for South Atlantic Snapper grouper vessels as well as other segments of interest (SOI). In most cases, these SOIs are at the species or species group level. Liese (pers. comm. 2022) produced estimates for a 2018 South Atlantic FMP deep-water fishery SOI, which consists of all logbook trips by permitted vessels where at least one pound of deep-water fish (i.e., snapper, tilefish, and grouper species) managed by the Snapper Grouper FMP was landed in 2018 using any gear type. This SOI's estimates can be used as a proxy for golden tilefish estimates. These estimates are specific to economic performance in the years 2014-2018. The analysis also provides average estimates of economic returns across 2014-2018, which are the most useful for current purposes. 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, as well as 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 South Atlantic deep-water fishery. In addition, estimates are provided at the trip level and the annual vessel level, of which the latter are most important for current purposes. Findings from the analysis are summarized below.

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 South Atlantic deep-water trip over and above the cash cost of taking the trip (i.e., variable costs of the trip) and is a proxy for producer surplus (PS) at the trip level. Trip net revenue is trip revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and the opportunity cost of 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. Table 3.3.1.1.4 illustrates the economic "margins" generated on South Atlantic deep-water fishery trips, i.e., trip net cash flow and trip net revenue as a percentage of trip revenue. As shown in this table, 47.5% of the average revenues generated on South Atlantic Deepwater Fishery trips were used to pay for crew labor costs. Fuel/supplies costs accounted for a further 24% of revenues and 42% of revenue is cash flow back to the owner(s). The margin associated with trip net revenue was lower at about 29%, as it accounts for the value of an owner operator's time. Thus, trip cash flow and trip net revenue were both positive on average from 2014 -2018, generally indicating that South Atlantic deep-water trips were profitable during this time.

Table 3.3.1.1.4. Economic characteristics of South Atlantic Deepwater Fishery trips 2014-2018 (2020$).

	2014	2015	2016	2017	2018	Average
Number of Observations	418	472	541	487	436	
Response Rate (%)	83%	86%	93%	95%	96%	
Trips						
Owner-Operated	81%	84%	76%	63%	61%	73.0%
Fuel Used per Day at Sea (gallons/day)	42	44	47	50	45	46
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	12.9%	10.5%	8.9%	8.9%	11.1%	10.5%
Bait	5.3%	4.4%	5.8%	5.2%	5.0%	5.1%
Ice	1.7%	1.7%	2.0%	1.9%	1.6%	2%
Groceries	3.8%	2.8%	4.1%	3.4%	3.9%	3.6%
Miscellaneous	3.0%	3.3%	2.9%	3.2%	2.3%	2.9%
Hired Crew	35.7%	33.4%	32.9%	34.7%	34.6%	34.3%
IFQ Purchase	0%	0%	0%	0%	0%	0%
Owner-Captain Time	13.0%	13.7%	15.4%	10.6%	12.6%	13.2%
Trip Net Cash Flow	38%	44.7%	43.5%	42.6%	41.5%	42%
Trip Net Revenue	25%	29.7%	28.1%	32.0%	28.8%	29%
Labor - Hired & Owner	49%	47.6%	48.3%	45.4%	47.2%	47.5%
Fuel & Supplies	27%	22.7%	23.6%	22.6%	24.0%	24%
Input Prices						
Fuel Price (per gallon)	$4.07	$3.08	$2.30	$2.41	$2.92	$2.93
Hire Crew Wage (per crew-day)	$346	$401	$356	$328	$284	$338
Productivity Measures						
Landings/Fuel Use (lbs./gallon)	8.9	8.2	6.7	6.7	6.4	7
Landings/Labor Use (lbs./crew-day)	172	185	166	162	140	163

Source: Liese (SEFSC, pers. comm. 2022)

Table 3.3.1.1.5 provides estimates of the important economic variables at the annual level for all vessels that had South Atlantic deep-water fishery landings from 2014-2016. Similar to the trip level, the three of the most important estimates of economic returns are net cash flow, net revenue from operations, as well as 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 as well as the vessel's depreciation. Economic return on asset value is calculated by dividing the net revenue from operations by the vessel value. As shown in Table 3.3.1.1.5, net cash flow and net revenue from operations at the annual vessel level were both positive from 2014-2016, generally indicating that South Atlantic snapper grouper vessels in the commercial sector were profitable. Specifically, net cash flow and net revenue from operations averaged 19% and 4%, respectively.

Table 3.3.1.1.5. Economic characteristics of South Atlantic Deepwater Fishery vessels from 2014-2018 (2020$).

	2014	2015	2016	2017	2018	Average
Number of Observations	34	50	42	50	47	
Response Rate (%)	51%	79%	72%	78%	80%	
Vessels						
Owner-Operated	82%	90%	83%	73%	70%	80%
For-Hire Active	24%	15%	10%	12%	8%	14%
Vessel Value	$101,773	$85,546	$116,914	$125,563	$112,721	$108,503
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	13.7%	11.0%	10.3%	10.2%	12.0%	11.4%
Other Supplies	13.9%	15.2%	15.6%	12.2%	12.2%	13.8%
Hired Crew	30.1%	25.5%	31.7%	32.4%	28.7%	29.7%
Vessel Repair & Maintenance	11.1%	14.0%	14.1%	11.9%	20.2%	14.3%
Insurance	1.4%	1.6%	2.0%	1.4%	2.7%	1.8%
Overhead	6.2%	8.8%	7.4%	6.1%	8.8%	7.5%
Loan Payment	1.5%	2.8%	3.1%	3.3%	1.5%	2.4%
IFQ Purchase	0.0%	0.2%	0.0%	0.4%	0.0%	0.1%
Owner-Captain Time	12.7%	12.5%	13.6%	11.2%	11.7%	12.3%
Net Cash Flow	22.0%	20.9%	15.7%	22.1%	13.9%	19.0%
Net Revenue for Operations	7.0%	6.8%	−0.7%	8.8%	−3.2%	4.0%
Depreciation	4.4%	4.6%	6.0%	5.7%	6.8%	5.5%
Fixed Costs	19.0%	24.4%	23.4%	19.4%	31.7%	24.0%
Labor - Hired & Owner	43.0%	38.0%	45.3%	43.6%	40.4%	42.0%
Fuel & Supplies	28.0%	26.2%	25.9%	22.4%	24.3%	25.0%
Economic Return (on asset value)	7.5%	7.5%	−0.6%	7.6%	−2.3%	3.9%

Source: Liese (SEFSC, pers. comm. 2022)

Dealers

The information in Table 3.3.1.1.6 illustrates the purchasing activities of dealers that bought golden tilefish landings from vessels from 2016 through 2020. The total number of dealers purchasing golden tilefish varied from 2016-2020. In 2020, the total number of dealers purchasing golden tilefish was approximately 17% greater relative to 2016. However, there was a decline in the total number of purchasing dealers increased in 2017 and 2018. Total value of golden tilefish purchases by dealers declined overall between 2016 and 2020. Purchases of golden tilefish landings decreased by 34% in 2020, relative to 2016. Counter to the trend in the number of golden tilefish dealers, the average value of golden tilefish purchases per dealer declined by 48% from 2016-2019.

The overall value of other species purchases increased by 16% in 2020, relative to 2016. The average value of other species purchase per dealer declined by about 21% in 2020, relative to 2016. Overall, golden tilefish made up only approximately 3% of total purchases by golden tilefish dealers, indicating that there is a very low financial dependency on golden tilefish landings.

Table 3.3.1.1.6. Dealer statistics for dealers that purchased golden tilefish landings by year, 2016-2020. All dollar estimates are in 2020$.

Year	Number Dealers	Statistic	Tilefish Purchases	Other Species Purchases	Total Purchases
2016	48	Maximum	$499,769	$5,805,837	$5,805,837
		Total	$2,556,712	$60,265,429	$62,822,140
		Mean	$53,265	$31,769	$32,299
2017	47	Maximum	$335,089	$6,295,487	$6,295,487
		Total	$2,597,311	$58,351,928	$60,949,238
		Mean	$55,262	$32,221	$32,804
2018	43	Maximum	$198,541	$4,898,624	$4,898,624
		Total	$1,500,964	$46,016,968	$47,517,932
		Mean	$34,906	$24,348	$24,582
2019	49	Maximum	$296,854	$8,235,082	$8,235,082
		Total	$1,873,543	$66,538,560	$68,412,103
		Mean	$37,471	$29,377	$29,552
2020	56	Maximum	$267,824	$3,077,877	$3,077,877
		Total	$1,697,307	$69,645,810	$71,343,117
		Mean	$27,825	$24,981	$25,041

Source: SERO ALS Data (2022)

Imports

Imports of foreign seafood products compete in the domestic seafood market and have in fact 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 the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. The following describes the imports of fish products that directly compete with domestic harvest of snappers and groupers, including the species in this amendment.

According to NMFS' foreign trade data,[3] snapper are not exported from the U.S. to other countries. Thus, the following describes the imports of fresh and frozen snapper products, which directly compete with domestic harvest of snapper species. All monetary estimates are in 2020

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

dollars. As shown in Table 3.3.1.1.7, imports of fresh snapper products were 30.6 million lbs product weight (pw) in 2016. They peaked at 32.8 million lbs pw in 2020, an increase of 6% relative to 2016. Total revenue from snapper imports increased from $97.3 million (2020 dollars) in 2016 to a five-year high of $110.7 million in 2019. The average price per pound for fresh snapper products was $3.24 from 2016-2020. Imports of fresh snapper products primarily originated in Mexico or Central America and primarily entered the U.S. through the port of Miami.

Table 3.3.1.1.7. Annual pounds and value of fresh snapper imports and share of imports by country, 2016-2020.

	2016	2017	2018	2019	2020
Pounds of fresh snapper imports (product weight, million pounds)	30.6	31.2	30.5	32.8	32.4
Value of fresh snapper imports (millions $, 2020$)	97.3	95.0	99.3	110.7	108.9
Average price per lb (2020$)	$3.18	$3.05	$3.25	$3.38	$3.36
Share of Imports by Country					
Mexico	32.7	35.8	32.5	34.9	40.4
Nicaragua	15.6	15.4	17.0	14.6	15.1
Panama	14.0	14.8	16.6	13.9	11.0
All others	37.6	33.9	33.9	36.6	33.5

Source: NOAA Foreign Trade Query Tool, accessed 05/14/22

As shown in Table 3.3.1.1.8, imports of frozen snapper products were 14.4 million pw in 2016. They peaked at 15.9 million lbs pw in 2020, an increase of 10% relative to 2016. Total revenue from snapper imports increased from $40.9 million (2020 dollars) in 2016 to a five-year high of $46.4 million in 2019. The average price per pound for fresh snapper products was $2.94 from 2016-2020. Imports of snapper products primarily originated in Mexico or Central America and primarily entered the U.S. through the port of Miami.

Table 3.3.1.1.8. Annual pounds and value of frozen snapper imports by country, 2016-2020.

	2016	2017	2018	2019	2020
Pounds of frozen snapper imports (product weight, million pounds)	14.4	12.8	12.2	11.4	15.9
Value of frozen snapper imports (millions $, 2020$)	40.9	36.7	36.1	35.2	46.4
Average price per lb (2020$)	$2.84	$2.86	$2.96	$3.09	$2.93
Share of Imports by Country					
Mexico	65.3	61.0	63.8	54.6	55.4
Nicaragua	7.8	11.0	11.3	6.8	5.4
Panama	9.3	7.9	6.9	13.5	10.3
All others	17.6	20.1	17.9	25.0	28.9

Source: NOAA Foreign Trade Query Tool, accessed 05/14/22

Groupers

According to NMFS' foreign trade data,[4] grouper are not exported from the U.S. to other countries. Thus, the following describes the imports of fresh and frozen grouper products, which directly compete with domestic harvest of grouper species. As shown in Table 3.3.1.1.9, imports of fresh grouper products were 11.5 million lbs pw in 2016. They peaked at 12.4 million lbs pw in 2018, but declined to 10.4 million lbs pw by 2020. Total revenue from fresh grouper imports decreased from $51.0 million (2020 dollars) in 2016 to a five-year low of $10.4 million in 2020. The average price per pound for fresh grouper products was $4.29 from 2016-2020. Imports of fresh grouper products primarily originated in Mexico, Panama and Brazil.

Table 3.3.1.1.9. Annual pounds and value of fresh grouper imports by country, 2016-2020.

	2016	2017	2018	2019	2020
Pounds of fresh Grouper imports (product weight, million pounds)	11.5	12.3	12.4	11.3	10.4
Value of fresh Grouper imports (millions $, 2020$)	51.0	53.5	54.9	50.9	39.0
Average price per lb (2020$)	$4.45	$4.36	$4.43	$4.50	$3.73
Share of Imports by Country					
Mexico	65.9	58.8	58.0	57.9	67.6
Panama	12.7	12.2	9.0	8.1	8.0
Brazil	4.9	10.1	15.9	16.9	12.3
All others	16.4	19.0	17.1	17.0	12.2

Source: NOAA Foreign Trade Query Tool, accessed 05/14/22

As shown in Table 3.3.1.1.10, imports of frozen grouper products were 0.8 million lbs pw in 2016. They peaked at 4.6 million lbs pw in 2018 but declined to 0.8 million lbs pw by 2020. Total revenue from frozen grouper increased from $1.6 million (2020 dollars) in 2016 to $5.9 million in 2018, but a subsequent decline to $1.4 million in 2020. The average price per pound for frozen grouper products was $1.55 from 2016-2020. Imports of frozen grouper products primarily originated in Mexico, India, and Indonesia.

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

Table 3.3.1.1.10. Annual pounds and value of frozen grouper imports and share of imports by country, 2016-2020.

	2016	2017	2018	2019	2020
Pounds of frozen Grouper imports (product weight, million pounds)	0.8	1.4	4.6	3.5	0.8
Value of frozen Grouper imports (millions $, 2020$)	1.6	2.0	5.9	4.6	1.4
Average price per lb (2020$)	$2.00	$1.40	$1.29	$1.32	$1.77
Share of Imports by Country					
Mexico	24.7	47.2	79.2	79.2	33.7
India	45.4	29.3	11.2	11.2	25.9
Indonesia	9.0	16.3	4.0	3.0	1.1
All others	20.8	7.2	5.5	6.5	39.3

Source: NOAA Foreign Trade Query Tool, accessed 05/14/22

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

In addition to these types of impacts, 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 South Atlantic golden tilefish were derived using the model developed for and applied in NMFS (2021)[5] and are provided in Table 3.3.1.1.11.

Table 3.3.1.1.11. Average annual economic impacts in the commercial sector of the South Atlantic golden tilefish. All monetary estimates are in thousands of 2020 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	14	2	3	20
Income impacts	357	66	160	584
Total value-added impacts	381	239	275	894
Output Impacts	662	538	533	1,733
Primary dealers/processors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	3	1	2	6
Income impacts	117	107	102	326
Total value-added impacts	124	137	191	453
Output impacts	375	283	374	1,032
Secondary wholesalers/distributors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	1	0	1	3
Income impacts	69	21	73	163
Total value-added impacts	74	35	125	233
Output impacts	186	68	243	497
Grocers	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	6	1	1	8
Income impacts	143	47	72	262
Total value-added impacts	152	77	121	350
Output impacts	244	124	238	607
Restaurants	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	37	2	6	46
Income impacts	573	174	328	1,075
Total value-added impacts	611	311	553	1,475
Output impacts	1,117	486	1,092	2,695
Harvesters and seafood industry	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	62	7	14	82
Income impacts	1,259	416	735	2,410
Total value-added impacts	1,343	798	1,265	3,406
Output impacts	2,585	1,500	2,480	6,564

Source: Calculated by NMFS SERO using the model developed for and applied in NMFS (2021b). *Converted to 2020 dollars using the annual, not seasonally adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of South Atlantic golden tilefish from 2016 through 2020. This business activity is characterized as jobs (full time equivalents), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and

[5] A detailed description of the input/output model is provided in NMFS (2021b).

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 golden tilefish are not available. Between 2016 and 2020, landings of South Atlantic golden tilefish resulted in approximately $1.90 million (2020$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 82 jobs, $2.4 million, $3.4 million, and $6.6 million per year, respectively, on average.

3.3.2 Recreational Sector

The recreational sector is comprised of the private and for-hire modes. The private mode includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire mode is composed of charter boats and headboats (also called 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.

3.3.2.1 Landings

3.3.2.1.1 Golden Tilefish

Recreational South Atlantic golden tilefish landings were highly variable from 2016-2020 (Table 3.3.2.1.1.1). Landings peaked in 2019 at 364,980 pounds ww, greatly exceeding any other year's landings. Private vessels accounted for the majority of tilefish landings on average from 2016-2020. Private vessels on average from 2016-2020 accounted for 77% of South Atlantic golden tilefish landings, charter vessels 20%, and headboats making up the remaining 3%. No landings for South Atlantic golden tilefish were recorded for the shore modes. The majority of landings on average occurred in Florida/Georgia (98%) (Table 3.3.2.1.1.2). Wave 1, which includes the months of January and February, accounted for the majority of landings on average from 2016-2020 (Table 3.3.2.1.1.3).

Table 3.3.2.1.1.1. Recreational landings (lbs ww) and percent distribution of South Atlantic golden tilefish across all states by mode for 2016-2020.

	Landings (pounds ww)				Percent Distribution		
Year	**Charter vessel**	**Headboat**	**Private**	**Total**	**Charter vessel**	**Headboat**	**Private**
2016	24,315	813	45,508	70,636	0.34	0.01	0.64
2017	6,665	2,067	7,364	16,096	0.41	0.13	0.46
2018	2,221	325	48,060	50,606	0.04	0.01	0.95
2019	14,885	6	350,089	364,980	0.04	0.00	0.96
2020	7,679	48	35,875	43,601	0.18	0.00	0.82
Average	11,153	652	97,379	109,184	0.20	0.03	0.77

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (7/1/2022).

Table 3.3.2.1.1.2 Recreational landings (lbs ww) of South Atlantic golden tilefish across by mode and state for 2016-2020.

	Charter		Headboat		Private	
	FL/GA	**NC**	**FL/GA**	**NC**	**FL/GA**	**NC**
2016	23,435	881	813	0	45,508	0
2017	6,665	0	2,067	0	7,364	0
2018	2,221	0	325	0	48,060	0
2019	14,885	0	0	6	342,522	7,567
2020	7,417	262	12	36	35,875	0
Average	10,925	228	644	8	95,866	1,513

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (7/1/2022).

Table 3.3.2.1.1.3 Recreational landings (lbs ww) of South Atlantic golden tilefish across by wave and mode.

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov-Dec)	Total
Charter							
2016	1,113	23,154	0	0	49	0	24,315
2017	5,956	709	0	0	0	0	6,665
2018	2,143	0	0	0	79	0	2,221
2019	12,872	2,013	0	0	0	0	14,885
2020	2,934	0	4,483	262	0	0	7,679
Average	5,003	5,175	897	52	25	0	11,153
Headboat							
2016	150	297	144	200	22	0	813
2017	56	0	56	1,479	477	0	2,067
2018	0	54	69	203	0	0	325
2019	0	0	6	0	0	0	6
2020	12	0	0	36	0	0	48
Average	44	70	55	384	100	0	652
Private/Rental							
2016	5,883	0	39,625	0	0	0	45,508
2017	0	0	0	7,364	0	0	7,364
2018	0	13,924	0	0	31,794	2,342	48,060
2019	342,522	0	0	7,567	0	0	350,089
2020	20,723	0	13,159	0	0	1,993	35,875
Average	73,826	2,785	10,557	2,986	6,359	867	97,379

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (7/1/2022).

3.3.2.1.2 Blueline Tilefish

Similar to golden tilefish, recreational South Atlantic blueline tilefish landings were variable from 2016-2020 (Table 3.3.2.1.2.1). Landings peaked in 2020 at 381,405 pounds ww, greatly exceeding any other year's landings. Private vessels accounted for the majority of blueline tilefish landings on average from 2016-2020. Private vessels on average from 2016-2020 accounted for 71% of South Atlantic golden tilefish landings, charter vessels 25%, and headboats making up the remaining 4%. No landings for South Atlantic blueline tilefish were recorded shore modes. The majority of blueline tilefish landings on average occurred in North Carolina (86%) (Table 3.3.2.1.2.2). Wave 4, which includes the months of July and August, accounted for the majority of landings on average from 2016-2020 (Table 3.3.2.1.2.3).

Table 3.3.2.1.2.1. Recreational landings (lbs ww) and percent distribution of South Atlantic blueline tilefish across all states by mode for 2017-2021.

	Landings (pounds ww)				Percent Distribution		
Year	Charter vessel	Headboat	Private	Total	Charter vessel	Headboat	Private
2017	94,356	10,222	52,304	156,882	0.60	0.07	0.33
2018	59,197	5,829	24,329	89,355	0.66	0.07	0.27
2019	88,339	2,113	18,617	109,069	0.81	0.02	0.17
2020	259,272	878	121,255	381,405	0.68	0.00	0.32
2021	125,533	1,275	26,330	153,139	0.82	0.01	0.17
Average	125,339	4,064	48,567	177,970	0.71	0.03	0.25

Source: Southeast Fisheries Science Center MRIP CHTS recreational ACL dataset (7/1/2022).

Table 3.3.2.1.2.2. Recreational landings (lbs ww) of South Atlantic blueline tilefish by mode and state for 2017-2021.

	Charter		Headboat		Private	
	FL/GA	NC	FL/GA	NC	FL/GA	NC
2016	51,330	43,026	6,166	4,056	11,441	40,863
2017	5,501	53,696	3,604	2,225	890	23,439
2018	7,611	80,728	1,917	197	10,450	8,167
2019	3,197	256,075	666	212	15,843	105,411
2020	5,683	119,850	372	903	4,092	22,238
Average	14,664	110,675	2,545	1,519	8,543	40,024

Source: Southeast Fisheries Science Center MRIP CHTS recreational ACL dataset (7/1/2022).

Table 3.3.2.1.2.3. Recreational landings (lbs ww) of South Atlantic blueline tilefish across by wave and mode for 2017-2021.

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov-Dec)	Total
Charter							
2016	0	50,603	11,361	32,392	0	0	94,356
2017	268	0	15,571	43,358	0	0	59,197
2018	0	1,688	37,587	49,064	0	0	88,339
2019	0	0	26,130	233,142	0	0	259,272
2020	0	0	26,902	98,631	0	0	125,533
Average	54	10,458	23,510	91,317	0	0	125,339
Headboat							
2016	862	64	3,465	4,415	1,416	0	10,222
2017	0	1,004	1,814	3,011	0	0	5,829
2018	0	167	346	1,432	169	0	2,113
2019	0	0	39	840	0	0	878
2020	116	256	504	399	0	0	1,275
Average	196	298	1,234	2,019	317	0	4,064
Private/Rental							
2016	2,078	0	23,901	16,962	0	9,364	52,304
2017	0	0	8,769	15,560	0	0	24,329
2018	10,450	0	0	8,167	0	0	18,617
2019	0	0	4,678	101,946	0	14,631	121,255
2020	0	0	21,812	4,292	227	0	26,330
Average	2,506	0	11,832	29,385	45	4,799	48,567
All Modes							
2016	2,940	50,666	38,728	53,769	1,416	9,364	156,882
2017	268	1,004	26,154	61,930	0	0	89,355
2018	10,450	1,855	37,933	58,662	169	0	109,069
2019	0	0	30,847	335,928	0	14,631	381,405
2020	116	256	49,218	103,322	227	0	153,139
Average	2,755	10,756	36,576	122,722	362	4,799	177,970

Source: Southeast Fisheries Science Center MRIP CHTS recreational ACL dataset (7/1/2022).

The focus of the actions in this amendment for blueline tilefish is the recreational sector. Therefore, a description of the economic environment for the blueline tilefish commercial sector is not provided here. Information regarding the blueline tilefish commercial sector may be found in the Vision Blueprint Commercial Regulatory Amendment 27 (SAFMC 2019b).

3.3.2.2 Permits

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

A federal charter/headboat (for-hire) vessel permit is also required for fishing in federal waters for Atlantic snapper grouper. For-hire Atlantic Snapper Grouper permits are open access permits (i.e., access is not restricted). From 2016-2020, the number of For-hire Atlantic Snapper Grouper permits that were valid in a given year has increased every year until 2019 as illustrated in Table 3.3.2.2.1**.** The number of For-hire Atlantic Snapper Grouper permits that were valid fell by 2% in 2020, relative to 2019.

Table 3.3.2.2.1. Number of For-hire Atlantic Snapper Grouper permits, 2016-2020.

Year	Number of Permits
2016	1,867
2017	1,982
2018	2,126
2019	2,183
2020	2,136

Source: NMFS SERO SF Access Permits Database 07/08/22.

3.3.2.3 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).[6]

[6] https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/queries/index

Tables 3.3.2.3.1 and 3.3.2.3.2 describe the recreational target and catch trips for golden tilefish in the South Atlantic from 2016-2020. There are no catch or target trips by shore mode for golden tilefish in the South Atlantic.

Private vessels represent 100% of golden tilefish target effort in the recreational sector. The majority of target effort occurs by private vessels in Florida, with sparse private vessel target effort occurring in North Carolina (Table 3.3.2.3.1).

Private vessels are responsible for the majority of catch effort for golden tilefish (88%). Catch effort by charter vessels represents the remaining 12% of the total catch effort. Private vessels in Florida account for the majority of catch effort for golden tilefish (87%), followed by charter vessels also in Florida (11%). As expected, the trends in catch effort mimic the trends in landings, with the peak occurring in 2019 (Table 3.3.2.3.2).

Table 3.3.2.3.1. Golden tilefish recreational target trips, by mode and state*, 2016-2020.

Mode	Year	Florida	North Carolina	Total
Charter	2016	0	0	0
	2017	0	0	0
	2018	0	0	0
	2019	0	0	0
	2020	0	0	0
	Average	0	0	0
Private	2016	13,256	0	13,256
	2017	2,057	0	2,057
	2018	2,471	0	2,471
	2019	8,227	297	8,525
	2020	37,404	0	37,404
	Average	12,683	59	12,743
All	2016	13,256	0	13,256
	2017	2,057	0	2,057
	2018	2,471	0	2,471
	2019	8,227	297	8,525
	2020	37,404	0	37,404
	Average	12,683	59	12,743

Source: MRIP database, SERO, NMFS (June 2022)
*No reported target trips for GA or SC
Note 1: The estimates are based on MRIP FES.

Table 3.3.2.3.2 Golden tilefish recreational catch trips, by mode and state, 2016-2020.

Mode	Year	Florida	North Carolina	Total
Charter	2016	3,808	177	3,985
	2017	553	0	553
	2018	469	0	469
	2019	1,251	0	1,251
	2020	1,062	161	1,224
	Average	1,429	68	1,496
Private	2016	12,945	0	12,945
	2017	1,512	0	1,512
	2018	8,514	0	8,514
	2019	25,478	297	25,776
	2020	4,919	0	4,919
	Average	10,674	59	10,733
All	2016	16,753	177	16,930
	2017	2,065	0	2,065
	2018	8,983	0	8,983
	2019	26,729	297	27,026
	2020	5,981	161	6,142
	Average	12,102	127	12,229
Mode	**Year**	**Florida**	**North Carolina**	**Total**
Charter	2016	3,808	177	3,985
	2017	553	0	553
	2018	469	0	469
	2019	1,251	0	1,251
	2020	1,062	161	1,224
	Average	1,429	68	1,496
Private	2016	12,945	0	12,945
	2017	1,512	0	1,512
	2018	8,514	0	8,514
	2019	25,478	297	25,776
	2020	4,919	0	4,919
	Average	10,674	59	10,733
All	2016	16,753	177	16,930
	2017	2,065	0	2,065
	2018	8,983	0	8,983
	2019	26,729	297	27,026
	2020	5,981	161	6,142
	Average	12,102	127	12,229

Source: MRIP database, SERO, NMFS (June 2022) *No reported target trips for GA or SC. Note 1: The estimates are based on MRIP FES.

Tables 3.3.2.3.3. and 3.3.2.3.4. describe the recreational target and catch trips for blueline tilefish in the South Atlantic from 2017-2021. There are no catch or target trips by shore mode for blueline tilefish in the South Atlantic.

Private vessels are responsible for the majority of target effort for blueline tilefish (64%), but it likely skewed due to the large number of trips taken by private vessels in 2020. Target effort by charter vessels represents the remaining 36% of the total target effort but is more consistent than private vessel effort. Private vessels in North Carolina account for the only private target effort for blueline tilefish (3.3.2.3.3).

Private vessels represent 54% of blueline tilefish catch effort in the recreational sector, and charter vessels the remaining 46%. On average, the majority of catch effort for blueline tilefish occurred in North Carolina (67%) evenly split between the charters and private modes. Florida accounted for 33% of catch effort for blueline tilefish in the recreational sector (3.3.2.3.4.).

Table 3.3.2.3.3. Blueline tilefish recreational target trips, by mode and state, 2017-2021.

Mode	Year	Florida	North Carolina	Total
Charter	2017	291	146	437
	2018	0	216	216
	2019	0	2,039	2,039
	2020	0	5,574	5,574
	2021	0	907	907
	Average	58	1,776	1,835
Private	2017	0	0	0
	2018	0	615	615
	2019	0	0	0
	2020	0	15,866	15,866
	2021	0	0	0
	Average	0	3,296	3,296
All	2017	291	146	437
	2018	0	831	831
	2019	0	2,039	2,039
	2020	0	21,440	21,440
	2021	0	907	907
	Average	58	5,073	5,131

Source: MRIP database, SERO, NMFS (June 2022)
*No reported target trips in GA or SC. Note 1: The estimates are based on MRIP CHTS.

Table 3.3.2.3.4. Blueline tilefish recreational catch trips, by mode and state, 2017-2021.

Mode	Year	Florida	North Carolina	Total
Charter	2017	4,449	3,362	7,811
	2018	1,461	3,382	4,843
	2019	4,106	4,870	8,976
	2020	780	13,874	14,654
	2021	994	7,062	8,056
	Average	2,358	6,510	8,868
Private	2017	9,479	4,139	13,618
	2018	739	3,351	4,090
	2019	999	1,621	2,620
	2020	7,475	16,864	24,339
	2021	1,354	6,753	8,107
	Average	4,009	6,546	10,555
All	2017	13,928	7,501	21,429
	2018	2,200	6,733	8,933
	2019	5,105	6,491	11,595
	2020	8,255	30,738	38,993
	2021	2,348	13,816	16,164
	Average	6,367	13,056	19,423

Source: MRIP database, SERO, NMFS (June 2022)
*No reported catch trips in GA or SC
Note 1: The estimates are based on MRIP CHTS.

Similar analysis of recreational effort is not possible for the headboat mode in the South Atlantic 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 snapper grouper trips by intent.

Headboat angler days were highly variable across the South Atlantic states from 2016 through 2020 (Table 3.3.3.2.2.5). Florida/Georgia were responsible for the vast majority of headboat effort during this time, accounting for about 69% of the total headboat effort. However, headboat effort in Florida/Georgia declined considerably in 2017 (about 36%) and again in 2020. Headboat effort in North Carolina also declined considerably (about 22%), but a year later in 2018. Headboat effort in South Carolina varied slightly during this time.

Table 3.3.2.3.5. South Atlantic headboat angler days and percent distribution by state (2016-2020).

	Angler Days			Percent Distribution		
	FL/GA*	NC	SC	FL/GA	NC	SC
2016	196,660	21,565	42,207	75.50%	8.30%	16.20%
2017	126,126	20,170	36,914	68.80%	11.00%	20.10%
2018	120,560	16,813	37,611	68.90%	9.60%	21.50%
2019	119,712	15,546	41,470	67.70%	8.80%	23.50%
2020	84,003	14,152	34,079	63.53%	10.70%	25.77%
Average	129,412	17,649	38,456	68.89%	9.68%	21.41%

*Florida and Georgia are combined for confidentiality purposes.
Source: NMFS Southeast Region Headboat Survey (SRHS) data 03/11/22.

3.3.2.4 Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The economic value of this satisfaction is referred to as consumer surplus (CS). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips. Carter and Liese (2012) produced estimates of CS for groupers, red snapper, and king mackerel in the South Atlantic. Carter and Liese (2012) did not produce specific estimates for tilefishes; instead, their estimates for grouper are likely the best available proxies for golden and blueline tilefish. The CS for catching and keeping a second grouper [7] on an angler trip is approximately $60.92 (2020$) and decreases thereafter (approximately $44.90 for a third grouper, $35.38 for a fourth grouper, and $29.15 for a fifth grouper (Carter and Liese 2012).

Estimates of average annual gross revenue for charter vessels are only available from Holland (2012). After adjusting for inflation, the best available estimate of average annual charter vessel revenue is $126,771 (2020$). Holland (2012) also provided an estimate of average annual gross revenue for South Atlantic headboats, which is $224,124 in 2020$. However, a more recent estimate of average annual gross revenue for South Atlantic headboats is available from D. Carter (pers. comm., March 15, 2018). Carter and Liese (2018) recently estimated that average annual gross revenue for South Atlantic headboats were approximately $307,545 (2020$) in 2017. This estimate is likely the best current estimate of annual gross revenue for South Atlantic headboats as it is based on a relatively large sample and is more recent. The difference in the Holland (2012) and Carter and Liese (2018) estimate for headboats suggests that the estimate for charter vessels based on Holland (2012) is likely an underestimate of current average annual revenue for charter vessels.

[7] The study only considered trips with at least one fish caught and kept in its experimental design; thus, an estimate for the first caught and kept fish is not available.

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 annual PS. In general, PS is the amount of money a vessel owner earns in excess of variable (trip) costs. Economic profit is the amount of money a vessel owner earns in excess of variable and fixed costs, inclusive of all implicit costs, such as the value of a vessel owner's time as captain and as entrepreneur, and the cost of using physical capital (i.e., depreciation of the vessel and gear). Estimates of PS and economic profit for headboats is not available from Carter and Liese (2018) as that study did not collect cost data. Although Holland (2012) did collect cost data, concerns have been raised about the accuracy of their cost estimates, and thus estimates of average annual vessel PS and profit have not been generated using those estimates.

With regard to for-hire trips, economic value can be measured by PS per angler trip, which represents the amount of money that a vessel owner earns in excess of the cost of providing the trip. Estimates of trip revenue, trip costs, and trip net revenue for trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). They also provide estimates of net cash flow per angler trip, which approximate PS per angler trip. As shown in Table 3.3.2.4.1, after accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 40% of revenue for South Atlantic charter vessels and 54% of revenue for Southeast headboats, or $560 and $1,835 (2020$), respectively. Given the respective average number of anglers per trip for each fleet, PS per angler trip is estimated to be $119 for charter vessels and $65 for headboats.

Table 3.3.2.4.1. Trip economics for offshore trips by South Atlantic charter vessels and Southeast headboats in 2017 (2020$).

	South Atlantic Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	29%	19%
Labor Costs (% of revenue)	28%	22%
Net Revenue per trip including Labor costs (% of revenue)	40%	54%
Net Revenue per Trip	$560	$1,835
Average # of Anglers per Trip	4.7	28.2
Trip Net Cash Flow per Angler Trip	$119	$65

Source: Souz and Liese (2019)

3.3.2.5 Business Activity

The desire for recreational fishing generates economic activity as consumers spend their income on various goods and services needed for recreational fishing. This spurs economic activity in the region where recreational fishing occurs. It should be clearly noted that, in the absence of the opportunity to fish, the income would presumably be spent on other goods and services and these

expenditures would similarly generate economic activity in the region where the expenditure occurs. As such, the analysis below represents a distributional analysis only.

Estimates of the business activity (economic impacts) associated with recreational angling for South Atlantic golden and blueline tilefish were calculated using average trip-level impact coefficients derived from the 2018 Fisheries Economics of the U.S. report (NMFS 2021a) and underlying data provided by the National Oceanic and Atmospheric Administration (NOAA) Office of Science and Technology. Economic impact estimates in 2018 dollars were adjusted to 2020 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 (2016–2020, golden tilefish) (2017-2021, blueline tilefish) resulting from golden and blueline tilefish charter and private vessel target trips are provided in Table 3.3.2.5.1 and 3.3.2.5.2. To calculate the multipliers from Table 3.3.2.5.1 and 3.3.2.5.2 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 3.3.2.5.1 and 3.3.2.5.2 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 3.3.2.5.1 and 3.3.2.5.2 may be considered a lower bound on the economic activity associated with those trips that targeted golden or blueline tilefish.

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 3.3.2.5.1. Estimated average annual economic impacts (2016-2020) from South Atlantic charter and private vessel golden tilefish target trips, by state, using state-level multipliers. All monetary estimates are in 2020 dollars in thousands.

	NC	FL
Charter Mode		
Target Trips	$0	$0
Value Added Impacts	$0	$0
Sales Impacts	$0	$0
Income Impacts	$0	$0
Employment (Jobs)	$0	$0
Private/Rental Mode		
Target Trips	$59	$12,683
Value Added Impacts	$2	$354
Sales Impacts	$3	$528
Income Impacts	$1	$175
Employment (Jobs)	$0	$5
All Modes		
Target Trips	$59	$12,683
Value Added Impacts	$2	$354
Sales Impacts	$3	$528
Income Impacts	$1	$175
Employment (Jobs)	$0	$5

Source: MRIP Survey Data (2016-2020) available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

Table 3.3.2.5.2. Estimated average annual economic impacts (2017-2021) from South Atlantic charter and private vessel blueline tilefish target trips, by state using state-level multipliers. All monetary estimates are in 2020 dollars in thousands.

	NC	FL
Charter Mode		
Target Trips	1,776	58
Value Added Impacts	$757	$14
Sales Impacts	$1,316	$23
Income Impacts	$446	$8
Employment (Jobs)	13	0
Private/Rental Mode		
Target Trips	3,296	0
Value Added Impacts	$104	$0
Sales Impacts	$172	$0
Income Impacts	$60	$0
Employment (Jobs)	2	0
All Modes		
Target Trips	5,072	58
Value Added Impacts	$861	$14
Sales Impacts	$1,488	$23
Income Impacts	$506	$8
Employment (Jobs)	15	0

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

3.4 Social Environment

This section describes select social, demographic, and geographic aspects of the golden and blueline tilefish fishery sectors addressed by the amendment, providing essential background for social effects analysis in Chapter 4. Trends in landings and permit issuance are provided to aid in describing the geographic distribution of fishing effort, with emphasis on identifying communities where fleets are most deeply engaged in the pursuit of the tilefish species of interest. Description of community-level involvement in the fishery sectors is provided to meet the requirements of National Standard 8 of the Magnuson-Stevens Act, which calls for examination of linkages between fishery resources and human communities when regulatory changes are under consideration. Finally, as prescribed in Executive Orders 12898 and 13985, which address environmental justice concerns, the section identifies vulnerabilities to prospective social change in communities where tilefish are of known importance to local fleets and businesses.

3.4.1 Golden Tilefish Commercial Sector

Olin et al. (2020) describes golden tilefish with regard to life history, diet, distribution, functional roles in the ecosystem, and other factors. The authors describe the species as sympatric with blueline tilefish in that both species tend to occupy the same deep-water ecological niche—in this case, along shelf-edges and sediment-laden slopes where water temperatures range from ~49° to 58° F at depths between 250 and 1,500 feet. As such, golden and blueline tilefish are often captured during the same trip.

Habitat considerations are important in human terms inasmuch as knowledgeable fishery participants must focus trip preparation activities and actual fishing effort to meet the demands of such areas. This involves: (a) navigating to and fishing in offshore waters with characteristically challenging sea surface, current, and weather conditions, and (b) dropping appropriately configured gear into particularly deep areas with muddy or clay-like bottom conditions that are often mixed with rocky substrate. All such factors affect the nature and extent of fishing effort, time at sea, gear and safety requirements, and costs associated with ocean travel. Safety-at-sea considerations take on added importance in the offshore zones where tilefish and other deep-water species are typically found, and where assistance can be relatively more difficult to attain than in areas closer to shore.

Travel-related challenges associated with pursuit of golden tilefish vary across the South Atlantic management region and its sub-regions. For example, captains and crew departing north of Cape Hatteras and along the South Florida coastline and Florida Keys can reach tilefish grounds relatively quickly. Meanwhile, vessels leaving from ports where the Continental Shelf is much wider, such as along the coastlines of southeast North Carolina and northeast South Carolina, must travel considerably greater distances to reach areas of suitable bathymetry and appropriate temperatures at depth.

A commonly used approach for pursuing golden tilefish involves drifting in appropriate areas with heavily weighted deep-drop hook-and-line gear while carefully maintaining desired position over the bottom. Use of cut bait is typical, but live bait may also be deployed. Electric reels and/or bandit gear are very commonly used to retrieve hooked fish from the depths. Commercial captains operating in the South Atlantic must possess a golden tilefish longline endorsement in order to legally harvest the species with bottom longline gear (north of St. Lucie in Florida). Given the depths and nature of the habitats involved, entanglement of gear poses a serious threat to operational efficiency and is therefore stringently avoided.

Knowledge of tilefish feeding patterns and ecological attributes of areas where tilefish are known or thought likely to be present—often with other demersal species of economic importance (such as snowy grouper, for instance)—are particularly important forms of information, shared at times between individual captains and/or social networks of captains involved in the fishery. Such captains also typically possess keen understanding of current market conditions for the species of interest and carefully weigh such information against the costs and difficulties of pursuing the fish in areas that may or may not yield a profitable harvest on any given day.

Landings by State

State-specific landings of golden tilefish captured in federal waters provide an indication of the communities from which commercial captains and crew conduct their operations. During 2020, nearly 81.4% of landings occurred at ports in Florida, followed by 11.9% at ports in South Carolina, and 6.7% at ports in North Carolina. No federally permitted commercial landings of the species were reported along the Georgia coastline during the period 2017 through 2020. Florida landings far exceed those of the remaining South Atlantic states during each year of the 2016 through 2020 time-series (SEFSC Community ALS File, May 2022).

South Atlantic Commercial Snapper Grouper Permits by State and Community

An unlimited or 225-lb.trip-limited snapper grouper (S-G) permit is required for captains/vessels to legally harvest golden tilefish on a commercial basis (or to commercially harvest adjacent species such as blueline tilefish and snowy grouper). The distribution of such permits indicates states and ports from which active vessels typically operate. A total of 535 unlimited S-G permits were issued during 2020, the latest year for which valid permit data are presently available. At 67.1%, most unlimited S-G permits were issued during 2020 to residents or persons with mailing addresses in Florida, followed by 21.9% in North Carolina, 7.6% in South Carolina, and 1.5% in Georgia. Two or fewer unlimited permits were issued to persons with mailing addresses in New York, New Jersey, Virginia, and Texas during 2020. As indicated in Table 3.4.1.1, a high percentage of both permit types are held by fishery participants active in waters proximal to Key West.

Table 3.4.1.1. Distribution of commercial snapper grouper unlimited and 225-lb trip-limited permits among the top permit-holding communities in the South Atlantic during 2020.

Leading Communities: Unlimited S-G Permits	Permits	Leading Communities: 225-lb Trip-Limited S-G Permits	Permits
Key West, Florida	92	Key West, Florida	11
Key Largo, Florida	22	Marathon, Florida	10
Miami, Florida	21	Miami, Florida	9
Marathon, Florida	19	Jupiter, Florida	6
Murrells Inlet, South Carolina	15	Big Pine Key, Florida	5
Little River, South Carolina	15	Key Largo, Florida	4
Port Canaveral, Florida	14	Sebastian, Florida	4
Jacksonville, Florida	13	Wilmington, North Carolina	4
Southport, North Carolina	13	West Palm Beach, Florida	3
Jupiter, Florida	12	Hatteras, North Carolina	3
Morehead City, North Carolina	11	Fort Pierce, Florida	2
St. Augustine, Florida	11	Middle Torch Key, Florida	2
Sneads Ferry, North Carolina	11	Cudjoe Key, Florida	2
Fort Pierce, Florida	11	Summerland Key, Florida	2
Big Pine Key, Florida	11	Fort Lauderdale, Florida	2
Sebastian, Florida	11	Boca Raton, Florida	2
Sneads Ferry, North Carolina	10	Morehead City, North Carolina	2
Mayport, Florida	10	--	--
Islamadora. Florida	8	--	--

Source: SERO Sustainable Fisheries (SF) Access permits database, accessed July 2022.

South Atlantic Golden Tilefish Commercial Longline Endorsements

Commercial participants/vessels must acquire a golden tilefish longline endorsement to legally deploy bottom longline gear for the species in the federal waters of the South Atlantic. A total of 22 such endorsements were issued during 2020, with the community-level distribution of endorsements provided in Table 3.4.1.2 below.

Table 3.4.1.2. Distribution of golden tilefish commercial longline endorsements in the South Atlantic region during 2020

State	Communities	Endorsements
Florida	Port Orange	5
South Carolina	Little River	3
Florida	Islamorada	3
Florida	Fort Pierce	3
Florida	St. Augustine	1
Florida	Port Canaveral	1
Florida	Port Salerno	1
Florida	Jupiter	1
Florida	Lantana	1
Florida	Palm Beach	1
North Carolina	Wanchese	1
Florida	New Smyrna Beach	1
Florida	Ponce Inlet	1
Georgia	Townsend	1
South Carolina	McClellanville	1

Source: SERO Sustainable Fisheries (SF) Access permits database, accessed July 2022.

Community Quotients of Commercial Golden Tilefish Landings in the South Atlantic

Figures 3.4.1.1 and 3.4.1.2 respectively depict the distribution of commercial golden tilefish landings and associated ex-vessel value of landings among those communities in the South Atlantic with the greatest share of golden tilefish landings during the time-series. Each distribution is expressed here as a regional quotient, or the share of community landings and ex-vessel values divided by landings and values for the overall region. Communities are presented in the graphic based on a ranking of average landings and average values over the period of interest.

As can be discerned from Figure 3.4.1.1, commercial participants based in Port Orange, Florida collectively account for the greatest proportion of community-specific commercial golden tilefish landings during 2020 and throughout the time-series. Fishery participants resident in or otherwise affiliated with the towns Titusville, Cocoa Beach, and Fort Pierce in Florida, and Little River in South Carolina also account for large proportions of landings during the period of interest.

Of note, captains and crew operating from Little River travel many scores of ocean miles to reach suitable tilefish grounds. Figure 3.4.1.2 depicts the ex-vessel value of landings by participants in each community for the time-period of interest, with figures closely approximating the distribution of landings in the region. Actual y-axis percentages are not depicted given confidentiality concerns in certain communities.

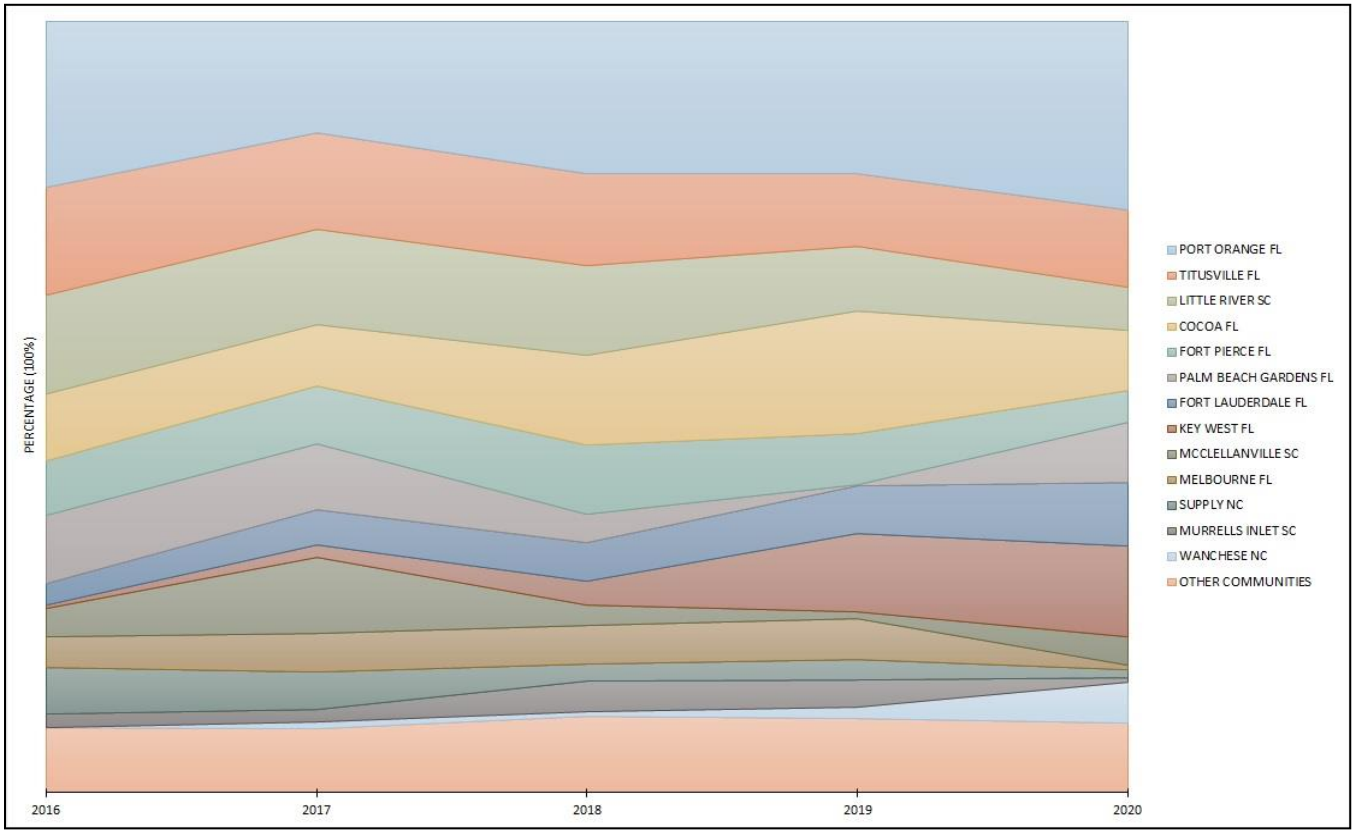

Figure 3.4.1.1. Distribution of regional landings among the top South Atlantic commercial golden tilefish landings communities: 2016-2020. Source: SEFSC, Community ALS File, July 2022.

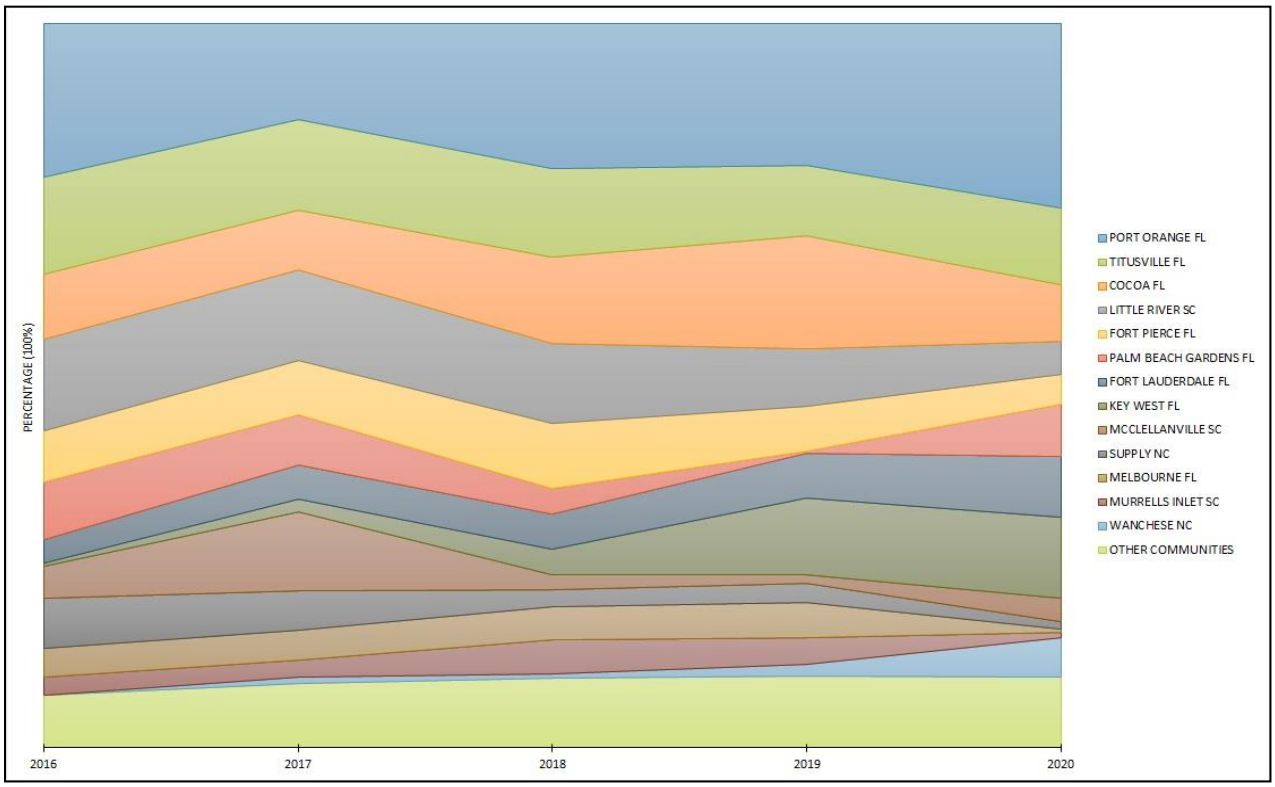

Figure 3.4.1.2. Distribution of regional value among the top South Atlantic commercial golden tilefish landings communities: 2016-2020. Source: SEFSC, Community ALS File, July 2022.

Finally, Figure 3.4.1.3 depicts the local quotient (LQ) of golden tilefish landings among communities depicted in the figure above. The LQ metric specifies the proportion of community-specific commercial landings for a given species relative to commercial landings of all species by persons affiliated with that community (y-axis) during a given year or years. In this case, the graphic depicts the LQ for golden tilefish during 2020.

In certain instances, the LQ value for golden tilefish is too small to enable effective visual representation on the graphic. Conversely, certain communities register particularly high LQ values. This is the case for numerous communities in Florida and in northeast South Carolina during the data year of interest.

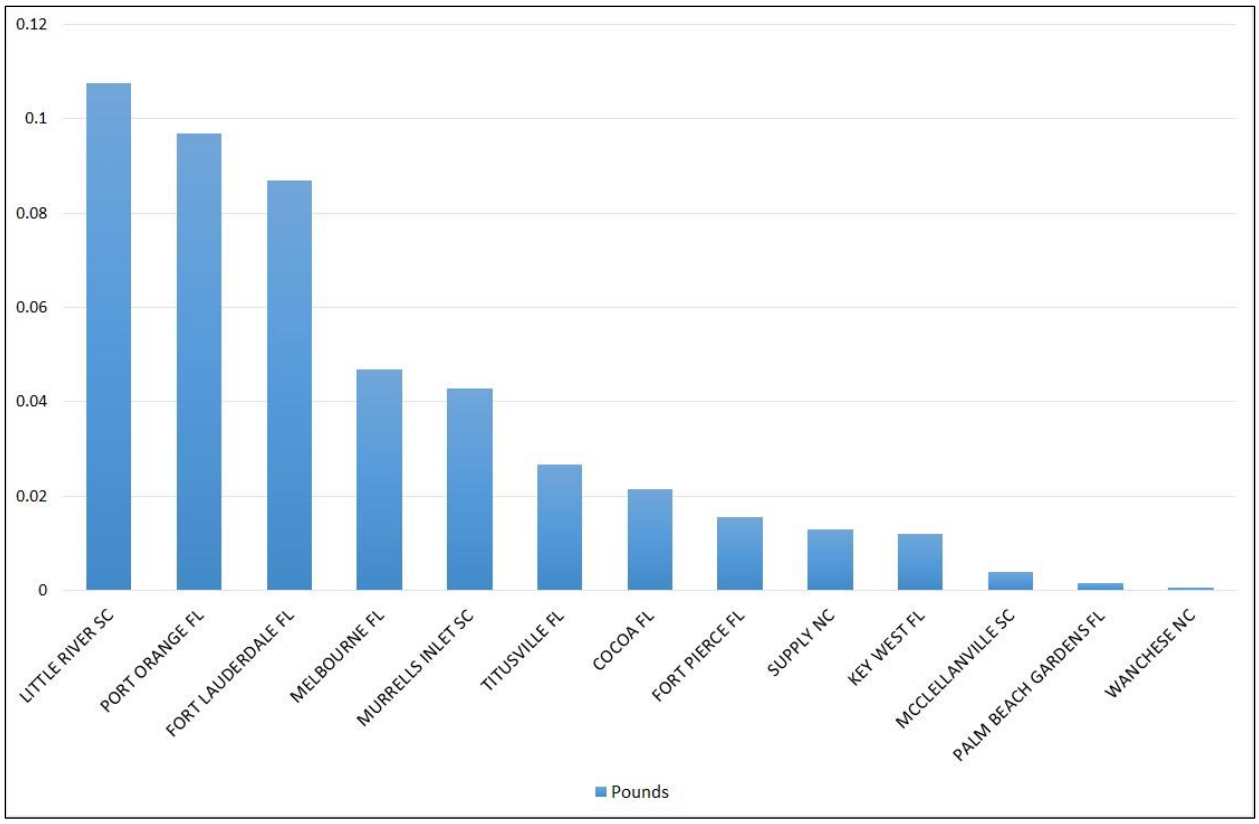

Figure 3.4.1.3. Local quotient of commercial golden tilefish landings among communities with the highest percentage of golden tilefish landings in 2020. Source: SEFSC, Community ALS Data File, accessed July 2022**.**

Community Engagement & Reliance: Commercial Golden Tilefish Fishery

As depicted in Figure 3.4.4, the Florida communities of Key West, Fort Pierce, and Fort Lauderdale, along with the North Carolina community of Wanchese score highly in terms of relative extent of engagement in the South Atlantic golden tilefish portion of the snapper grouper fishery. The measure of engagement provided here is a generalizable composite indicator based on: (a) pounds of golden tilefish landed by the local commercial fleets—in this case, pounds averaged over the time-series, (b) associated ex-vessel revenue, and (c) the number of commercial fishery participants and seafood dealers present in a given community.

Readers may consult Jacob et al. (2013), Jepson and Colburn (2013), and Hospital and Leong (2021) for discussion of the rationale and approach for using indicators to assess local engagement in and reliance on regional marine fisheries. The measure of reliance used here incorporates the same variables noted above, divided by the total local population figure. Both measures are useful for indicating where any prospective effects of commercial golden tilefish management actions are likely to be experienced. Of note, Key West far exceeds the one standard deviation threshold for engagement in South Atlantic commercial fisheries, as does the North Carolina community of Wanchese. Wanchese approaches the 0.5 standard deviation threshold for reliance on regional commercial fisheries, suggesting limited local economic alternatives to the fishing and seafood industry. Wanchese, on Roanoke Island in northeast North Carolina is a rural waterfront town of some 1,522 residents (U.S. Census Bureau 2020a).

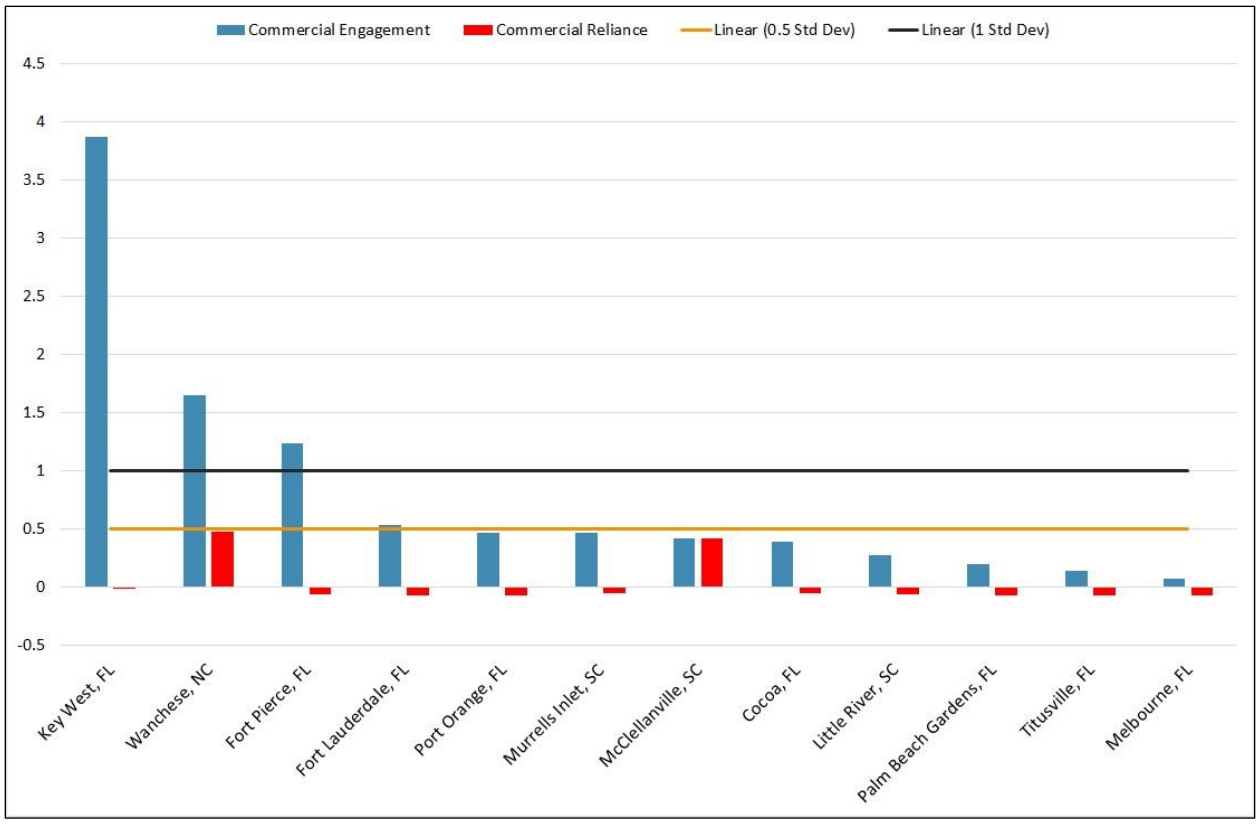

Figure 3.4.1.4. Measures of engagement and reliance among the leading commercial golden tilefish landings communities in the South Atlantic during 2020. Source: SERO, Community Social Vulnerability Indicators Database, accessed July 2022.

3.4.2 Blueline Tilefish Recreational Sector

Participants in the federally managed South Atlantic recreational fishing sector generally pursue blueline and/or golden tilefish using deep-drop gear and techniques suited to the considerable depths and mixed sediment/rocky substrate habitats preferred by these sympatric species. Of note, while golden tilefish are often the principal target for many for-hire and private vessel captains, blueline tilefish are often landed. The current recreational bag limit is three fish per day per vessel for blueline, and one fish per day per vessel for golden, with an aggregate limit of three grouper/tilefish per vessel per day.

Environmental knowledge, positioning technology, navigational skills, experience with deep-drop gear, and effective at-sea coordination between captain and crew (and patrons) are core dimensions of success when pursuing blueline and golden tilefish in their deep-water habitats. As such, the settings and networks in which such information is communicated and practiced are important social-environmental dimensions of the recreational and commercial sectors alike.

Drifting over the fishing grounds is most typical given the challenges of anchoring in the dynamic deep-water zones close to the Gulf Stream. Heavy weight, often up to six pounds, is needed for fishing rigs to reach bottom. Cut bait is used by most captains, typically in conjunction with multiple hooks on heavy leader and a heavy braided mainline. Given the depths involved, electric reels or bandit gear are very typically used to retrieve fish from the depths. A descending device is required on all vessels (SAFMC 2020b).

State-Level Distribution of Recreational Blueline and Golden Tilefish Landings

Based on data generated through the NMFS MRIP-FES, 99% of documented golden tilefish landings were attributed to privately operated recreational fishing vessels active along the east coast of Florida during 2020. The data situation was quite different for blueline tilefish, in that 91.6% of documented landings for that species were attributed to private vessels along the coast of North Carolina during 2020, and only 8.2 percent to vessels active along the east coast of Florida. Given that rapidly evolving fish-finding, geo-positioning, and vessel and engine technologies are improving ease of access to deep-water fishing areas around the nation's Exclusive Economic Zone, it logically may be expected that recreational fishing for deep-water species such as blueline and golden tilefish will increase in popularity across the entirety of the South Atlantic fishery management region in the years to come (see Cooke et al. 2021).

For-Hire Permits

For-hire captains seeking to harvest blueline and/or golden tilefish in federal waters must possess a South Atlantic snapper grouper charter/headboat permit. A total of 2,136 such permits were issued during 2020, the vast majority to persons with mailing addresses in North Carolina, South Carolina, Georgia, and Florida. The total number of permits increased steadily during the period 2016 through 2019, with 1,867 permits issued in 2016, 1,982 in 2017, 2,126 in 2018, and 2,183 in 2019. As such, 47 fewer permits were issued during 2020 than during 2019.

Table 3.4.3.1 below depicts the distribution of South Atlantic snapper grouper charter/headboat permits among the leading permit-holding communities during the 2020 data year. Of note in the table, the greatest proportion of federal permits were held by residents or persons with postal addresses in Key West, with 196 issued during 2020, down from a high of 206 in 2018.

Extensive local involvement in the South Atlantic snapper-grouper fisheries on the part of Key West merits summary description of the community. As of April 1, 2020, Key West was home to 24,649 permanent residents (U.S. Census Bureau 2020b), but with a characteristically large expansion of the local population as seasonal residents and tourists arrive during the winter months. Key West is the southernmost city in the mainland U.S., with a consistently mild tropical-maritime climate (NOAA 2021). The combination of favorable winter weather, close proximity to deep-water fishing grounds, and increasing rates of seasonal residence and visitation following a period of gentrification initiated in decades past (Shivlani 2014), help explain the extensive nature of for-hire fishing opportunities and services available in the community.

Table 3.4.3.1. Distribution of South Atlantic for-hire/headboat snapper grouper permits among the top 20 permit-holding communities in the region, 2020.

State	Leading Communities	Number of Permits in 2020
Florida	Key West	196
Florida	Islamorada	98
Florida	Marathon	81
Florida	Port Canaveral	77
South Carolina	Charleston	55
Florida	St. Augustine	44
North Carolina	Hatteras	42

State	Leading Communities	Number of Permits in 2020
Florida	Miami	41
Florida	Ponce Inlet	40
South Carolina	Murrells Inlet	36
Florida	Jacksonville	36
North Carolina	Morehead City	35
Florida	Jupiter	33
Florida	Key Largo	33
South Carolina	Little River	29
North Carolina	Manteo	28
Florida	Naples	27
Florida	Cape Canaveral	26
Florida	Port Orange	25
South Carolina	Fort Lauderdale	22

Source: SERO Sustainable Fisheries (SF) Access permits database, accessed July 2022.

Community Engagement & Reliance: Recreational Blueline & Golden Tilefish Sectors

The full range of data indicative of involvement in the South Atlantic blueline and golden tilefish recreational fishery sectors is not readily available at the level of the community. For this reason, it is not possible with available information to identify communities that are specifically engaged in and/or reliant on recreational fishing for these deep-water species in particular. Given that information regarding community-specific interaction with any given species is limited, NMFS social scientists developed indices of utility for identifying communities where recreational fishing is an important component of the local economy in general (see Jacob et al. 2013; Jepson and Colburn 2013; Hospital and Leong 2021).

Based on the available indices, the communities depicted in Figure 3.4.2.1 are those in the South Atlantic region where residents are most clearly involved in the recreational fishing industry in general. Further specificity is enabled in that the communities represented in the figure are those with the greatest number of for-hire snapper grouper permits in the South Atlantic fishery management region. The measure of engagement depicted here derives from the number of for-hire permitted vessels and recreational fishing infrastructure actively used by residents or persons otherwise connected to a given community. The measure of reliance derives from the same variables divided by the total local population figure.

In this case, very high levels of engagement in marine recreational fisheries are noted of Jacksonville, Islamorada, and Key West in Florida, and Hatteras in North Carolina. Of note, Hatteras is the only community that exceeds the 0.5 standard deviation threshold for *reliance* on the recreational fishing industry, indicating the particular importance of for-hire and private recreational fishing and related services and opportunities in this remote Outer Banks community. Other geographically remote communities approach the same threshold, including Islamorada in the Florida Keys, and Manteo in northeastern North Carolina.

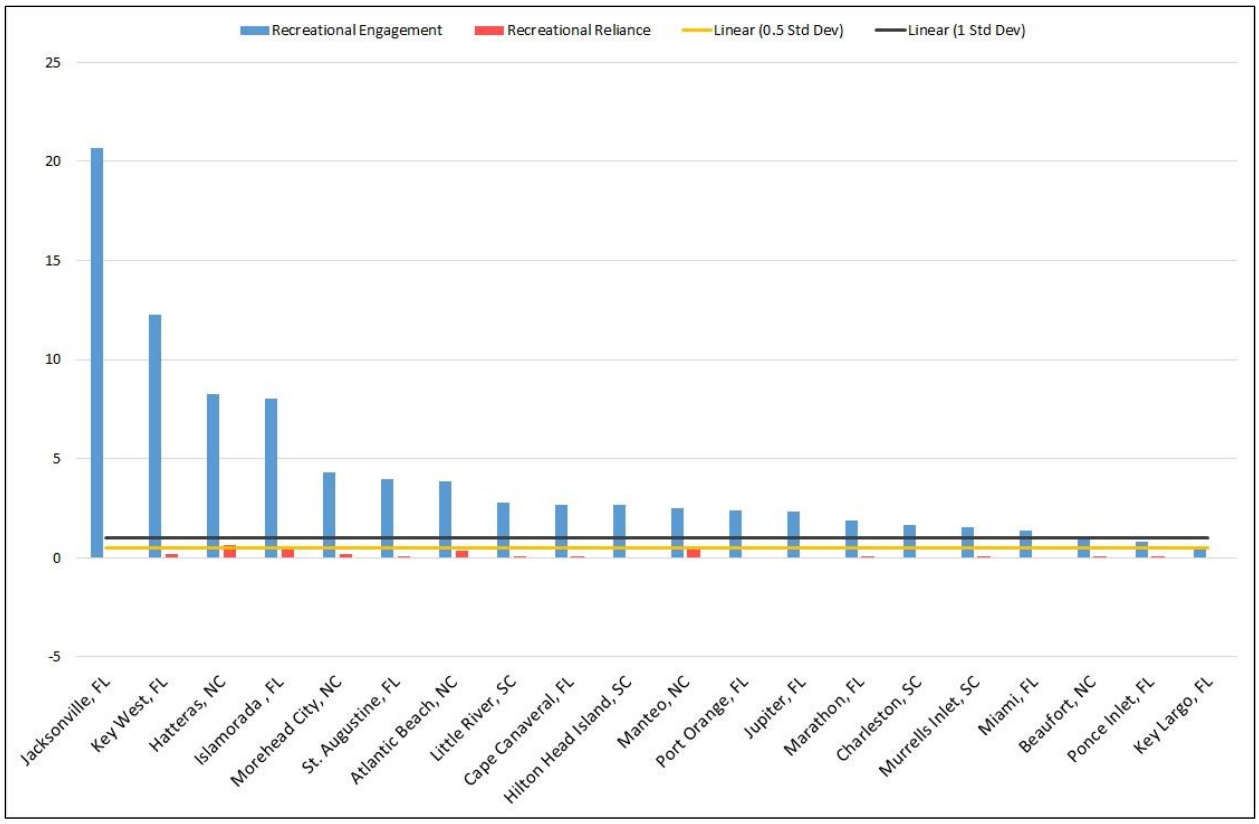

Figure 3.4.2.1. Measures of community involvement in the South Atlantic recreational fishing industry: 2020. Source: SERO, Community Social Vulnerability Indicators Database, accessed July 2022.

3.4.3 Environmental Justice

Executive Order 12898 was established in 1994 to require that federal agencies examine the human health and socioeconomic implications of federal regulatory actions among low-income and minority groups and populations around the nation. The order requires that such agencies conduct programs, policies, and activities in a manner that ensures no individuals or populations are excluded, denied the benefits of, or subjected to discrimination due to race, color, or nation of origin. Of particular relevance in the context of marine fisheries, federal agencies are further required to collect, maintain, and analyze data regarding patterns of consumption of fish and wildlife among persons who rely on such foods for purposes of subsistence. In sum, the principle intent of the order is to require assessment and due consideration of any "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories."

Established in 2021, Executive Order 13985 also calls for social equity in the context of federal decision-making and policy actions. Titled "Advancing Racial Equity and Support for Underserved Communities through the Federal Government," this order requires that federal policies and programs are designed and undertaken in a manner that delivers resources and benefits equitably to all citizens, including those who are members of historically underserved communities. Here, the phrase "underserved communities" refers to populations and persons

that have been systematically denied full and equitable opportunity to participate in economic, social, and civic aspects of life in the nation.

Various forms of data are available to indicate environmental justice issues among minority and low-income populations and/or indigenous communities potentially affected by federal regulatory and other actions. With the intent of enhancing capacity to determine whether environmental justice issues may be affecting communities around the U.S. where fishing-related industry is an important aspect of the local economy, NMFS social scientists undertook an extensive series of deliberations and review of pertinent data and literature. The scientists ultimately selected key social, economic, and demographic variables that could function to identify social vulnerabilities at the community level of analysis (see Jacob et al. 2013; Jepson and Colburn 2013). Census data such as community-specific rates of poverty, number of households maintained by single females, number of households with children under the age of five, rates of crime, and rates of unemployment exemplify the types of information chosen to aid in community analysis. Pertinent variables were subsequently used to develop composite indices that could be applied to assess vulnerability to environmental, regulatory, and other sources of change among the nation's fishing- and/or seafood-oriented communities.

As provided in the following figures, three composite indices—termed here as poverty, population composition, and personal disruption—are applied to indicate relative degrees of socioeconomic vulnerability among those communities with the greatest percentages of commercial golden tilefish landings in the South Atlantic region. Mean standardized scores for each community are provided along the y-axis, with means for the vulnerability measures and threshold standard deviations depicted along the x-axis. Scores exceeding the 0.5 standard deviation level indicate local social vulnerability to regulatory and other sources of change. As can be discerned from Figure 3.4.3.1 below, three of the principal landings communities—Fort Pierce, Fort Lauderdale, and Cocoa in Florida—exceed the designated vulnerability thresholds for one or more indices.

Finally, Figure 3.4.3.2 depicts social vulnerability measures for South Atlantic communities most extensively involved in the regional recreational fishing industry. The data presented here indicate social vulnerabilities especially in Miami, Florida. Both figures derive from data available in the SERO Community Social Vulnerability Indicators (CSVI) Database.

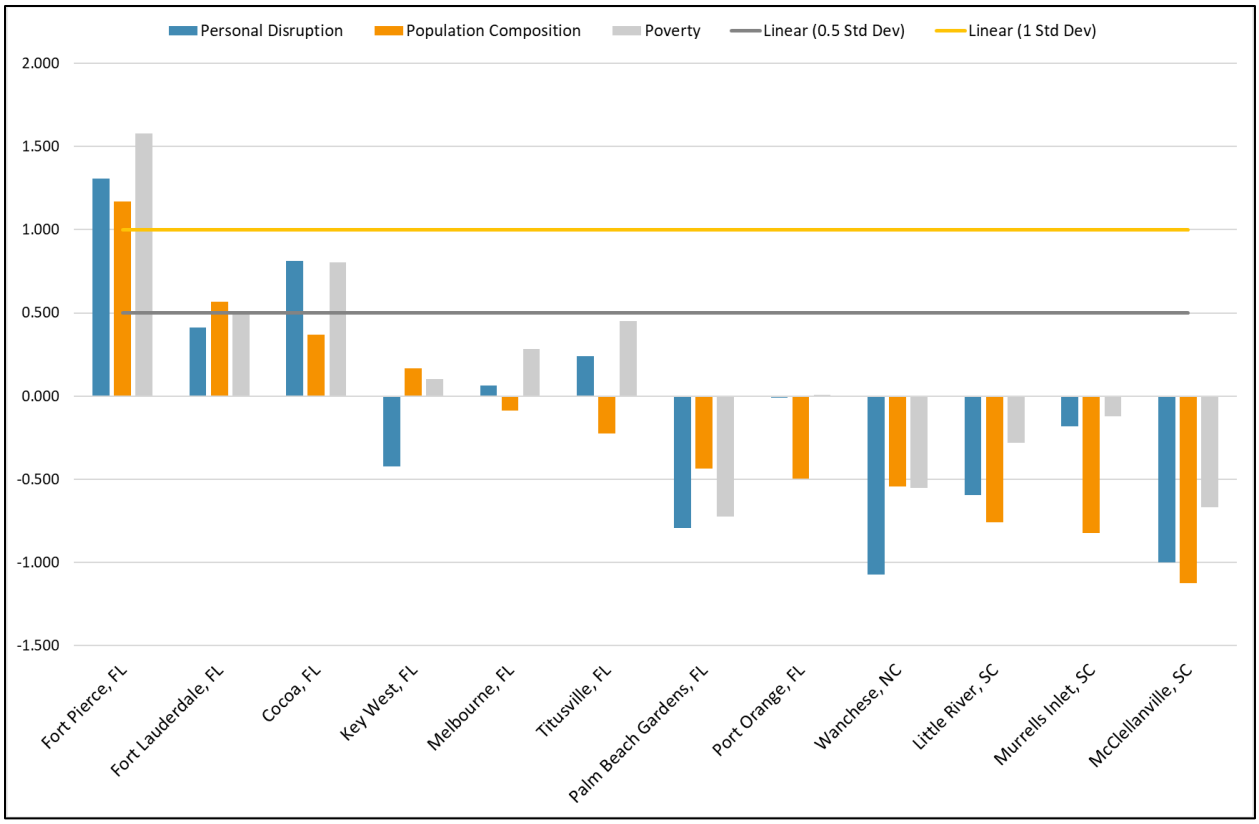

Figure 3.4.3.1. Socioeconomic vulnerability measures for South Atlantic communities most extensively involved in commercial harvest of tilefish. Source: SERO, CSVI Database, accessed July 2022.

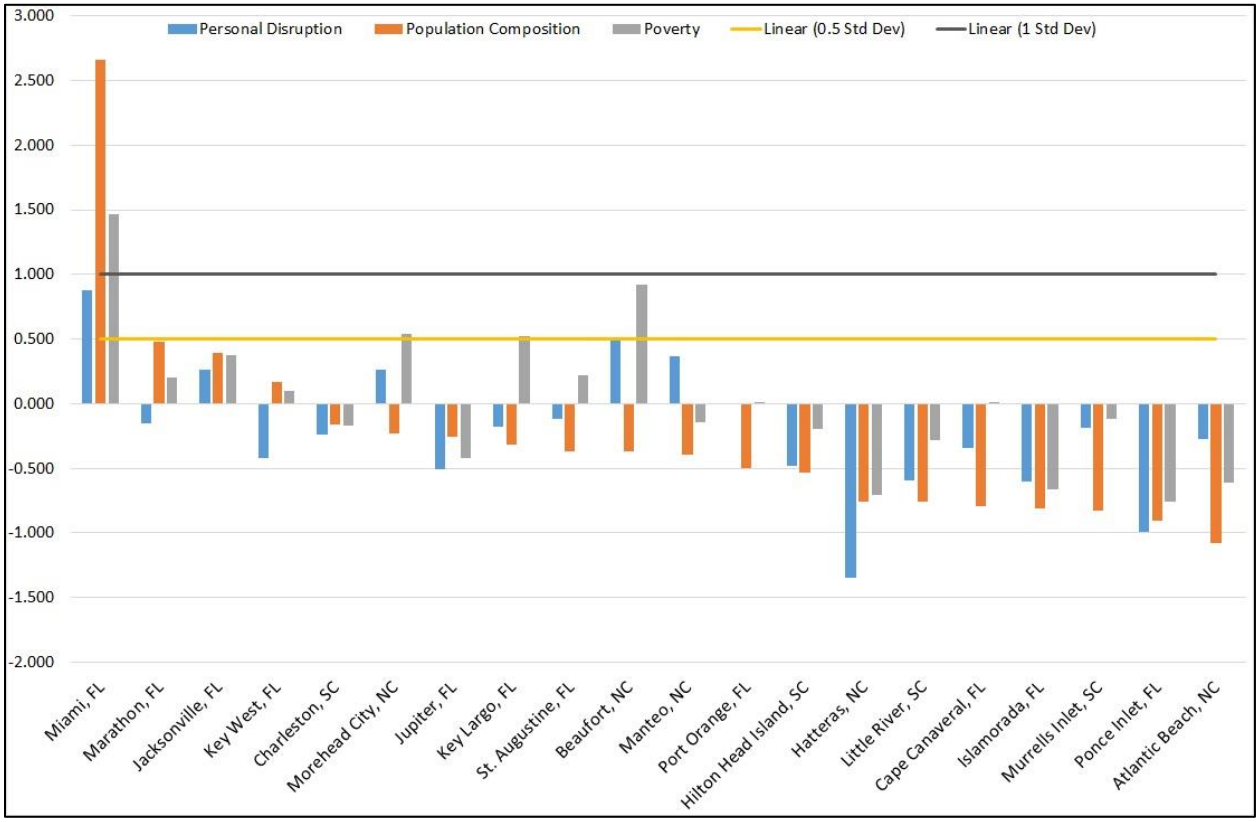

Figure 3.4.3.2. Socioeconomic vulnerability measures for communities most extensively involved in the South Atlantic recreational snapper grouper fisheries. Source: SERO CSVI Database, accessed July 2022.

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

Responsibility for federal fishery management decision-making is divided between the U.S. 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 collecting and providing the data necessary for the councils to prepare fishery management plans and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws. In most cases, the Secretary has delegated this authority to NMFS.

The South Atlantic Fishery Management Council (Council) is responsible for conservation and management of fishery resources in federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 mi offshore from the seaward boundary of North Carolina, South Carolina, Georgia, and east Florida to Key West. The Council has thirteen voting members: one from NMFS; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. There are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard (USCG), State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The Council has adopted procedures whereby the non-voting members serving on the Council Committees have full voting rights at the Committee level but not at the full Council level. The Council also established two voting seats for the Mid-Atlantic Council on the South Atlantic Mackerel Committee. Council members serve three-year terms and are recommended by state governors and appointed by the Secretary from lists of nominees submitted by state governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel and legal matters, are open to the public. The Council uses its scientific and statistical committee (SSC) to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedure Act, in the form of "notice and comment" rulemaking.

3.5.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries

Division of the North Carolina Department of Environmental Quality. The Marine Resources Division of the South Carolina Department of Natural Resources manages South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Division of Marine Fisheries Management of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. 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 South Atlantic states are also involved through ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of complementary state regulations to conserve coastal species. The ASFMC is also represented at the Council but does not have voting authority at the Council level.

NMFS's State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.5.3 Enforcement

Both the NMFS Office for Law Enforcement (NOAA/OLE) and the USCG have the authority and the responsibility to enforce Federal regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the states in the Southeast Region (North Carolina), which granted authority to state officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the states has increased through Joint Enforcement Agreements, whereby states conduct patrols that focus on federal priorities and, in some circumstances, prosecute resultant violators through the state when a state violation has occurred.

The NOAA Office of General Counsel Penalty Policy and Penalty Schedule is available online at http://www.gc.noaa.gov/enforce-office3.html.

Chapter 4. Environmental Effects and Comparison of Alternatives

4.1 Action 1. Revise the acceptable biological catch, total annual catch limit, and annual optimum yield for golden tilefish

4.1.1 Biological Effects

Expected effects to golden tilefish and co-occurring species

Alternative 1 (No Action) would ignore the new acceptable biological catch (ABC) recommendations of the Scientific and Statistical Committee (SSC) from the most recent stock assessment; and in doing so would no longer be based on best scientific information available (BSIA) and, therefore, is not a viable alternative.

Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2** through **Alternative 4** are viable alternatives because they do not exceed the SSC recommended ABCs.

All of the action alternatives would result in higher annual catch limits (ACL) than the status quo. The ABC, total ACL, and annual optimum yield (OY) would increase each year until 2026 and remain in place after 2026 until modified. The recommended ABC includes recreational estimates from the MRIP-FES.

The results of SEDAR 66 (2021) indicated that golden tilefish is not undergoing overfishing and is not overfished. Increasing golden tilefish catch levels as proposed in this amendment would not be expected to result in negative biological impacts since overall catch would be constrained to the ACL and AMs would prevent the ACL and overfishing limit (OFL) from being exceeded, correct for overages if they occur (if the stock is in an overfished condition under the existing AMs), and prevent overfishing. In addition, the proposed increase in the total ACL for golden tilefish is based on the SSC's recommended ABC for golden tilefish in the South Atlantic region. SEDAR 66 (2021) indicates

Alternatives*

Alternative 1 (No Action). The total annual catch limit and annual optimum yield for golden tilefish are equal to the current acceptable biological catch (342,000 pounds gutted weight).

Alternative 2. Revise the acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to the recommended acceptable biological catch.

Alternative 3. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to 95% of the recommended acceptable biological catch.

Alternative 4. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to 90% of the recommended acceptable biological catch.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

that the golden tilefish catch limits can be increased without having negative effects on the sustainability of the stock. Furthermore, since the magnitude of the proposed increase in the ACL is small relative to **Alternative 1 (No Action)**, a substantial increase in fishing effort is not expected.

Biological benefits increase as the buffer between the ABCs and the total ACLs increase. Under **Preferred Alternative 2** there would be no buffer between the ABCs and the total ACLs. **Alternatives 3** and **Alternative 4** have larger buffers between ABC and ACL and would be expected to have greater biological benefits than **Preferred Alternative 2**. Although **Preferred Alternative 2** would allow the greatest amount of harvest of the action alternatives considered, it is also based on the SSC's ABC recommendation, it is BSIA, and it represents a catch level that does not result in overfishing.

Substantial changes in fishing effort or behavior are not expected as a result of this action or subsequent actions in this amendment; therefore, there are no expected biological effects, positive or negative, on co-occurring species or protected species in the area (refer to the Bycatch Practicability Analysis (BPA) in Appendix G). Similarly, there are no expected impacts to Essential Fish Habitat from this action or subsequent actions in this amendment since none of the proposed actions are expected to alter the way in which the fishery is prosecuted.

4.1.2 Economic Effects

In general, total ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable long-term effects on the health of a stock. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measures. As such, ACLs that are set above the observed landings in the fishery for a species and do not change harvest or fishing behavior may not have realized economic effects each year. Nevertheless, ACLs set above observed harvest levels do create a gap between the ACL and typical landings that may be utilized in years of exceptional abundance or accessibility to a species, thus providing the opportunity for increased landings and a reduced likelihood of triggering restrictive AMs. As such, there are potential economic benefits from ACLs that allow for such a gap. The opposite is true for ACLs that constrain harvest or fishing effort within a fishery or reduce the previously described gap between average landings and the ACL.

As noted in Section 4.1.1, **Alternative 1 (No Action)** is not a viable alternative. Although not viable since it does not implement BSIA, **Alternative 1 (No Action)** would be expected to be constraining on harvest when compared to recent 5-year average landings. The ACL is set equal to the ABC in **Alternative 1 (No Action)** and **Preferred Alternative 2**, with the differences between the two in part occurring due to the current versus updated ABC and how the non-headboat recreational component of the total ACL would be accounted for moving forward. Specifically, the current ABC is inclusive of MRIP Coastal Household Telephone Survey (CHTS) measurements to account for private recreational and charter landings while the updated ABC would be inclusive of MRIP-FES measurements for these landings. Projections that allow for conversion between both measurements for the recreational sector are not available, as there is no forward-looking conversion between the two. As such, a direct comparison of **Alternative**

1 (No Action) to **Preferred Alternative 2** is not possible. This applies to comparisons of **Alternative 1 (No Action)** to **Alternatives 3** and **4** as well since these two alternatives also incorporate the updated ABC and thus MRIP-FES terms. As a proxy for the status quo (**Alternative 1 (No Action)**), the five-year (2016 - 2020) average landings of golden tilefish are compared to **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** where appropriate to estimate the economic effects of each alternative.

The potential revised total ACLs for golden tilefish in **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** would be constraining on harvest when initially implemented (Table 4.1.2.1; Table 4.1.2.2). **Alternative 4** would provide the lowest total ACL, thus would be expected to most severely limit harvest, and there would be elevated negative economic effects anticipated from this alternative. **Alternative 3** offers a comparatively higher ACL and **Preferred Alternative 2** would provide the highest ACL. From a net economic benefits perspective, **Preferred Alternative 2** would provide the highest potential net economic benefits of the viable alternatives being considered followed by **Alternative 3** and **Alternative 4** (Table 4.1.2.2).

Table 4.1.2.1. South Atlantic golden tilefish landings for fishing years 2016-2020[a].

Fishing Year	Commercial landings (lbs gw)	Recreational landings[a] (lbs gw)	Total landings (lbs gw)
2016	421,513	66,639	488,152
2017	427,586	15,288	442,874
2018	247,349	47,742	295,092
2019	306,409	344,320	650,729
2020	273,570	28,940	302,509
5-year average	335,285	100,586	435,871

[a]Recreational landings are in MRIP- FES terms. Assumes a conversion ratio of 1.06 to convert pounds whole weight to pounds gutted weight (SEDAR 66).
Source: SEFSC MRIP FES ACL data set (September 2022) for recreational landings and SEFSC Commercial ACL data set (April 2022) for commercial landings.

Table 4.1.2.2. Percent difference between the total ACL in Action 1 compared to 5-year average landings from fishing years 2016-2020[a].

Fishing Year	Percent difference between the ACL and 5-year average annual landings for Preferred Alternative 2	Percent difference between the ACL and 5-year average annual landings for Alternative 3	Percent difference between the ACL and 5-year average annual landings for Alternative 4
2023	0%	-5%	-10%
2024	3%	-2%	-7%
2025	5%	0%	-5%
2026+	7%	2%	-4%

[a]**Alternative 1 (No Action)** is tracked in part using CHTS measurements for charter and private recreational landings while **Alternatives 2 (Preferred)** through **4** would be tracked in part using FES measurements for charter and private recreational landings. As such, the economic effects of **Alternative 1 (No Action)** cannot be directly compared in a quantitative manner to the other alternatives since the accounting methods used to track the CHTS and FES are notably different and are not forward projecting. Thus, **Alternative 1 (No Action)** cannot be considered in this analysis.

The estimated change in potential landings by sector under **Preferred Alternative 2** through **Alternative 4** are provided in Table 4.1.2.3 and Table 4.1.2.5. Table 4.1.2.4 and Table 4.1.2.6 show the resulting estimated change in net economic benefits by sector and Table 4.1.2.7 shows the estimated change in net economic benefits for **Action 1** in aggregate for both sectors combined. In the 2023 fishing year, **Preferred Alternative 2** is estimated to result in an increase in potential net economic benefits of $138,185 for the commercial sector (as measured in producer surplus or PS), a decrease in potential net economic benefits of $788,341 for the recreational sector (as measured in consumer surplus or CS), and a decrease in potential net economic benefits of $650,156 for both sectors combined (2020 $). By the 2026 fishing year and beyond, **Preferred Alternative 2** is estimated to result in an increase in potential net economic benefits of $184,778 for the commercial sector, a decrease in potential net economic benefits of $778,229 for the recreational sector, and decrease in potential net economic benefits of $593,450 for both sectors combined (2020 $). The decrease in landings and potential net economic benefits for the recreational sector can largely be attributed to the change from MRIP-CHTS to MRIP-FES measurements for the sector ACL. In doing so, the recreational landings of golden tilefish will be noticeably constrained in comparison to baseline levels exhibited in recent year. These expected changes are highlighted in Tables 4.1.2.5 and 4.1.2.6, with additional details and assumptions used in the subsequent paragraphs.

Table 4.1.2.3. Estimated change in potential landings (lbs gw) to the commercial sector from Action 1.

Fishing Year	Preferred Alternative 2	Alternative 3	Alternative 4
2023	**88,905**	67,873	46,841
2024	**101,476**	79,815	58,154
2025	**111,146**	89,002	66,857
2026+	**118,882**	96,351	73,820

Table 4.1.2.4. Estimated change in potential net economic benefits to the commercial sector (PS) from Action 1 (2020 $).

Fishing Year	Preferred Alternative 2	Alternative 3	Alternative 4
2023	**$138,185**	$105,495	$72,804
2024	**$157,724**	$124,057	$90,389
2025	**$172,754**	$138,335	$103,916
2026+	**$184,778**	$149,758	$114,738

Table 4.1.2.5. Estimated change in potential landings (numbers of fish) to the recreational sector from Action 1.

Fishing Year	Preferred Alternative 2	Alternative 3	Alternative 4
2023	**-12,941**	-13,057	-13,278
2024	**-12,871**	-12,990	-13,218
2025	**-12,818**	-12,940	-13,173
2026+	**-12,775**	-12,899	-13,136

Table 4.1.2.6. Estimated change in potential net economic benefits to the recreational sector (CS) from Action 1 (2020 $).

Fishing Year	Preferred Alternative 2	Alternative 3	Alternative 4
2023	**-$788,341**	-$795,426	-$808,888
2024	**-$784,077**	-$791,375	-$805,242
2025	**-$780,848**	-$788,308	-$802,481
2026+	**-$778,229**	-$785,819	-$800,241

Table 4.1.2.7. Estimated change in potential net economic benefits (recreational and commercial combined) from Action 1 (2020 $)[a].

Fishing Year	Preferred Alternative 2	Alternative 3	Alternative 4
2023	**-$650,156**	-$689,932	-$736,084
2024	**-$626,353**	-$667,318	-$714,852
2025	**-$608,094**	-$649,973	-$698,565
2026+	**-$593,450**	-$636,061	-$685,503

[a]**Alternative 1 (No Action)** is tracked in part using CHTS measurements for charter and private recreational landings while **Alternatives 2 (Preferred)** through **4** would be tracked in part using FES measurements for charter and private recreational landings. As such, the economic effects of **Alternative 1 (No Action)** cannot be directly compared in a quantitative manner to the other alternatives since the accounting methods used to track the CHTS and FES are notably different and are not forward projecting. Thus, **Alternative 1 (No Action)** cannot be considered in this analysis.

Assumptions used in calculating these estimates include application of the status quo allocation of the total ACL (97% commercial, 3% recreational) to the new ACL for each alternative to estimate economic benefits. This allocation is then compared to the baseline scenario (i.e., a proxy for **Alternative 1 (No Action))** to determine the gap between the baseline scenario and the ACL by sector under the assumption that both sectors would fully harvest their respective ACLs. For the commercial sector, the current sector ACL of 331,740 lbs gw is used as the baseline scenario since the units measuring this portion of the total ACL are not changing due to this action (Table 4.1.2.1). For the recreational sector, 5-year average landings (2016-2020; 15,267 fish; Table 3.2.1.3.2)) in MRIP-FES terms are used as the baseline scenario since a forward

looking conversion of MRIP-CHTS and MRIP-FES measurements is not available that would allow direct comparison of the current recreational sector ACL under **Alternative 1 (No Action)**, which is in MRIP-CHTS measurements, to the resulting new recreational sector ACL under **Alternatives 2 (Preferred)** through **4**.

To estimate the change in potential net economic benefits for the commercial sector, the difference in the current and potential future commercial portion of the total ACL applied to the appropriate price ($4.71/lbs gw; Tables 3.3.1.1.2 and 3.3.1.1.3) along with a scaling factor of 33% of gross revenue (Section 3.3.1; NMFS SEFSC, pers. comm. 2022) to estimate PS for the commercial sector. Although there are no currently available estimates of the demand elasticity for golden tilefish, it is assumed that there would be no expected change to CS from the commercial perspective since there is likely a high degree of substitutability of South Atlantic golden tilefish for other species such as golden tilefish from the Gulf of Mexico or Mid-Atlantic regions, other snapper grouper species caught both domestically and imported.
Estimates of net revenues or economic profit are not available for snapper grouper dealers, therefore, it is not possible to quantitatively estimate the effect of changes in purchases on their profits. However, in general, dealers are indirectly affected whenever gross revenues to commercial fishing vessels are expected to change (e.g., increases in gross revenues are expected to indirectly benefit dealers and vice versa). Thus, economic benefits to dealers would be directionally the same as stated above for commercial vessels. Golden tilefish made up only approximately 3% of total purchases by golden tilefish dealers, indicating that there is a very low financial dependency on golden tilefish landings on an annual basis, thus the change in net economic benefits from this action is likely to be minimal for dealers (Section 3.3.1).

To estimate net economic benefits for the recreational sector, a CS estimate of $60.92 for the second grouper kept on a recreational trip is used (2020 $; Section 3.3.2). This marginal value estimate is used as a proxy value since one is not currently available specifically for golden tilefish. A weight of 5.61 pounds (lbs) gutted weight (gw) per golden tilefish is used to convert the recreational portion of the ACL from lbs gw to numbers of fish. It is assumed that changes in the recreational portion of the total ACL would only affect catch per trip and not the overall number of trips taken due to the low retention limit for golden tilefish and a large number of substitute target species. This includes no direct change to for-hire fishing activity and thus no change in direct economic effects for the for-hire component of the recreational sector. As such, there are no estimated changes in PS provided for the recreational sector.

4.1.3 Social Effects

The OFL, ABC, and ACL for any stock does not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict, or close harvest could negatively impact the commercial, for-hire, and private recreational sectors. AMs can have significant direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects, such as increased pressure on another species, or fishermen having to stop fishing altogether due to regulatory closures. However, restrictions on harvest contribute to sustainable management goals, and are expected to be beneficial to fishermen and their

communities in the long term. Generally, the higher the ACL, the greater the short-term social benefits that would be expected to accrue if harvest is sustainable.

Communities that would be most affected by changes to the OFL, ABC, and ACL for golden tilefish are detailed in Section 3.4. Historically, commercial golden tilefish landings have been highest in the state of Florida, specifically Port Orange, Titusville, Cocoa, and Fort Pierce.

Under **Preferred Alternative 2**, **Alternative 3**, and **Alternative 4** the ACL for golden tilefish would be based on the most recent stock assessment and updated MRIP estimates. Adjustments in an ACL based on updated information are necessary to ensure continuous social benefits over time. Specifically, updated information ensures the sustainability of fishing activities which can stabilize business operations and planning for the future. **Alternative 1 (No Action)** would not update the golden tilefish ACL based on current information and would not provide the social benefits associated with up-to-date scientific information.

In general, a higher ACL would lower the chance of triggering a recreational or commercial AM and result in the lowest level of negative effects on the recreational and commercial sectors. Additionally, higher ACLs may provide opportunity for commercial and recreational fishermen to expand their harvest providing social benefits associated with increased income to fishing businesses within the community and higher trip satisfaction. Among the action alternatives, **Preferred Alternative 2** would be the most beneficial for fishermen, followed by **Alternative 3**, and **Alternative 4**.

4.1.4 Administrative Effects

Modifying the total ACL and annual OY for golden tilefish through **Preferred Alternative 2** through **Alternative 4** would not have effects on the administrative environment, outside of the requisite public notices. Under all of the action alternatives, the ACL would increase so the likelihood of exceeding the ACL and requiring in-season (if overfished, as stated in existing AMs) post season AMs would be reduced from the status quo. The overall administrative effects are likely going to be minimal and the same across the viable alternatives.

4.2 Action 2. Revise sector allocations and sector annual catch limits for golden tilefish

4.2.1 Biological Effects

Biological effects are not expected to be substantially different between **Alternative 1 (No Action)** and **Preferred Alternative 2**, since the allocation percentages would be similar and do not affect the total ACL specified in Action 1. The commercial sector has effective in-season AMs in place to prevent the commercial ACL from being exceeded.

Golden tilefish are most likely to be captured with species such as yellowedge grouper, warsaw grouper, snowy grouper, and silk snapper. However, many of the overlapping occurrences for these species with golden tilefish were minimal except for yellowedge grouper.

Alternatives*

Alternative 1 (No Action). Retain the current recreational sector and commercial sector allocations as 3.00% and 97.00%, respectively, of the revised total annual catch limit for golden tilefish. Note: Within the commercial sector 25% is allocated to hook and line (HL) component and 75% to the longline (LL) component.

Alternative 2. Allocate 96.70% of the revised total annual catch limit for golden tilefish to the commercial sector and 3.30% of the revised total annual catch limit for golden tilefish to the recreational sector.
Note: Within the commercial sector 25% is allocated to hook and line (HL) component and 75% to the longline (LL) component.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

4.2.2 Economic Effects

In general, sector ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable long-term effects on the health of a stock. The sector ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the sector ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measures. As such, sector ACLs that are set above observed landings in a fishery for a species and do not change harvest or fishing behavior may not have realized economic effects each year. Nevertheless, sector ACLs set above observed average harvest levels do create a gap between the sector ACL and typical landings that may be utilized in years of exceptional abundance or accessibility of a species, thus providing the opportunity for increased landings and a reduced likelihood of triggering restrictive AMs. As such there are potential economic benefits from sector ACLs that allow for such a gap.

Commercial Sector

Alternative 1 (No Action) would maintain the current commercial allocation of 97.00% of the total ACL. **Preferred Alternative 2** would result in comparatively lower commercial sector allocation and sector ACL (96.70% of the total ACL). Although both of the commercial ACL alternatives in **Action 2** are higher than the current sector ACL of 331,740 lbs gw and 5-year average landings (2016 through 2020; 335,285 lbs gw; Table 4.1.2.1), it is assumed that the commercial sector could fully harvest its ACL and there would be fewer potential landings of golden tilefish under **Preferred Alternative 2** relative to **Alternative 1 (No Action)** (Table 4.2.2.1). These relatively reduced landings would be expected to comparatively decrease total potential producer surplus (PS) for the commercial sector. When compared to **Alternative 1 (No**

Action), **Preferred Alternative 2** would result in an estimated reduction in PS of $2,028 in 2023 and a reduction in PS of $2,173 by fishing year 2026 (2020 $) (Table 4.2.2.2).

Estimates of net revenues or economic profit are not available for snapper grouper dealers. Therefore, it is not possible to estimate the effect of changes in purchases on their profits. However, in general, dealers are indirectly affected whenever gross revenues to commercial fishing vessels are expected to change (e.g., increases in gross revenues are expected to indirectly benefit dealers and vice versa). Thus, the directionality of economic benefits to dealers would be the same as stated above. Golden tilefish made up only approximately 3% of total purchases by fish dealers, indicating that there is a very low financial dependency on golden tilefish landings on an annual basis, thus the change in net economic benefits from this action is likely to be minimal for dealers (Section 3.3.1).

Table 4.2.2.1 Percent difference between the commercial sector ACLs in Action 2 compared to 5-year average landings of golden tilefish from 2016-2020 and comparison of sector ACLs.

Fishing Year	Commercial sector ACL (lbs gw)	Percent difference between 5-year average landings and the sector ACL	Difference from Alternative 1 (No Action) sector ACL (lbs gw)
Alternative 1 (No Action)			
2023	421,950	26%	-
2024	434,560	30%	-
2025	444,260	33%	-
2026+	452,020	35%	-
Preferred Alternative 2			
2023	**420,645**	**25%**	**-1,305**
2024	**433,216**	**29%**	**-1,344**
2025	**442,886**	**32%**	**-1,374**
2026+	**450,622**	**34%**	**-1,398**

[a]Assumes the total ACL in Preferred Alternative 2 of Action 1 to determine the sector ACL.

Table 4.2.2.2. Estimated change in potential net economic benefits for the commercial sector (PS) from the alternatives in Action 2 compared to Alternative 1 (No Action) (2020 $).

Fishing Year	Preferred Alternative 2
2023	**-$2,028**
2024	**-$2,089**
2025	**-$2,136**
2026+	**-$2,173**

Assumptions used in calculating the estimates in Table 4.2.2.2 include a comparison of the sector ACL in **Alternative 1 (No Action)** to the appropriate sector ACL resulting from the other alternative. To estimate the change in potential net economic benefits, the difference in lbs gw is applied to the appropriate price ($4.71/lbs gw; Tables 3.3.1.2 and 3.3.1.3) along with a scaling factor of 33% of gross revenue (Section 3.3.1; NMFS SEFSC, pers. comm. 2022) to estimate PS for the commercial sector. Although there are no currently available estimates of the demand elasticity for golden tilefish, it is assumed that there would be no expected change to consumer

surplus from the commercial perspective since there is likely a high degree of substitutability of golden tilefish for other species. The total ACL for which the sector ACLs are based upon is derived from Preferred Alternative 2 in Action 1.

Recreational Sector

Alternative 1 (No Action) would maintain the current recreational allocation of 3.00% of the total ACL. **Preferred Alternative 2** would result in a comparatively higher recreational sector allocation and sector ACL (3.30% of the total ACL.) The recreational ACLs in **Action 2** are estimated to be constraining based on the average annual landings over the last five years of available data (Table 4.2.2.3), and it is assumed that the recreational sector could fully harvest its ACL if conditions allowed. There would be higher potential landings of golden tilefish under **Preferred Alternative 2** relative to **Alternative 1 (No Action)**. These relatively increased landings would be expected to comparatively increase total consumer surplus (CS) for the recreational sector. When compared to **Alternative 1 (No Action)**, **Preferred Alternative 2** would result in an estimated increase in CS of $14,194 in fishing year 2023 and an increase in CS of $15,169 by fishing year 2026 (2020 $)(Table 4.2.2.4).

Table 4.2.2.3. Percent difference between the recreational sector ACLs in Action 2 compared to 5-year average landings of golden tilefish from 2016-2020 and comparison of sector ACLs.

Fishing Year	Recreational sector ACL (numbers of fish)	Percent difference between 5-year average landings and the sector ACL	Difference from Alternative 1 (No Action) (#s of fish)
Alternative 1 (No Action)			
2023	2,326	-85%	-
2024	2,396	-84%	-
2025	2,449	-84%	-
2026+	2,492	-84%	-
Preferred Alternative 2			
2023	**2,559**	**-83%**	**233**
2024	**2,635**	**-83%**	**239**
2025	**2,694**	**-82%**	**245**
2026+	**2,741**	**-82%**	**249**

[a]Assumes the total ACL in Preferred Alternative 2 of Action 1 to determine the sector ACL.

Table 4.2.2.4. Estimated change in potential net economic benefits for the recreational sector (CS) from the alternatives in Action 2 compared to Alternative 1 (No Action) (2020 $).

Fishing Year	Preferred Alternative 2
2023	**$14,194**
2024	**$14,560**
2025	**$14,925**
2026+	**$15,169**

Assumptions used in calculating the estimates in Table 4.2.2.4 include a comparison of the sector ACL in **Alternative 1 (No Action)** to the appropriate sector ACL resulting from the other alternative in numbers of fish. To estimate the change in potential net economic benefits, a CS estimate of $60.92 for the second grouper kept on a recreational trip is used (2020 $; Section 3.3.2). This marginal value estimate is used as a proxy value since one is not currently available specifically for golden tilefish. It is assumed that changes in the recreational portion of the total ACL would only affect catch per trip and not the overall number of trips taken due to the low retention limit for golden tilefish and a large number of substitute target species. This includes no direct change to for-hire fishing activity and thus no change in direct economic effects for the for-hire component of the recreational sector. As such, there are no estimated changes in PS provided for the recreational sector.

Total

In general, higher ACLs create a larger gap between the sector ACL and observed landings which allows for increased harvest when fishery conditions allow, thereby increase net economic benefits. Thus under this notion, the alternatives in **Action 2** can be ranked for the commercial sector from a short-term economic perspective with **Alternative 1 (No Action)** resulting in the highest potential benefits followed by **Preferred Alternative 2**. For the recreational sector, the ranking would be the opposite with **Preferred Alternative 2** resulting in the highest potential benefits followed by **Alternative 1 (No Action)**. In terms of total estimated net economic benefits for the action, the same ranking would apply as stated for the recreational sector. In comparison to **Alternative 1 (No Action)**, **Preferred Alternative 2** would increase net economic benefits by $12,116 in the 2023 fishing year (Table 4.2.2.5) (2020 $).

Table 4.2.2.5. Estimated change in potential net economic benefits from the Preferred Alternative 2 compared to Alternative 1 (No Action) (2020 $).

Fishing Year	Preferred Alternative 2
2023	**$12,166**
2024	**$12,471**
2025	**$12,790**
2026+	**$12,996**

4.2.3 Social Effects

Sector allocations exist for the recreational and commercial sectors already. **Alternative 1 (No Action)** would maintain the current allocation percentages and may have few social effects. With **Preferred Alternative 2,** there would be a less than 1% decrease in the commercial

percentage compared to **Alternative 1 (No Action)**. While this change in percentage is negligible, some negative social effects may occur if commercial fishermen have a negative perception of this change. In the past, there has been some resistance to further decreasing a given sector's percentage allocation.

It is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL (Action 1) and may have further effects that could be either negative or positive depending upon the combination of management actions. Therefore, the choice of an allocation would need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. However, based on recent landings of golden tilefish (2018-2021) and assuming Action 1 – Preferred Alternative 2, no closures are expected under **Alternative 1 (No Action)** or **Preferred Alternative 2** for the time period of January 1 through June 30 for the hook and line component of the commercial sector. Alternatively, the longline component of the commercial sector is anticipated to close early to mid-March (Appendix F).

4.2.4 Administrative Effects

Administrative effects would not vary between **Alternative 1 (No Action)** and **Preferred Alternative 2**. The overall administrative effects are likely going to be minimal and the same across the alternatives. Administrative burdens would relate to data monitoring, outreach, and enforcement of a short fishing season. Other administrative burdens that may result would take the form of development and dissemination of outreach and education materials for fishery participants and law enforcement.

4.3 Action 3. Modify the fishing season for commercial golden tilefish hook and line and longline components

4.3.1 Biological Effects

Alternatives*

Alternative 1. (No Action).
Do not modify the commercial fishing season for golden tilefish (January 1-December 31).

Alternative 2. Modify the fishing season for the commercial hook and line component.
2a. January 15.
2b. January 22.
2c. February 1.

Alternative 3. Modify the fishing season for the commercial longline component.
3a. January 15.
3b. January 22.
3c. February 1.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

The action proposed would have a minimal biological effect to the golden tilefish stock because it does not significantly change the fishing season. The adjustment of the fishing season to start two weeks later would not affect the way the fishery for golden tilefish is prosecuted. None of the alternatives would change the impacts on spawning as the majority of the effort would still be concentrated in the winter months and golden tilefish in the South Atlantic spawn from March through November with spawning peaks from April to June. **Alternative 2** and **Preferred Alternative 3** and associated sub-alternatives would modify the fishing season for the commercial hook and line or the longline components by two, three, or four weeks.

Regardless of the alternative selected, this action would not be anticipated to have negative biological impacts on golden tilefish since the commercial sector is constrained by the ACL (as determined in Action 1 and Action 2). There is not expected to be any difference in the biological impacts of **Alternative 1 (No action)**, **Alternative 2**, and **Preferred Alternative 3** and associated sub-alternatives. None of the alternatives would modify the fishery for golden tilefish in such a way that it would result in impacts to protected species. There are no expected impacts to EFH from this action.

4.3.2 Economic Effects

From a total harvest perspective, all of the alternatives in **Action 3** would likely result in the entire commercial sector ACL being landed. There may be some economic benefits for both the commercial hook and line component (**Alternative 2**) starting at a different time than the commercial longline component (**Preferred Alternative 3)** if the start times vary, which would presumably reduce the amount of golden tilefish being landed at any single time, thereby potentially avoiding oversupplying the market and leading to elevated prices. Improved prices could lead to higher net operating revenue for commercial vessels.

Additionally, a later start time for the commercial longline component would allow harvest to remain open later in the year which would allow vessels harvesting under the longline component to remain fishing for golden tilefish during the Lenten season when demand and prices tend to be relatively high. This notion is backed by elevated prices for golden tilefish typically observed in March and April compared to prices in January and February (Table 4.3.2.1). If the seasonality of golden tilefish landings shifts due to modifying the start date of the longline component under **Preferred Alternative 3**, net economic benefits would be expected to

comparatively increase. When compared to **Alternative 1 (No Action)**, **Preferred Sub-alternative 3a** would result in an estimated increase in net economic benefits of $8,105 in 2023 and an increase in net economic benefits of $9,885 by fishing year 2026 (2020 $) (Table 4.3.2.2).

Table 4.3.2.1. Average monthly ex-vessel price of South Atlantic longline-caught golden tilefish from 2015-2020 (2020 $).

Month	Price Per Pound (gw)
January	$4.53
February	$4.61
March	$4.86
April	$5.10

Source: SEFSC-Social Science Research Group (SSRG) Socioeconomic Panel (Jan 2022 version)

Table 4.3.2.2. Estimated change in net economic benefits for the commercial longline component from Preferred Alternative 3 compared to Alternative 1 (No Action) (2020 $).

Fishing Year	Preferred Alternative 3a	Alternative 3b	Alternative 3c
2023	**$8,105**	$13,834	$22,015
2024	**$8,851**	$14,580	$22,762
2025	**$9,426**	$15,155	$23,336
2026+	**$9,885**	$15,614	$23,796

Assumptions used in the calculations provided in Table 4.3.2.2 include application of the longline-specific sector ACLs under Preferred Alternative 2 in Action 2. Projected landings are adjusted according to the start date of **Alternative 1 (No Action)** and each sub-alternative for **Preferred Alternative 3** based on information found in Appendix F. This information includes a daily catch rate 4,315 lbs gw per day in January, total landings of 99,701 lbs gw in February, and a daily catch rate 3,976 lbs gw in March in April. Projected landings each month are then applied to appropriate monthly ex-vessel price per lbs gw as found in Table 4.3.2.1 and a scaling factor of 33% of gross revenue (Section 3.3.1; NMFS SEFSC, pers. comm. 2022) to estimate PS for the commercial sector. Total PS for the sub-alternatives in **Preferred Alternative 3** are then compared to the total PS for **Alternative 1 (No Action)** to estimate the change in net economic benefits.

The commercial hook and line component opens when other economically important species, such as the shallow water groupers, are seasonally closed to harvest. Therefore, setting a later start date to the fishing season may not be beneficial to this component of the commercial golden tilefish fishery. Under the stated notions and projections, **Sub-alternative 3c** would offer the highest economic benefits followed by **Sub-alternative 3b**, **Preferred Sub-alternative 3a, Alternative 1 (No Action)**, **Sub-alternative 2c**, **Sub-alternative 2b**, and **Sub-alternative 2a.**

4.3.3 Social Effects

Golden tilefish is an important commercial species in Florida, particularly in central Florida (Port Orange, Titusville, Cocoa, and Fort Pierce). Changes to the start of the fishing season for the commercial hook-and-line or the commercial longline components could change the level of access to the golden tilefish stock during periods when golden tilefish are available.

The effects on commercial fishermen and related businesses would be associated with access to golden tilefish stock during periods when the dockside price is highest, and if the commercial ACL is met and an early closure occurs. As described in Appendix F, while the golden tilefish ACL is increasing, the commercial longline component is still anticipated to close early (Action 1 and Action 2). Staggering the commercial hook and line (**Alternative 2**) and commercial longline (**Preferred Alternative 3**) seasons may reduce the number of fish on the market at a given time and increase the profitability of commercial longline businesses. It would also allow the longline component to remain open closer to the Lenten season when prices for fish increase. Under this logic, the farther apart the two seasons the higher likelihood of avoiding low prices due to a flooded market, assuming golden tilefish are available in highly reliant communities at the time. **Sub-alternative 3c** would offset the hook and line and longline seasons the furthest followed by **Sub-alternative 3b**, **Preferred Sub-alternative 3a** and **Alternative 1 (No Action)**.

4.3.4 Administrative Effects

Administrative burdens for **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 3** would be similar and are expected to be minimal. Administrative burden would be associated with rule-making, education and outreach and enforcement.

4.4 Action 4. Modify recreational accountability measures for golden tilefish

4.4.1 Biological Effects

Expected effects to golden tilefish and co-occurring species

Biological benefits would be expected to be greater for the alternative that provides the most timely and realistic option chosen to trigger and implement an AM.

Under **Alternative 1 (No Action)**, an in-season closure would be triggered if the recreational harvest exceeds the recreational landings. If data show that the recreational ACL was exceeded, and the total ACL was exceeded and golden tilefish were overfished, an AM to shorten to following fishing year could be triggered, if deemed necessary. Golden tilefish are not overfished and as such the AM would not be triggered unless this status determination changes.

Under **Alternative 2**, the in-season AM would remain but the two triggers for the post-season AM (total ACL and overfished) would be removed. **Alternative 2** provides a mechanism to prevent the recreational ACL from being exceeded in-season and a mechanism to modify the following fishing year if the ACL is exceeded in a fishing year. As such, **Alternative 2** could have positive biological effects to the golden tilefish stock.

Preferred Alternative 3 would also result in biological benefit to the stock in that it is likely to prevent in-season overages of the recreational ACL. However, this alternative would not reduce the ACL in the following year after an overage since it is designed to prevent overages from occurring. Under this alternative, adjustments would be made to the length of time that fishing is allowed in a given year if there was a significant increase in effort during the previous fishing year.

Alternatives*

Alternative 1 (No Action).
If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the NMFS determines that no closure is necessary based on the best scientific information available.
If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the NMFS determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The NMFS will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on January 1 and end on the date NMFS projects the recreational annual catch limit will be met.

Biological benefits to the golden tilefish stock would be greatest under **Preferred Alternative 3** followed **by Alternative 2**, and **Alternative 1 (No Action)** relative to each other.

4.4.2 Economic Effects

Recreational AMs typically consist of corrective measures that create short-term indirect negative economic effects by curtailing harvest and fishing activity when harvest has exceeded the sector ACL, thus potentially affecting net revenues of for-hire operations and CS on recreational fishing trips. In the long-term, these measures also help reduce the risk of overfishing a stock to the point of depletion, which results in long-term economic benefits through sustained harvest and fishing activity as well as the for-gone need for more stringent restrictive management measures that may be needed to rebuild a depleted stock.

Alternative 1 (No Action) would retain a post-season shortening of the season and a potential payback provision for an overage of the sector ACL that would reduce the sector ACL by the amount of the overage as long as golden tilefish are overfished. This could result in short-term economic benefits for the recreational sector due to increased harvest and long-term potential economic costs to fishery participants. This portion of the alternative would not occur if the species is not overfished, therefore the economic effects are dependent on the status of the golden tilefish stock.

The economic effects of **Alternative 2** would likely be similar to those of **Alternative 1 (No Action)**, but the AM would occur regardless of the stock status, thus has a higher likelihood of occurring. **Preferred Alternative 3** would result in a fishing season that is announced annually with set start and end dates. This AM would limit overall long-term harvest of golden tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

In terms of potential short-term negative economic effects to the recreational sector, **Alternative 2** would have the highest potential negative economic effects since there is a payback provision that would occur regardless of stock status, followed by **Alternative 1 (No Action)**, and **Preferred Alternative 3**.

4.4.3 Social Effects

AMs can have direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. Although the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Those restrictions usually translate into reduced opportunity for harvest, which in turn can change fishing behaviors. Those behaviors can increase pressure on other stocks or amplify conflict.

Alternative 1 (No Action) would not modify the current in-season or post-season recreational AMs for golden tilefish (closure if the recreational ACL is met, the total ACL is met, and golden tilefish is overfished, season length reduction provision if overfished and stock ACL is

exceeded). Inconsistent closure dates may make it challenging for for-hire businesses to plan their fishing activities. Overall, longer seasons result in increased fishing opportunities for the recreational sector and increased revenue opportunities for the for-hire sector. Reducing the season length is anticipated to result in direct negative social effects associated with loss of access to the resource.

Alternative 2, would reduce the following fishing season in response to landings exceeding the recreational ACL, but it does not include qualifying language stating that golden tilefish must identified as overfished; AND the combined commercial and recreational ACL must be exceeded in the same calendar year. As such, the fishing season may vary significantly from year to year due to changes in fishing behavior or environmental conditions. Inconsistent fishing seasons can make it challenging for private anglers and for-hire business to plan their fishing activities through the long-term.

Alternatively, **Preferred Alternative 3** would have NMFS announce the length of the recreational season for golden tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year. Although the end date for golden tilefish may shift each year, announcing at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

4.4.4 Administrative Effects

Administrative burdens such as data monitoring, rulemaking, outreach, and enforcement would be similar for **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 3**. If triggered, **Alternative 2** would require a season announcement notice for a reduced season length. **Preferred Alternative 3** would have NMFS announce the length of the recreational season for golden tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year. There would be an increased administrative burden related to determining the season length.

4.5 Action 5. Modify blueline tilefish recreational bag limit

4.5.1 Biological Effects

Alternatives*

Alternative 1 (No Action). The current recreational blueline tilefish bag limit is 3 per person per day. Captains and crew of for-hire vessels with valid Federal South Atlantic Charter/Headboat Snapper Grouper Permits are allowed to retain bag limit quantities of all snapper grouper species during the open recreational season.

Preferred Alternative 2. Reduce recreational blueline tilefish bag limit to 2 fish per person per day.

Alternative 3. Reduce recreational blueline tilefish bag limit to 1 fish per person per day.

Preferred Alternative 4. Do not allow retention of blueline tilefish by captain and crew.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

To explore the percent reduction in harvest to each component of the recreational sector from the proposed changes, data from 2017 through 2021 were used. The largest percentage of the landings during the open recreational seasons from 2017 through 2021 was attributed to the charter component of the recreational sector, followed by the headboat component and the private recreational component (Table 4.5.1.1). The percentage of trips harvesting a range of blueline tilefish per person per day and by mode (Headboat, charter, and private) are shown in Figure 4.5.1.1 (including captain and crew), and Figure 4.5.1.2 (excluding captain and crew). In the for-hire component, the percentage of headboat trips retaining two blueline tilefish while allowing retention by captain and captain and crew was around 40%, whereas when retention by captain and crew is removed, the percentage of trips retaining two blueline tilefish diminishes to about 20%. If the captain and crew are excluded from the bag limit, there would be a slight increase in the percentage of charter trips that can retain two blueline tilefish.

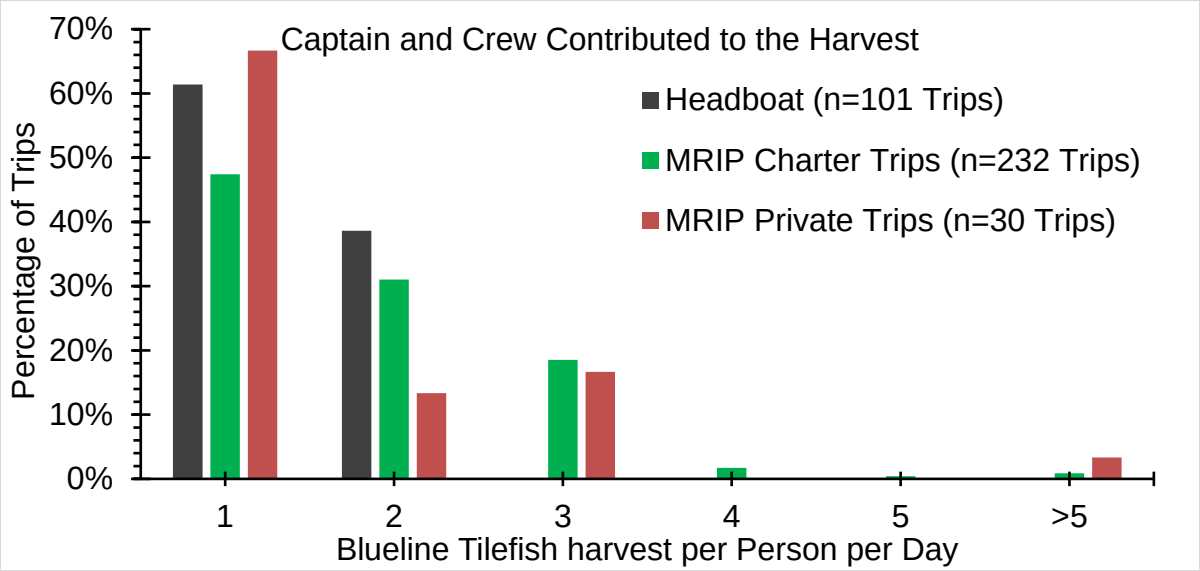

Figure 4.5.1.1. Percentage of trips for a range of South Atlantic blueline tilefish harvested per person for the three components of the recreational sector during the open seasons in 2017-2021 and including retention by captain and crew.

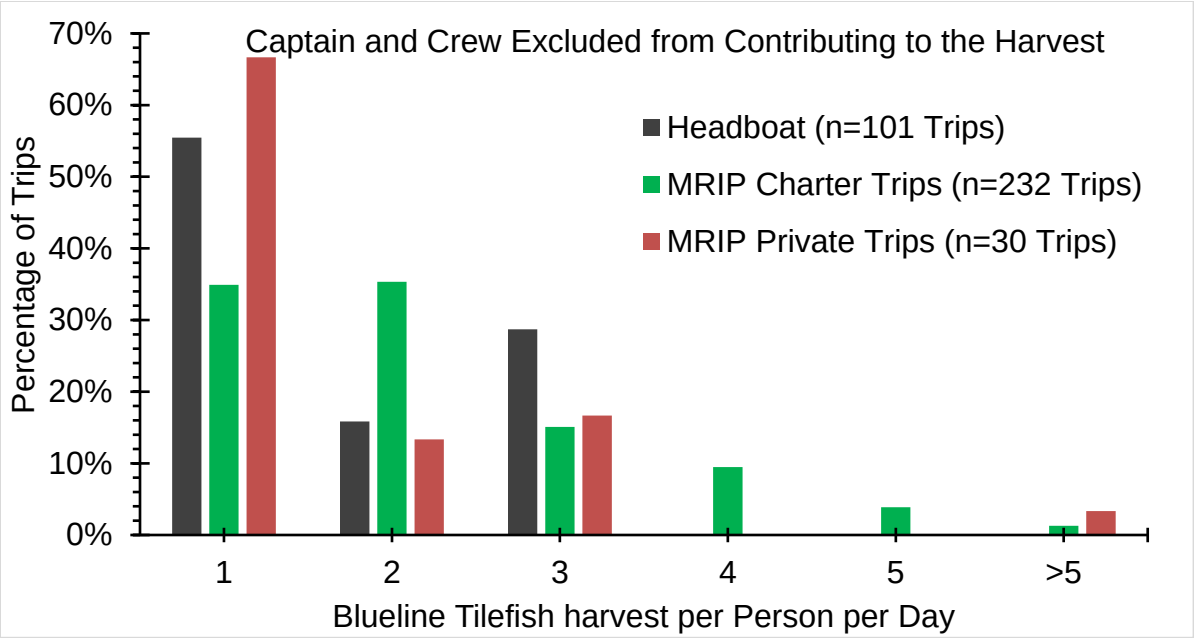

Figure 4.5.1.2. Percentage of trips for a range of South Atlantic blueline tilefish harvested per person for the three components of the recreational sector during the open seasons in 2017-2021 and excluding retention by captain and crew.

Percent reductions weighted by each mode's contribution to the landings are presented in Table 4.5.1.2. A bag limit of two blueline tilefish per person per day, as proposed under **Preferred Alternative 2**, and prohibiting retention of the bag limit by captain and crew, as proposed under **Preferred Alternative 4**, would result in an overall 12.2% reduction in harvest for the recreational sector (Table 4.5.1.2).

Table 4.5.1.1. Percent of South Atlantic blueline tilefish recreational landings by mode during the open season from 2017 to 2021.

Mode	Percentage of Landings
MRIP Charter	71.6%
MRIP Private	1.9%
Headboat	26.6%

Note: The open season is May 1 through August 31. Percentages were based on the recreational landings in pounds whole weight.

Table 4.5.1.2. Adjusted percent reductions of South Atlantic blueline tilefish recreational landings.

Alternative	Adjusted Reductions
Alternative 1: 3 Fish per Person	0.0%
Preferred Alternative 2: 2 Fish per Person	8.5%
Alternative 3: 1 Fish per Person	35.1%
Preferred Alternative 4: No Retention for Captain and Crew	3.7%

Note: Adjusted percent reductions of South Atlantic blueline tilefish recreational landings. The percent reductions were adjusted by weighting the percent reductions by mode by the recreational landings for each mode during the open season from 2017 to 2021 (see Appendix F). Percentages are based on the recreational landings by mode in pounds whole weight.

Alternative 3 and **Preferred Alternative 4** would result in the greatest reduction in harvest (38.8%) and the most positive biological benefits since they would help the most to maintain recreational landings at or below the ACL. The combination of **Preferred Alternative 4**, and **Alternative 1 (No Action)** would result in least biological impacts with only a 3.7% reduction in harvest. This action would not change how or where the fishery is conducted and is not expected to have any impacts on protected species. There are no expected impacts to EFH from this action.

4.5.2 Economic Effects

Generally, angler satisfaction increases with the number of fish that can be harvested and the size of the fish. The smaller the bag limit the greater the probability that the satisfaction from an angler trip could be reduced. Anglers tend to land two or fewer blueline tilefish on a single trip (Section 4.5.1). Setting the bag limit at 2 fish **(Preferred Alternative 2)** or 1 fish per person (**Alternative 3**) would have greater negative economic effects in comparison to **Alternative 1 (No Action)** on a trip-level due to constraining harvest and related economic benefits consumer surplus (CS). Removing a captain and crew bag limit (**Preferred Alternative 4**) may also constrain harvest leading to similar economic effects as **Preferred Alternative 2** and **Alternative 3**. Conversely, more restrictive retention limits would allow for longer open harvest seasons. **Preferred Alternative 2** is estimated to result in an estimated decrease in CS of $273,923 and **Preferred Alternative 4** is estimated to result in an estimated decrease in CS of $119,268 (Table 4.5.2.1).

Table 4.5.2.1. Estimated change in recreational harvest of blueline tilefish and associated change in net economic benefits consumer surplus (CS) from Action 5.

Alternative	Estimated change in harvest (%)[a]	Estimated change (#s of Fish)[b]	Estimated change in CS (2020 $)[c]
Alternative 1 (No Action)	0.0%	-	-
Preferred Alternative 2	**-8.5%**	**-4,498**	**-$273,993**
Alternative 3	-35.1%	-18,572	-$1,131,430
Preferred Alternative 4	**-3.7%**	**-1,958**	**-$119,268**

[a] Reductions are based upon Table 7 in Appendix F.
[b] Based on 5-year average landings in Table 3.2.1.3.1 and an average weight of 3.7 lbs ww per blueline tilefish.
[c] Based on a CS estimate of $60.92 which is for the second grouper kept on a recreational trip is used (2020 $; Section 3.3.2). This marginal value estimate is used as a proxy value since one is not currently available specifically for blueline tilefish.

While there may be some benefit from implementing a reduced bag limit (**Preferred Alternative 2** and **Alternative 3**) or eliminating captain and crew bag limits (**Preferred Alternative 4**) stemming from a prolonged season or increased availability of the species, such a limitation may affect the marketability of for-hire trips if limits are set too low. Thus a lower bag limits may lead to a decrease in producer surplus (PS) for for-hire vessels due to decreased for-hire trips being booked by customers in comparison to the current limits in **Alternative 1 (No Action)**. These potential effects cannot be quantified with current data.

4.5.3 Social Effects

In general, a reduction in the recreational bag limit (**Preferred Alternative 2** and **Alternative 3**) or prohibiting retention of fish by captain and crew (**Preferred Alternative 4**) may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded. However, bag and vessel limits that are too low may make fishing trips inefficient and lower angler satisfaction.

The higher bag limit under **Alternative 1 (No Action)** would likely have little effect on recreational fishermen in the short-term but could result in negative effects in the future if the recreational ACL is regularly exceeded, as it has been in recent years. Slowing the rate of harvest and ensuring sustainable harvest of the blueline tilefish stock would provide for long-term social benefits.

If slowing the rate of harvest and lengthening the season provides additional fishing opportunities to the recreational fishing communities, **Alternative 3** (35% reduction in landings) would be the most beneficial, followed by **Preferred Alternative 2** (8.5%), Preferred **Alternative 4** (3.7%), and **Alternative 1 (No Action)** as presented in detailed analyses included in Appendix F.

4.5.4 Administrative Effects

Administrative burdens for **Alternative 1 (No Action)**, **Preferred Alternative 2**, **Alternative 3** and **Preferred Alternative 4** would be similar and are expected to be minimal. Administrative burden would be associated with rule-making, education and outreach, and enforcement.

4.6 Action 6. Modify recreational accountability measures for blueline tilefish

4.6.1 Biological Effects

Expected effects to blueline tilefish and co-occurring species

Biological benefits would be expected to be greater for the alternative that provides the most timely and realistic option chosen to trigger and implement an AM.

Under **Alternative 1 (No Action)**, an in-season closure would be triggered if the recreational harvest exceeds the recreational landings. Post season, if data shows that the recreational ACL was exceeded, and the total ACL was exceeded and blueline tilefish were overfished, an AM to shorten to following fishing year and a decrease in the recreational ACL could be triggered, if deemed necessary. Blueline tilefish are not overfished and as such the current post season AM would not be triggered unless this status determination changes.

Under **Alternative 2,** the in-season AM would remain**. Alternative 2** also removes two triggers (total ACL and overfished) from the current post-season AM. **Alternative 2** provides a mechanism to prevent the recreational ACL from being exceeded in-season and a mechanism to modify the following fishing year if the ACL is exceeded in a fishing year. As such, **Alternative 2** could have positive biological effects to the blueline tilefish stock.

Preferred Alternative 3 would result in biological benefit to the stock in that it is likely to prevent in-season overages of the recreational ACL. This alternative would not reduce the ACL in the following year after an overage since it is designed to prevent overages from occurring. However, under this alternative, adjustments would be made to the length of time that fishing is allowed in a given year if there was a significant increase in effort during the previous fishing year.

Alternatives*

Alternative 1 (No Action).
If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the NMFS determines that no closure is necessary based on the best scientific information available.
If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the NMFS determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. NMFS will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on May 1 and end on the date NMFS projects the recreational ACL will be met.

Biological benefits to the blueline tilefish stock would be greatest under **Preferred Alternative 3** followed by **Alternative 2**, and **Alternative 1 (No Action)** relative to each other.
There are no expected impacts to EFH or protected species from this action.

4.6.2 Economic Effects

Recreational AMs typically consist of corrective measures that create short-term indirect negative economic effects by curtailing harvest and fishing activity when harvest has exceeded the sector ACL, thus potentially affecting net revenues of for-hire operations and CS on recreational fishing trips. In the long-term, these measures also help reduce the risk of overfishing a stock to the point of depletion, which results in long-term economic benefits through sustained harvest and fishing activity as well as the for-gone need for more stringent restrictive management measures that may be needed to rebuild a depleted stock.

Alternative 1 (No Action) would retain a post-season shortening of the season and a potential payback provision for an overage of the sector ACL that would reduce the sector ACL by the amount of the overage if blueline tilefish were overfished. This could result in short-term economic benefits for the recreational sector due to increased harvest and long-term potential economic costs to fishery participants. The post-season portion of this alternative would not occur if the species is not overfished, therefore the economic effects are partially dependent on the status of the blueline tilefish stock.

The economic effects of **Alternative 2** would likely be similar to those of **Alternative 1 (No Action)**, but the AM would occur regardless of the stock status, thus has a higher likelihood of occurring. **Preferred Alternative 3** would result in a fishing season that is announced annually with set start and end dates. **Preferred Alternative 3** would limit overall long-term harvest of blueline tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

4.6.3 Social Effects

AMs can have direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. Although the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Those restrictions usually translate into reduced opportunity for harvest, which in turn can change fishing behaviors. Those behaviors can increase pressure on other stocks or amplify conflict.

Alternative 1 (No Action) would not modify the current recreational in-season and post-season AMs for blueline tilefish (closure if recreational landings meet or are projected to meet the ACL, a season length reduction provision if overfished and stock ACL is exceeded). Inconsistent closure dates may make it challenging for for-hire businesses to plan their fishing activities. Overall, longer seasons result in increased fishing opportunities for the recreational sector and increased revenue opportunities for the for-hire sector. Reducing the season length is anticipated to result in direct negative social effects associated with loss of access to the resource.

Alternative 2, would reduce the following fishing season in response to landings exceeding the recreational and total ACL, but it does not include qualifying language stating that blueline tilefish must identified as overfished; AND the combined commercial and recreational ACL must be exceeded in the same calendar year. As such, the fishing season may vary significantly from year to year due to changes in fishing behavior or environmental conditions. Inconsistent fishing seasons can make it challenging for private anglers and for-hire business to plan their fishing activities through the long-term.

Alternatively, **Preferred Alternative 3** would have NMFS announce the length of the recreational season for blueline tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year. While the end date for blueline tilefish may shift each year, announcing at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

4.6.4 Administrative Effects

Administrative burdens such as data monitoring, rulemaking, outreach, and enforcement would be similar for **Alternative 1 (No Action)**, and **Preferred Alternative 3**. **Alternative 2** could potentially yield an increase in administrative burden if both an in-season and post-season AM is triggered. **Preferred Alternative 3** would have NMFS announce the length of the recreational season for blueline tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year. There would be an increased administrative burden related to determining the season length.

Chapter 5. Council's Rationale for the Preferred Alternatives

5.1 Action 1. Revise the acceptable biological catch, total annual catch limit, and annual optimum yield for golden tilefish

5.1.1 Snapper Grouper Advisory Panel Comments and Recommendations

The Advisory Panel (AP) met on April 18-20, 2022, and provided comments on the developing amendment. Members raised continued concern about the uncertainty of recreational data, especially for deep-water species, and advances in technology that allows more people to access them. They had no comments or recommendations on this particular action.

5.1.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

The SSC in their May 2021 report to the Council identified and summarized assessment uncertainties as follows:

- *A large portion of the uncertainty in this assessment is driven by uncertainty in natural mortality. Sensitivity analysis indicated that natural mortality had a large impact on stock status.*
- *The estimated recruitment values from 2003 to 2011 were below RMSY. Estimated recruitment values from that time period were accounted for in the Monte Carlo Bootstrap Ensemble (MCBE) uncertainty analysis. An additional plot that was not included in the original stock assessment report was requested from the lead analyst:*
- *Uncertainty in recruitment from 2012 to the terminal year of the model had a wide envelope, which encompassed the values estimated for 2003-2011. This MCBE uncertainty was then used in the projection analyses. Thus, the uncertainty related to future recruitments has been accounted for in both the MCBE and projection analyses, which will be used to provide management advice. The SSC would like to point out that uncertainty exists and that if the recruitment values continue to be estimated below*

Alternatives*

Alternative 1 (No Action). The total annual catch limit and annual optimum yield for golden tilefish are equal to the current acceptable biological catch (342,000 pounds gutted weight).

Alternative 2. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to the recommended acceptable biological catch.

Alternative 3. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to 95% of the recommended acceptable biological catch.

Alternative 4. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to 90% of the recommended acceptable biological catch.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

RMSY, then the sensitivity analysis that was provided regarding recruitment may come to fruition.

- *Truncation of the commercial longline index to 2006 leaves this assessment without a highly informative index of abundance in the latter years of the assessment when index information is needed most to inform estimation of recent recruitment. The SSC noted that management actions have unintentionally resulted in loss of information available to the assessment.*
- *The SSC expressed concern with MCBE runs having nearly as many runs in the overfished and overfishing as sustainable quadrant; thus, the terminal status of the stock is highly uncertain.*
- *Steepness could not be estimated reliably within the model and sensitivity analysis indicated that the values used to specify steepness as a model input had a considerable effect on stock status.*
- *Sensitivity analyses showed that increasing weight on the MARMAP/SEAMAP index affected stock status as well. However, placing a large weight on this index may not be appropriate given intermittent sampling and limited spatial coverage relative to the stock's range (sampling area focused mainly on southern SC and northern GA).*
- *In general, indices available for this assessment are patchy in spatial coverage and demonstrate high variability with little trend.*
- *The terminal year of this assessment is 2018, so uncertainty in current stock status is already higher than characterized in the assessment.*

The SSC provided fishing level recommendations to the Council for the OFL and ABC. The OFL was reduced to account for uncertainty and risk as outlined in the ABC Control Rule to establish the ABC. Adjustments were made to address the following: uncertainty in the stock status; environmental conditions were not explicitly included in the assessment; and that the stock has low productivity, high vulnerability, and high susceptibility. The SSC received updates on the amendment during their April and October 2022 meetings and had no further comments or recommendations on this action.

5.1.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Comments were also received during regularly scheduled Council meetings.

Summary of public comments pertaining to annual catch limit (ACL):
Commenters generally supported adjustment of the golden tilefish ACL. One commentor supported raising the golden tilefish ACL considering that fishermen frequently catch their trip limit every time when fishing off South Carolina.

5.1.5 Council's Conclusion

The Magnuson-Stevens Act defines optimum yield (OY) as a long-term average amount of desired yield from a stock, stock complex, or fishery that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and considering the protection of marine ecosystems. The Magnuson-Stevens Act does not preclude the OY from being set equal to the acceptable biological catch (ABC), but neither can exceed the overfishing limit (OFL). The Magnuson-Stevens Act indicates that OY "is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor." The Council has been frequently setting an annual OY equal to the ABC and below the maximum sustainable yield (MSY) to provide greater assurance that overfishing is prevented, the long-term average biomass is near or above the biomass that would produce the MSY (B_{MSY}), and overfished stocks are rebuilt within the allotted timeframe for the species in question.

In general, an ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. Annual catch limits in coordination with accountability measures (AM) must prevent overfishing. The Magnuson-Stevens Act National Standard 1 Guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC, but states that an ACL may typically be set very close to the ABC.

The Council chose to adopt the ABC recommended by the Scientific and Statistical Committee (SSC) and concluded that **Preferred Alternative 2** best meets the purpose and need of Amendment 52 to update the ABC and total ACL for the golden tilefish portion of the snapper grouper fishery based on the results of the most recent stock assessment and the SSC's recommendations. Because the golden tilefish stock in the South Atlantic is neither overfished nor experiencing overfishing, the Council determined that an additional precautionary buffer between the ABC and the ACL and annual OY was not needed because the ABC Control Rule incorporates management risk. The preferred alternative also best meets the objectives of the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.1.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

This action addresses objectives under Strategy 3.1: Consider development of management approaches that assist fishery-dependent businesses to operate efficiently and profitably under "*Objective 3 - Ensure that management decisions help maximize social and economic opportunity for all sectors."*

5.2 Action 2. Revise sector allocations and sector annual catch limits for golden tilefish

Alternatives*

Alternative 1 (No Action). Retain the current recreational sector and commercial sector allocations as 3.00% and 97.00%, respectively, of the revised total annual catch limit for golden tilefish. Note: Within the commercial sector 25% is allocated to hook and line (HL) component and 75% to the longline (LL) component.

Alternative 2. Allocate 96.70% of the revised total annual catch limit for golden tilefish to the commercial sector and 3.30% of the revised total annual catch limit for golden tilefish to the recreational sector.

Note: Within the commercial sector 25% is allocated to hook and line (HL) component and 75% to the longline (LL) component.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

5.2.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP met in April 18-20, 2022, and provided comments including that clarify that catch levels are dependent on when the amendment is implemented. There was continued concern about uncertainty of recreational data, especially for deep-water species, and advances in technology that allows more people to access them. The AP received an update on the amendment during their October 2022 meeting. They had no comments or recommendations on this particular action.

5.2.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.2.3 SSC Comments and Recommendations

The SSC received updates on the amendment during their April and October 2022 meetings. They had no comments or recommendations on this particular action.

5.2.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Written comments submitted by mail/fax needed to be received by close of business the Monday before the meeting (September 5, 2022). Comments were also received during regularly scheduled Council meetings.

Summary of public comments pertaining to sector allocations and ACL:
One commentor indicated recreational fishermen are constantly hurt by the commercial quotas, recreational fishermen do not have the same impact on the environment as commercial fishing does, and many fishing weekends are already limited due to natural sea conditions. Multiple commenters supported increasing the ACL on golden tilefish. Some commenters supported retaining the current allocation among user groups. Some commenters supported establishing a commercial hook and line endorsement considering the hook and line ACL is being caught quicker and quicker each year with the popularity of deep-water fishing. One commenter would like to see some type of trip limit reduction after 50% of the quota has been met to extend the season. Multiple commenters supported retaining the current allocation for golden tilefish of 97% commercial 3% recreational. One commenter supported increasing the commercial ACL considering the fishery for golden tilefish off South Carolina and Cape Canaveral appears to be very healthy with fishermen seeing multiple sizes all mixed together. One commenter made the following recommendations: use the current formulas to recalculate allocations and implement the conversion at the same time the quotas are updated based on Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES;); automate conversions of allocations from MRIP's Coastal Household Telephone Survey (CHTS) currency to MRIP FES during the process to update quotas based on MRIP FES so that status quo in terms of who caches what is maintained as catch levels are updated; if the Council wants to go through an allocation review process using the decision tree that is under development, then they would have time to do that and carefully consider if and how to reallocate; and look at ways to improve recreational data and ways to reduce dead discards.

5.2.5 Council's Conclusion

The Council's Allocations Trigger Policy states that the Council will review sector allocations upon completion of a stock assessment. In addition, recreational landings estimates have been revised to adopt the new FES methodology. This action allowed the Council to consider how to allocate the total ACL between the commercial and recreational sectors from 2023 onwards under the revised catch levels. The Council chose not to consider changing the commercial ACL allocation between the hook and line sector (25%) and the longline sector (75%).

In the golden tilefish fishery, the recreational sector accounts for a fairly constant but small portion of the harvest, given that golden tilefish is a deep-water species that is caught further from shore and in greater depths than most of the other species in the snapper grouper complex. The incorporation of the new MRIP-FES data for golden tilefish did not result in a large change in estimated landings from the recreational sector, with the percentages shifting up in annual catch from 3% to 3.3%. Considering the limited recreational effort for, and harvest of, golden tilefish, the Council views allocating 3.3% of the revised total annual catch limit for golden tilefish to the recreational sector as a fair and equitable allocation that is reasonably calculated to promote conservation, and that does not give any entity an excessive share of harvest privileges based on the historical and current harvest of golden tilefish. The Council determined that **Preferred Alternative 2** best addresses the purpose and need of Amendment 52 to revise sector allocations based on the best scientific information available. **Preferred Alternative 2** best meets the goals and objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.2.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

This action addresses objectives under Strategy 6.1: Support management approaches that consider the mechanics of designing allocation strategies under *Objective 6 – Develop management measures that support optimal sector allocations for the snapper grouper fishery*.

5.3 Action 3. Modify the fishing season for commercial golden tilefish hook and line and longline components

5.3.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP met in April 18-20, 2022, and provided the following comments:

- Golden tilefish is important for the market when shallow water grouper are closed.
- Longline endorsement holders may benefit from a January 15 opening.
- Social benefits to fishermen's families at the start of the year (not having to gear up for fishing on January 1).
- Economic benefit from extending fishing closer to Easter.
- Retain the January 1 start date for the commercial hook and line component to allow them a "head start" for the year before the commercial longline component begins fishing.
- More participation in the hook and line component (also buoy gear in recent years) is rationale for consideration of a commercial hook and line endorsement for golden tilefish.
- After longline fishing is over, there is bycatch of golden tilefish, and a bycatch allowance would reduce unnecessary mortality and allow for the fish to enter the market.
- Some vessels with longline endorsements continue to fish for yellowedge grouper and also target sharks and wreckfish after the golden tilefish longline quota is caught. Consider a hook and line endorsement to allow vessels that use longline to be allowed to retain golden tilefish after the longline quota is harvested; and consider possible regional inequality in access (North Carolina versus Florida).

Alternatives*

Alternative 1. (No Action).
Do not modify the commercial fishing season for golden tilefish (January 1-December 31).

Alternative 2. Modify the fishing season for the commercial hook and line component.
2a. January 15.
2b. January 22.
2c. February 1.

Alternative 3. Modify the fishing season for the commercial longline component.
3a. January 15.
3b. January 22.
3c. February 1.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in

The Snapper Grouper AP made the following motions:

- That the commercial longline sector open on January 15 (unanimous).
- Consider a Golden Tilefish Hook and Line Endorsement and bring it back to the AP at a later date (2 opposed, 1 abstention).

- Convene a meeting of the Longline Endorsement holders to discuss ways to manage their fishery (unanimous).

The AP received an update on the amendment during their October 2022 meeting. They had no additional comments or recommendations on this particular action.

5.3.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.3.3 SSC Comments and Recommendations

The SSC received updates on the amendment during their April and October 2022 meetings. They had no comments or recommendations on this particular action.

5.3.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Written comments submitted by mail/fax needed to be received by close of business the Monday before the meeting (September 5, 2022). Comments were also received during regularly scheduled Council meetings.

Summary of public comments pertaining to golden tilefish season:
Several commenters were concerned the longline component of the snapper grouper fishery operates during the roughest time of the year with the fleet going hard to catch as much as possible in the shortest period causing a flooded market and a very short-lived supply of a premier product. It also forces the boats to fish during potentially hazardous weather conditions. One commenter supported changing the opening of hook and line and/or longline season but noted it could work for some but not others. A number of commenters supported starting the commercial golden tilefish longline season on January 15.

5.3.5 Council's Conclusion

The Council chose **Preferred Alternative 3, Preferred Sub-alternative 3a** to modify the fishing season only for the commercial longline component to start January 15. This change is in response to an industry request to avoid oversupplying the market in the first part of the year and allow commercial longline vessels to remain fishing for golden tilefish during the Lenten season, when prices tend to be relatively high. The Council understands that golden tilefish are an important part of the market for fishermen when the harvest for shallow water grouper is closed each year from January through April. In addition, longline endorsement holders on the Snapper Grouper AP stated that they would prefer a January 15 opening to improve social benefits to their families at the start of the year (e.g., have some time after the holidays to prepare to begin fishing and not have to rush to be ready by January 1). The Council determined that since the

commercial golden tilefish longline component landed the full ACL by March from 2016 to 2021, delaying the onset of fishing by two weeks at the start of the year would not prevent the full ACL from being caught during the remainder of the year. With the increase in the ACL in Amendment 52, analyses project that the commercial golden tilefish longline season would extend into April.

The Council decided not to modify the fishing season for the commercial hook and line component. The hook and line component is limited to 500 pounds (lbs) gutted weight (gw) per trip, whereas vessels with longline gear and a golden tilefish endorsement can land 4,000 lbs gw of golden tilefish per trip. Hence, the Council reasoned that the hook and line component would benefit from getting a "head start" for the year before the longline sector begins fishing. During its December 2022 meeting, the Council discussed the problems that would arise with changing the fishing year versus just delaying the onset of the longline commercial season for golden tilefish. The commercial fishing year for golden tilefish (longline and hook-and-line) is the calendar year. Modifying the fishing year for one commercial component and not the other would complicate tracking the overall commercial ACL and may cause problems when compiling information prior to a stock assessment.

The Council determined that **Preferred Alternative 3, Preferred Sub-alternative 3a** best meets the need to achieve optimum yield and optimizes fishing operations for the longline component of the commercial fishery, and best meets the goals and objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.3.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

This action addresses objectives under Strategy 6.1: *Support management approaches that consider the mechanics of designing allocation strategies* under *Objective 6 – Develop management measures that support optimal sector allocations for the Snapper Grouper Fishery.*

5.4 Action 4. Modify recreational accountability measures for golden tilefish

5.4.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP met on April 18-20, 2022, and approved a motion supporting Alternative 2.

5.4.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.4.3 SSC Comments and Recommendations

The SSC received updates on the amendment during their April and October 2022 meetings. They had no comments or recommendations on this particular action.

5.4.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Comments were also received during regularly scheduled Council meetings.

Alternatives*

Alternative 1 (No Action). If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available.
If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of golden tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless the National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, the National Marine Fisheries Service will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Preferred Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on January 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

Summary of public comments pertaining to accountability measures for golden tilefish: Several commenters supported changing AMs for the golden tilefish recreational sector so it would be held accountable for the fish that they catch and or kill due to discards.

5.4.5 Council's Conclusion

The Council is modifying the recreational accountability measures to prevent ACL overages and render the measures more efficient. The Council considers **Preferred Alternative 3** as the most suitable among the alternatives considered to prevent overages of the recreational ACL. The recreational harvest of golden tilefish will continue to open on January 1 each year, and the National Marine Fisheries Service will annually announce the length of the recreational fishing season based on projections of when the recreational ACL would be met and on catch rates from the previous season. Thus, the length of the season would account for any overages in the previous season. The Council is removing the current in-season AM, because the time lag of when recreational harvest data are available makes in-season management difficult and inefficient. The Council determined that **Preferred Alternative 3** would best meet the purpose of preventing overfishing of the golden tilefish stock and best meets the goals and objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.4.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

The use of AMs is addressed under the Vision Blueprint's Goal 2 - *Adopt management strategies for the snapper grouper fishery that rebuild and maintain fishery resources, adapt to regional differences in the fishery, and consider the social and economic needs of fishing communities*.

5.5 Action 5. Modify blueline tilefish recreational bag limit

5.5.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP met in April 18-20, 2022, and provided the following comments:

- North of Cape Hatteras, North Carolina, blueline tilefish are abundant in shallow water.
- Eliminating possession by captain and crew would be appropriate if needed; however, the Council could consider waiting until after the stock assessment is completed to consider changes to management measures.
- Blueline tilefish is an important species for the for-hire sector in northeastern North Carolina. When dolphin or tuna are not available, blueline tilefish fill that gap.
- Consider a 3 per person limit with a maximum of 18 in consideration of current economic conditions to make changes to the possession limit for captain and crew.

Alternatives*

Alternative 1 (No Action). The current recreational blueline tilefish bag limit is 3 per person per day. Captain and crew of for-hire vessels with valid Federal South Atlantic Charter/Headboat Snapper Grouper Permits are allowed to retain bag limit quantities of all snapper grouper species during the open recreational season.

Alternative 2. Reduce recreational blueline tilefish bag limit to 2 fish per person per day.

Alternative 3. Reduce recreational blueline tilefish bag limit to 1 fish per person per day.

Alternative 4. Do not allow retention of blueline tilefish by captain and crew.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

5.5.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.5.3 SSC Comments and Recommendations

The SSC received updates on the amendment during their April and October 2022 meetings. They had no comments or recommendations on this particular action.

5.5.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Comments were also received during regularly scheduled Council meetings.

Summary of public comments on bag limit for blueline tilefish:
One commenter recommended managing blueline tilefish to avoid closures so regulatory discards are kept to a minimum; reduce either the recreational bag limit or season to constrain the harvest of blueline tilefish and constrain that catch to their ACL; look at all available recreational

landings and the for-hire e-logbook reports since 2016 to help guide the reduction in the bag limit and or season. One commenter supported putting in limitations to prevent recreational blueline tilefish ACL overages. One commenter noted that Florida already changed their recreational blueline tilefish regulations in state waters to be consistent with federal waters which should address overages that might have been attributed to what was coming out of Florida.

5.5.5 Council's Conclusion

The Council is recommending changes to recreational management measures for blueline tilefish to prevent overages of the recreational ACL and ensure overfishing does not occur. Initially, the Council considered only modifying the recreational AM to accomplish this. However, the Council considered it prudent to both modify the recreational AM under Action 6 and also reduce the recreational retention limit to further ensure recreational landings would not exceed the ACL. Hence, the Council expects that reducing the blueline tilefish bag limit from three to two fish per person per day under **Preferred Alternative 2** and prohibiting retention of the bag limit by captain and crew under **Preferred Alternative 4** will, in combination, keep the recreational landings of blueline tilefish within the recreational ACL.

The Council concluded that these preferred alternatives address the need to achieve optimum yield while meeting the objectives of the Snapper Grouper FMP, as amended. The preferred alternatives also comply with the requirements of the Magnuson-Stevens Act and other applicable law.

5.5.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

This action addresses Strategy 2.1– *Support development of management approaches that address retention of snapper grouper species* under Objective 2 - *Develop innovative management measures that allow consistent access to the fishery for all sectors*.

5.6 Action 6. Modify recreational accountability measures for blueline tilefish

5.6.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP met in April 18-20, 2022, and passed the following motion pertaining to recreational AMs for blueline tilefish: Motion: recommend the Council select alternative 2 as preferred.

5.6.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed Amendment 52 during their February 10, 2022, meeting. They had no comments or recommendations on this particular action.

5.6.3 SSC Comments and Recommendations

The SSC received updates on the amendment during their April and October 2022 meetings. They had no comments or recommendations on this particular action.

5.6.4 Public Comments and Recommendations

A scoping document and accompanying presentation were posted on the Council's website on January 18, 2022. Scoping hearings for Amendment 52 were held via webinar on February 1-3, 2022. The scoping comment period ran from January 18, 2022, through 5 PM on February 4, 2022. Public hearings were held via webinar on September 6 and September 7, 2022. Comments were also received online. Written comments were accepted from August 26 to September 16, 2022. Comments were also received during regularly scheduled Council meetings.

Alternatives*

Alternative 1 (No Action). If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless NMFS determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage, if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If recreational landings of blueline tilefish reach, or are projected to reach, the recreational annual catch limit, the recreational sector will close for the remainder of the fishing year unless NMFS determines that no closure is necessary based on the best scientific information available. If the recreational landings exceed the recreational annual catch limit, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, NMFS will reduce the length of the recreational fishing season and the recreational annual catch limit by the amount of the recreational overage.

Alternative 3. Remove the current recreational accountability measure that closes the recreational sector in-season. NMFS will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on May 1 and end on the date NMFS projects the recreational annual catch limit will be met.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

Summary of public comments pertaining to recreational season:
Several commenters noted that limitations need to be put into place to prevent recreational overages from happening and if they occur, they be paid back through reductions. One commenter recommended the Council manage blueline tilefish to avoid closures so regulatory discards are kept at a minimum. Several commenters indicated the commercial sector catch has made huge sacrifices and incurred financial hardship to rebuild the stock and provides food for consumers who do not have access this fishery. One commentor indicated the recreational sector exceeding their ACL has severely limited the growth of the fishery. Several commenters noted the recreational sector should be monitored as well as commercial sector.

5.6.5 Council's Conclusion

The Council is modifying the recreational accountability measures for blueline tilefish to prevent overages of the recreational ACL and render the AM more effective, given that overages of the recreational ACL occurred every year from 2017 through 2021. The current post-season recreational AM was not being triggered due to being tied to the stock status of blueline tilefish. That is, corrective action for overages was not initiated because the blueline tilefish stock is not considered overfished. Consequently, overages of the recreational ACL continued to occur. In addition, the Magnuson-Stevens Act National Standard 1 Guidelines advise Councils to reevaluate the system of ACLs and AMs when overages of a stock's ACL occur more than once in four consecutive years.

The Council concluded that **Preferred Alternative 3** is the most suitable way to modify the recreational AM for blueline tilefish given its short recreational season. The recreational harvest of blueline tilefish will start on May 1 and end on the date NMFS projects the recreational annual catch limit will be met. **Preferred Alternative 3** would help ensure overages of the recreational ACL are prevented so that optimum yield is achieved. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.6.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

. The use of AMs is addressed under the Vision Blueprint's Goal 2 - *Adopt management strategies for the snapper grouper fishery that rebuild and maintain fishery resources, adapt to regional differences in the fishery, and consider the social and economic needs of fishing communities*.

Chapter 6. Cumulative Effects

While this environmental assessment (EA) is being prepared using the 2020 Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, the cumulative effects discussed in this section meet the two-part standard for "reasonable foreseeability" and "reasonably close causal connection" required by the new definition of effects or impacts. Below is the five-step cumulative effects analysis that identifies criteria that must be considered in an EA.

6.1 Affected Area

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West, which is also the South Atlantic Fishery Management Council's (Council) area of jurisdiction. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. The ranges of affected species are described in Volume II of the Fishery Ecosystem Plan.[8] For the proposed actions found in Amendment 52 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), the cumulative effects analysis includes an analysis of data from 2017 through the present.

6.2 Past, Present, and Reasonably Foreseeable Actions Impacting the Affected Area

Fishery managers implemented the first significant regulations pertaining to snapper grouper species in 1983 through the Snapper Grouper FMP (SAFMC 1983). Listed below are other past, present, and reasonably foreseeable actions occurring in the South Atlantic Region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical and socio-economic environment. The complete history of management of the snapper grouper fishery can be found in Appendix I (History of Management).

Past Actions

Amendment 36 to the Snapper Grouper FMP, effective on July 31, 2017, was implemented to establish new spawning special management zones (SMZ) to protect spawning areas for snapper grouper species.

Amendment 37 to the Snapper Grouper FMP, effective on August 24, 2017, modified the hogfish fishery management unit in response to genetically different stocks along the South Atlantic, specified fishing levels for the two stocks, established a rebuilding plan for the Florida Keys/East Florida stock, and established or revised management measures for both hogfish stocks such as size limits, recreational bag limits, and commercial trip limits.

[8] http://safmc.net/ecosystem-management/fishery-ecosystem-plan/

Amendment 43 to the Snapper Grouper FMP, effective on July 26, 2017, specified recreational and commercial annual catch limits (ACL) for red snapper beginning in 2018.

Abbreviated Framework 1 to the Snapper Grouper FMP, effective on August 27, 2018, was implemented to address overfishing of red grouper, and reduced the commercial and recreational ACLs for red grouper in the South Atlantic exclusive economic zone (EEZ).

Abbreviated Framework 2 to the Snapper Grouper FMP, effective on May 9, 2019, revised fishing levels for black sea bass and vermilion snapper in response to the latest stock assessments for those species in the South Atlantic.

Amendment 42 to the Snapper Grouper FMP, effective on January 8, 2020, added three newly approved sea turtle release devices and updated the regulations to simplify and clarify the specifications for other release gear requirements. The new devices and updates provide more options to fulfill the requirements for sea turtle release gear on board vessels with commercial and charter/for-hire snapper grouper permits in the South Atlantic. The amendment also streamlines the procedure to implement newly approved devices and handling procedures in the future.

Regulatory Amendment 27 (Vision Blueprint Regulatory Amendment 27) to the Snapper Grouper FMP, effective on February 26, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the commercial sector of the snapper grouper fishery. The framework amendment revised commercial regulations for blueline tilefish, snowy grouper, greater amberjack, red porgy, vermilion snapper, almaco jack, Other Jacks Complex (lesser amberjack, almaco jack, and banded rudderfish), queen snapper, silk snapper, blackfin snapper, and gray triggerfish. Actions include modifying fishing seasons, trip limits, and minimum size limits.

Regulatory Amendment 30 to the Snapper Grouper FMP, effective on March 9, 2020, revised the rebuilding plan for red grouper, extended the annual spawning closure for that species off North and South Carolina, and established a commercial trip limit.

Regulatory Amendment 26 (Vision Blueprint Regulatory Amendment 26) to the Snapper Grouper FMP, effective on March 30, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the recreational sector of the snapper grouper fishery. The framework amendment modified the 20-fish aggregate bag limits, and minimum size limits for certain species.

Regulatory Amendment 29 to the Snapper Grouper FMP, effective July 15, 2020, modified gear requirements for South Atlantic snapper grouper species. Actions included requirements for descending and venting devices, and modifications to requirements for circle hooks and powerheads.

Abbreviated Framework 3 to the Snapper Grouper FMP, effective August 17, 2020, revised fishing levels for blueline tilefish in the South Atlantic region.

Regulatory Amendment 33 to the Snapper Grouper FMP, effective August 17, 2020, removed the requirement that if projections indicate the South Atlantic red snapper season (commercial or

recreational) would be three days or fewer, the commercial and/or recreational seasons would not open for that fishing year. If this requirement is removed, red snapper harvest could be open for either recreational or commercial harvest for fewer than four days.

Regulatory Amendment 34 to the Snapper Grouper FMP, effective May 3, 2021, created 34 special management zones around artificial reefs off North Carolina and South Carolina.

Comprehensive Acceptable Biological Catch (ABC) Control Rule Amendment (Amendment 45 to the Snapper Grouper FMP) would modify the ABC control rule, specify an approach for determining the acceptable risk of overfishing and the probability of rebuilding success for overfished stocks, allow phase-in of ABC changes, and allow carry-over of unharvested catch.

Amendment 49 to the Snapper Grouper FMP would address the results of the latest stock assessment for the greater amberjack stock in the South Atlantic region. This amendment was approved by the Council's at their December 2022 meeting.

Amendment 51 to the Snapper Grouper FMP would address the results of the latest stock assessment for the snowy grouper stock in the South Atlantic region. Snowy grouper was determined to be overfished and undergoing overfishing.

Present Actions

Amendment 44 to the Snapper Grouper FMP would address the results of the latest stock assessment for the yellowtail snapper stock in the southeast.

Amendment 53 to the Snapper Grouper FMP would address the results of the latest stock assessment for the gag stock in the South Atlantic region. Gag was determined to be overfished and undergoing overfishing.

Regulatory Amendment 35 to the Snapper Grouper FMP would revise the ABC and ACLs for red snapper in the South Atlantic based on the results of the latest stock assessment; and specify management measures to reduce dead releases for the South Atlantic snapper grouper fishery. Red snapper was determined to be overfished and undergoing overfishing.

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit requirements and reporting.

Reasonably Foreseeable Future Actions

The Council will be developing and amendment to the Snapper Grouper FMP to end overfishing of scamp and yellowmouth grouper, and rebuild the stocks.

Expected Impacts from Past, Present, and Future Actions

The intent of Amendment 52 is to modify the management of South Atlantic golden tilefish and blueline tilefish. Actions include revising the ABC, optimum yield, ACLs, and sector allocations for golden tilefish based on the most recent stock assessment (SEDAR 66 (2021). Management changes to the commercial golden tilefish were requested by industry to better align fishing seasons. Changes to recreational accountability measures (AM) for both golden and blueline

tilefish are intended to prevent recreational landings from exceeding the ACL and correcting for overages if they occur.

The proposed actions in Amendment 52 are not expected to result in significant cumulative adverse biological or socio-economic effects (see Chapter 4). In recent years, participants in the snapper grouper fishery and associated businesses have experienced some negative economic and social impacts due to changes in ACLs and early closures during the fishing years. Factors such as distance to fishing grounds, weather, and water temperature affect availability of species to the recreational fleets in different parts of the Council's jurisdiction. The proposed actions would reduce the likelihood of exceeding the recreational ACL for blueline tilefish and golden tilefish with the modification of the AMs that set a fishing year based on the catch the previous year. The actions are in response to the best available scientific information for golden tilefish and blueline tilefish. When combined with the impacts of past, present, and future actions affecting the snapper grouper fishery, minor cumulative impacts are likely to accrue.

There may be cumulative socio-economic effects with increased golden tilefish allocations, which would improve commercial and recreational fishing opportunities and benefits to associated businesses and communities. However, the actions in this amendment are not expected to result in significant cumulative adverse biological or socio-economic effects to the snapper grouper fishery when combined with the impacts of past, present, and future actions (see Chapter 4).

6.3 Consideration of Climate Change and Other Non-Fishery Related Issues

Climate Change

Global climate changes could have significant effects on South Atlantic fisheries, though the extent of these effects on the snapper grouper fishery is not known at this time. The Environmental Protection Agency's climate change webpage (https://www.epa.gov/climate-indicators/marine-species-distribution), and NOAA's Office of Science and Technology climate webpage (https://www.fisheries.noaa.gov/topic/climate), provides background information on climate change, including indicators which measure or anticipate effects on oceans, weather and climate, ecosystems, health and society, and greenhouse gases. The United Nations Intergovernmental Panel on Climate Change's Fifth Assessment Report also provides a compilation of scientific information on climate change (November 2, 2014). Those findings are summarized below.

Ocean acidification, or a decrease in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions, affects the chemistry and temperature of the water. Increased thermal stratification alters ocean circulation patterns, and causes a loss of sea ice, sea level rise, increased wave height and frequency, reduced upwelling, and changes in precipitation and wind patterns. Changes in coastal and marine ecosystems can influence organism metabolism and alter ecological processes such as productivity, species interactions, migration, range and distribution, larval and juvenile survival, prey availability, and susceptibility to predators. The "center of biomass," a geographical representation of each species' weight distribution, is being used to identify the shifting of fish populations. Warming sea temperature trends in the southeast

have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Harvesting and habitat changes also cause geographic population shifts. Changes in water temperatures may also affect the distribution of native and exotic species, allowing invasive species to establish communities in areas they may not have been able to survive previously. The combination of warmer water and expansion of salt marshes inland with sea-level rise may increase productivity of estuarine-dependent species in the short term. However, in the long term, this increased productivity may be temporary because of loss of fishery habitats due to wetland loss (Kennedy et al. 2002). The numerous changes to the marine ecosystem may cause an increased risk of disease in marine biota. An increase in the occurrence and intensity of toxic algae blooms will negatively influence the productivity of keystone animals, such as corals, and critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002; IPCC 2014).

Climate change may impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts would occur. In the near term, it is unlikely that the management measures contained in Amendment 52 would compound or exacerbate the ongoing effects of climate change on snapper grouper species.

Weather Variables

Hurricane season is from June 1 to November 30, and accounts for 97% of all tropical activity affecting the Atlantic basin. These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Although these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes.

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6.4 Overall Impacts Expected from Past, Present, and Future Actions

The proposed management actions are summarized in Chapter 2 of this document. Detailed discussions of the magnitude and significance of the impacts of the alternatives on the human environment appear in Chapter 4 of this document. None of the impacts of the actions in this amendment, in combination with past, present, and future actions have been determined to be significant. Although several other management actions, in addition to this amendment, are expected to affect snapper grouper species, any additive effects, beneficial and adverse, are not expected to result in a significant level of cumulative impacts.

The proposed actions would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places as these are not in the South Atlantic EEZ. These actions are not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific, cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic EEZ. The proposed actions are not likely to cause loss or destruction of these national marine sanctuaries because the actions are not expected to result in appreciable changes to current fishing practices. Additionally, the proposed actions are not likely to change the way in

which the snapper grouper fishery is prosecuted; therefore, the actions are not expected to result in adverse impacts on health or human safety beyond the status quo.

6.5 Monitoring and Mitigation

Fishery-independent and fishery-dependent data comprise a significant portion of information used in stock assessments. Fishery-independent data are being collected through the Southeast Fishery Information Survey and the Marine Resources Monitoring Assessment and Prediction Program. The effects of the proposed actions are, and would continue to be, monitored through collection of recreational landings data by all the four states in the South Atlantic Region (Florida, Georgia, South Carolina, and North Carolina). The National Marine Fisheries Service would continue to monitor and collect information on snapper grouper species for stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. The proposed actions relate to the harvest of indigenous species in the Atlantic, and the activities/regulations being altered do not introduce non-indigenous species and are not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these alternatives do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

Chapter 7. List of Interdisciplinary Plan Team Members

Name	Agency/Division	Title
Myra Brouwer	SAFMC	Deputy Director for Management/IPT Lead
Scott Crosson	SEFSC	Economist
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Scott Sandorf	SERO/SF	Technical Writer and Editor
Karla Gore	SERO/SF	Fishery Biologist/IPT Lead
Ed Glazier	SERO/SF	Anthropologist
Shepherd Grimes	NOAA GC	General Counsel
John Hadley	SAFMC	Economist
Nikolai Klibansky	SEFSC	Fishery Biologist
Mike Larkin	SERO/SF	Data Analyst
Jennifer Lee	SERO/PR	Fishery Biologist
Christina Package-Ward	SERO/SF	Social Scientist
Roger Pugliese	SAFMC	Habitat and Ecosystem Scientist/IPT Lead
Mike Schmidtke	SAFMC	Fishery Scientist
Monica Smit-Brunello	NOAA GC	General Counsel
Adam Stemle	SERO/SF	Economist
Mike Travis	SERO/SF	Social Science Branch Chief
Matthew Walia	SERO/OLE	Compliance Liaison Analyst
Christina Wiegand	SAFMC	Social Scientist

NOAA=National Oceanic and Atmospheric Administration, NMFS = National Marine Fisheries Service, SERO = Southeast Regional Office, SF = Sustainable Fisheries Division, PR = Protected Resources Division, HC = Habitat Conservation Division, SEFSC=Southeast Fisheries Science Center, GC = General Counsel

Chapter 8. Agencies and Persons Consulted

Responsible Agencies
South Atlantic Fishery Management Council (Administrative Lead)
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843-571-4366/ 866-SAFMC-10 (TEL)
843-769-4520 (FAX)
www.safmc.net

NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
727- 824-5301 (TEL)
727-824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted
SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

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Appendix A. Other Applicable Laws

1.1 Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Among other things under the APA, 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 APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. Amendment 52 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Amendment 52) complies with the provisions of the APA through the South Atlantic Fishery Management Council's (Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this plan amendment will have a request for public comments, which complies with the APA, and upon publication of the final rule, unless the rule falls within an APA exception, there will be a 30-day wait period before the regulations are effective.

1.2 Information Quality Act (IQA)

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Amendment 52 uses the best available information and made a broad presentation thereof. The information contained in this document was developed using best available scientific information. Therefore, this document is in compliance with the IQA.

1.3 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have management measures that complement those of the states, federal and state administrative procedures vary, and regulatory changes are unlikely to be fully instituted at the same time. The Council believes the actions in this plan amendment are consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina. Pursuant to Section 307 of the CZMA, this determination will be submitted to the responsible state agencies who administer the approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

1.4 Executive Order 12612: Federalism

Executive Order (E.O.) 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this document and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 12612 is not necessary.

1.5 Executive Order 12962: Recreational Fisheries

E.O. 12962 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. Additionally, the Order establishes a seven-member National Recreational Fisheries Coordination Council 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 National Recreational Fisheries Coordination Council 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 Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this document are consistent with the directives of E.O. 12962.

1.6 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this document are consistent with the directives of E.O. 13089.

1.7 Executive Order 13158: Marine Protected Areas (MPAs)

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of MPAs. The E.O. defined MPAs as "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 and cultural resources

therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources."

The alternatives considered in this document are consistent with the directives of E.O. 13158.

1.8 National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The three sanctuaries in the South Atlantic exclusive economic zone are the USS Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the National Marine Sanctuaries.

1.9 Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

1.10 Small Business Act (SBA)

Enacted in 1953, the SBA requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the SBA are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

1.11 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Act to require that an FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

Appendix B. Regulatory Impact Review

Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest to satisfy the obligations under Executive Order (E.O.) 12866, as amended. In conjunction with the analysis of direct and indirect effects in the "Environmental Consequences" section of this Amendment, the RIR: 1) provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way. The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order (E.O.) 12866. In addition, the RIR provides some information that may be used in conducting an analysis of the effects on small entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the effects this regulatory action would be expected to have on the recreational and commercial sectors of the golden tilefish and the recreational sector of the blueline tilefish fisheries.

Problems and Objectives

The problems and objectives for the proposed actions are presented in Section 1.4 of this amendment and are incorporated herein by reference.

Description of Fisheries

A description of the commercial and recreational sectors of the snowy grouper fishery is provided in Section 3.3 of this amendment and is incorporated herein by reference.

Effects of Management Measures

Action 1. Revise the acceptable biological catch, annual catch limit and annual optimum yield for golden tilefish

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.1.2. The following discussion summarizes the expected economic effects of the South Atlantic Fishery Management Council (Council) preferred alternative relative to the No Action alternative (i.e., the status quo).

In general, total ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior

changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measure. In the case of golden tilefish, the revised ACL being considered in **Preferred Alternative 2** would be constraining on harvest and is projected to increase landings of the species for the commercial sector and reduce landings for the recreational sector.

In the 2023 fishing year, **Preferred Alternative 2** is estimated to result in an increase in potential net economic benefits of $138,185 for the commercial sector (as measured in producer surplus or PS), a decrease in potential net economic benefits of $788,341 for the recreational sector (as measured in consumer surplus or CS), and a decrease in potential net economic benefits of $650,156 for both sectors combined (2020 $). By the 2026 fishing year and beyond, Preferred Alternative 2 is estimated to result in an increase in potential net economic benefits of $184,778 for the commercial sector, a decrease in potential net economic benefits of $778,229 for the recreational sector, and decrease in potential net economic benefits of $593,450 for both sectors combined (2020 $). The decrease in landings and potential net economic benefits for the recreational sector can largely be attributed to the change from MRIP-CHTS to MRIP-FES measurements for the sector ACL. In doing so, the recreational landings of golden tilefish will be noticeably constrained in comparison to baseline levels exhibited in recent years. These expected changes are highlighted in Tables 4.1.2.5 and 4.1.2.6, with additional details and assumptions used in the subsequent paragraphs

Action 2. Revise sector allocations and sector annual catch limits for golden tilefish

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.2.2. The following discussion summarizes the expected economic effects of the Council preferred alternative relative to the No Action alternative (i.e., the status quo).

In general, sector ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measure. In the case of golden tilefish, the revised sector allocations and resulting ACLs being considered in **Preferred Alternative 2** would be constraining on harvest for both sectors and shifts between sectors would create distributional economic effects by sector.

Commercial Sector

Preferred Alternative 2 would result in comparatively lower commercial sector allocation and sector ACL (96.70% of the total ACL). Thus, there would be more potential landings of golden tilefish under **Preferred Alternative 2** relative to **Alternative 1 (No Action)**. These relatively decreased landings would be expected to comparatively decrease total potential PS for the commercial sector. When compared to **Alternative 1 (No Action)**, **Preferred Alternative 2** would result in an estimated reduction in PS of $2,028 in 2023 and a reduction in PS of $2,173 by fishing year 2026 (2020 $). Estimates of net revenues or economic profit are not available for snapper grouper dealers. Therefore, it is not possible to estimate the effect of changes in purchases on their profits. However, in general, dealers are indirectly affected whenever gross revenues to commercial fishing vessels are expected to change (e.g., increases in gross revenues

are expected to indirectly benefit dealers and vice versa). Thus, the directionality of economic benefits to dealers would be the same as stated above. Golden tilefish made up only approximately 3% of total purchases by golden tilefish dealers, indicating that there is a very low financial dependency on golden tilefish landings on an annual basis, thus the change in net economic benefits from this action is likely to be minimal for dealers.

Recreational Sector

Preferred Alternative 2 would result in a comparatively higher recreational sector allocation and sector ACL (3.30% of the total ACL). Thus, there would be higher potential landings of golden tilefish under **Preferred Alternative 2** relative to **Alternative 1 (No Action)**. These relatively increased landings would be expected to comparatively increase total CS for the recreational sector. When compared to **Alternative 1 (No Action)**, **Preferred Alternative 2** would result in an estimated increase in CS of $14,194 in fishing year 2023 and an increase in CS of $15,169 by fishing year 2026 (2020 $).

Total

Preferred Alternative 2 would result in comparatively lower potential net economic benefits for the commercial sector and higher potential benefits for the recreational sector. In terms of total estimated net economic benefits for the action, the same directionality would apply as stated for the recreational sector. In comparison to **Alternative 1 (No Action)**, **Preferred Alternative 2** would increase net economic benefits by $12,116 in the 2023 fishing year (2020 $).

Action 3. Modify the fishing season for commercial golden tilefish hook and line and longline components

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.3.2. The following discussion summarizes the expected economic effects of the Council preferred alternative relative to the No Action alternative (i.e., the status quo).

There may be some economic benefits from the commercial hook and line component starting at a different time than the commercial longline component **(Preferred Alternative 3)** if the start times vary which would presumably reduce the amount of golden tilefish being landed at any single time, thereby potentially avoiding oversupplying the market and leading to elevated prices. Improved prices could lead to higher net operating revenue for commercial vessels.

Additionally, a later start time for the commercial longline component would allow harvest to remain open later in the year which would allow vessels harvesting under the longline component to remain fishing for golden tilefish during Lent when demand and prices tend to be relatively high. This notion is backed by elevated prices for golden tilefish typically observed in March and April compared to prices in January and February. If the seasonality of golden tilefish landings shifts due to modifying the start date of the longline component under **Preferred Alternative 3**, net economic benefits would be expected to comparatively increase. When compared to **Alternative 1 (No Action)**, **Preferred Sub-alternative 3a** would result in an estimated increase in net economic benefits of $8,105 in 2023 and an increase in net economic benefits of $9,885 by fishing year 2026 (2020 $).

Action 4. Modify recreational accountability measures for golden tilefish

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.4.2. The following discussion summarizes the expected economic effects of the Council preferred alternative relative to the No Action alternative (i.e., the status quo). Recreational AMs typically consist of corrective measures that create short-term indirect negative economic effects by curtailing harvest and fishing activity when harvest has exceeded the sector ACL, thus potentially affecting net revenues of for-hire operations and CS on recreational fishing trips. In the long-term, these measures also help reduce the risk of overfishing a stock to the point of depletion, which results long-term economic benefits through sustained harvest and fishing activity as well as the for-gone need for more stringent restrictive management measures that may be needed to rebuild a depleted stock. **Preferred Alternative 3** would result in a fishing season that is announced annually with set start and end dates. This AM would limit overall long-term harvest of golden tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

Action 5.

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.5.2. The following discussion summarizes the expected economic effects of the Council preferred alternative relative to the No Action alternative (i.e., the status quo).

Generally, angler satisfaction increases with the number of fish that can be harvested and the size of the fish. The smaller the bag limit the greater the probability that the satisfaction from an angler trip could be reduced. Anglers tend to land two or fewer blueline tilefish on a single trip. Setting the bag limit at 2 fish **(Preferred Alternative 2)** would have greater negative economic effects in comparison to **Alternative 1 (No Action)** on a trip-level due to constraining harvest and related economic benefits (CS). Removing a captain and crew bag limit (**Preferred Alternative 4**) may also constrain harvest leading to similar economic effects in comparison to as **Preferred Alternative 2**. Conversely, more restrictive retention limits would allow for longer open harvest seasons. **Preferred Alternative 2** is estimated to result in an estimated decrease in CS of $273,923 and **Preferred Alternative 4** is estimated to result in an estimated decrease in CS of $119,268 (2020 $).

Action 6. Modify recreational accountability measures for blueline tilefish

A detailed analysis and discussion of the expected economic effects of the proposed action are included in Section 4.7.2. The following discussion summarizes the expected economic effects of the Council preferred alternative relative to the No Action alternative (i.e., the status quo).

Recreational AMs typically consist of corrective measures that create short-term indirect negative economic effects by curtailing harvest and fishing activity when harvest has exceeded the sector ACL, thus potentially affecting net revenues of for-hire operations and CS on recreational fishing trips. In the long-term, these measures also help reduce the risk of overfishing a stock to the point of depletion, which results long-term economic benefits through

sustained harvest and fishing activity as well as the for-gone need for more stringent restrictive management measures that may be needed to rebuild a depleted stock.

Preferred Alternative 3 would result in a fishing season that is announced annually with set start and end dates. **Preferred Alternative 3** would limit overall long-term harvest of blueline tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

Public Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs to the private sector are discussed in the effects of management measures. Estimated public costs associated with this action include:

Council costs of document preparation, meetings, public hearings, and information dissemination	$31,731
NMFS administrative costs of document preparation, meetings, and review	$27,103
TOTAL	$58,833

The estimate provided above does not include any law enforcement costs. Any enforcement duties associated with this action would be expected to be covered under routine enforcement costs rather than an expenditure of new funds. The Council and NMFS administrative costs directly attributable to this amendment and the rulemaking process would be incurred prior to the effective date of the final rule implementing this amendment.

Net Benefits of Regulatory Action

It is important to specify the time period being considered when evaluating benefits and costs. According to OMB's FAQs regarding Circular A-4,[9] "When choosing the appropriate time horizon for estimating costs and benefits, agencies should consider how long the regulation being analyzed is likely to have resulting effects. The time horizon begins when the regulatory action is implemented and ends when those effects are expected to cease. Ideally, analysis should include all future costs and benefits. Here as elsewhere, however, a 'rule of reason' is appropriate, and the agency should consider for how long it can reasonably predict the future and limit its analysis to this time period. Thus, if a regulation has no predetermined sunset provision, the agency will need to choose the endpoint of its analysis on the basis of a judgment about the foreseeable future."

[9] See p. 4 at https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/OMB/circulars/a004/a-4_FAQ.pdf

For current purposes, the reasonably "foreseeable future" is considered to be the next 5 years. There are two primary reasons for considering the next 5 years the appropriate time period for evaluating the benefits and costs of this regulatory action rather than a longer (or shorter) time period. First, this regulatory action does not include a predetermined sunset provision. Second, based on the history of management in the snapper grouper fishery in the South Atlantic, regulations such as those considered in this amendment are often revisited within 5 years or so.

The analyses of the changes in economic benefits indicates a decrease of $1,167,508 in net economic benefits to the recreational sector, an increase of $144,262 in net economic benefits to the commercial sector, and a decrease in total net economic benefits of $1,023,246 (2020 $) in the first year of implementation. These net benefits change in subsequent years largely due to the increasing annual catch limit for snowy grouper. In discounted terms and over a 5-year time period using the analyses provided in this amendment, the total net present value of the change in net economic benefits is -$4,050,338 using a 7% discount rate and -$4,518,602 using a 3% discount rate (2020 $). On an average annual basis over a 5-year time period, the total net present value of the change in net economic benefits is -$810,068 using a 7% discount rate and -$903,720 using a 3% discount rate (2020 $).

The estimated non-discounted public costs resulting from the regulation are $58,833 (2021 $). The costs resulting from the amendment and the associated rulemaking process should not be discounted as they will be incurred prior to the effective date of the final rule. Based on the quantified economic effects, this regulatory action is expected to decrease net economic benefits to the Nation. Over a 5-year time period, the quantified change in net economic benefits is expected to be -$4,109,172 using a 7% discount rate and -$4,577,435 using a 3% discount rate (2020 $). On an average annual basis over a 5-year time period, the total net present value of the change in net economic benefits is -$821,834 using a 7% discount rate and -$915,487 using a 3% discount rate (2020 $).

Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, these actions have been determined to not be economically significant for the purposes of E.O. 12866. In absolute terms, the expected total costs and benefits of this amendment are $1,082,079 in the first year of implementation.

Appendix C. Regulatory Flexibility Analysis

Introduction

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

With certain exceptions, the RFA requires agencies to conduct an initial regulatory flexibility analysis (IRFA) for each proposed rule. The IRFA is designed to assess the effects various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those effects. An IRFA is primarily conducted to determine whether the proposed regulatory action would have a significant economic effect on a substantial number of small entities. In addition to analyses conducted for the Regulatory Impact Review (RIR), the IRFA provides: 1) a description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed regulatory action; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed regulatory action will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed regulatory action, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule; and 6) a description of any significant alternatives to the proposed regulatory action which accomplish the stated objectives of applicable statutes and would minimize any significant economic effects of the proposed regulatory action on small entities.

In addition to the information provided in this section, additional information on the expected economic effects of the proposed action is included in the RIR.

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

A discussion of the reasons why action by the agency is being considered is provided in Section 1.4. The purposes of this proposed regulatory action are to revise the acceptable biological catch (ABC), annual optimum yield (OY), total annual catch limit (ACL), and sector allocations for

golden tilefish based on the most recent stock assessment and modify management measures and AMs for golden tilefish and blueline tilefish. The objective of this proposed regulatory action is to base conservation and management measures on the best scientific information available and achieve optimum yield, consistent with the Magnuson-Stevens Act and its National Standards. The Magnuson-Stevens Act serves as the legal basis for the proposed regulatory action. All monetary estimates in the following analysis are in 2020 dollars.

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

This proposed regulatory action would revise the ABC, annual OY, and total ACL for South Atlantic golden tilefish. The current ABC, annual OY, and total ACL are 342,000 pounds gutted weight (lb gw). The recreational component of the current total ACL is based on Marine Recreational Information Program (MRIP) Coastal Household Telephone Survey (CHTS) data. This proposed regulatory action would change these values to 435,000 lb gw in 2023, 448,000 lb gw in 2024, 458,000 lb gw in 2025, and 466,000 lb gw in 2026 and beyond. The recreational component of the proposed total ACL is based on MRIP Fishing Effort Survey (FES) data. This proposed regulatory action would also revise the commercial and recreational allocations of the total ACL for South Atlantic golden tilefish from 97% commercial and 3% recreational to 96.7% commercial and 3.3% recreational. This proposed regulatory action would also change the start date of the fishing season for the longline component of the commercial sector from January 1 to January 15. All of these actions would regulate and are expected to directly affect commercial fishing businesses that commercially harvest South Atlantic golden tilefish. The average number of commercial fishing vessels that harvested South Atlantic golden tilefish between 2016 and 2020 was 106 vessels per year. Of those 106 vessels, 20 vessels specifically used longline gear to harvest South Atlantic golden tilefish on average per year.

Although the proposed changes to the total ACL and sector allocations also regulate for-hire fishing businesses that harvest golden tilefish by limiting their aggregate harvest, the analysis assumes that changes in the recreational portion of the total ACL would only affect catch per trip, not the overall number of target trips taken by for-hire fishing businesses, due to the relatively low bag limit for golden tilefish and the relatively large number of substitute target species for golden tilefish. Because for-hire fishing activity is not expected to change, the profits of for-hire businesses are not expected to change as a result of these actions.

This proposed regulatory action would also modify the recreational accountability measures for golden tilefish and blueline tilefish. Accountability measures do not directly regulate or affect for-hire fishing businesses. Thus, those actions are not germane under the RFA. This proposed regulatory action would also reduce the bag limit for blueline tilefish from 3 fish to 2 fish per angler per day and prohibit captain and crew on for-hire fishing trips from retaining the recreational bag limit. Recreational harvest under the bag limit regulates the behavior of individual, recreational anglers, including for-hire captain and crew, not the behavior of for-hire fishing businesses. Recreational anglers are not considered entities under the RFA, and thus the effects of those actions are also not germane to this analysis.

On December 29, 2015, NMFS issued a final rule establishing a small business size standard of $11 million in annual gross receipts (revenue) for all businesses primarily engaged in the commercial fishing industry (NAICS code 11411) for RFA compliance purposes only (80 FR 81194, December 29, 2015). In addition to this gross revenue standard, a business primarily involved in commercial fishing is classified as a small business if it is independently owned and operated and is not dominant in its field of operations (including its affiliates). NMFS does not possess ownership data to determine whether commercial fishing vessels harvesting South Atlantic golden tilefish may be affiliated. Thus, each vessel is assumed to represent a single commercial fishing business. From 2016 through 2020, the maximum annual gross revenue earned by a single commercial fishing vessel that harvested South Atlantic golden tilefish between 2016 and 2020 was about $581,344. Based on this information, all commercial fishing businesses directly regulated by this proposed regulatory action are determined to be small entities for the purpose of this analysis.

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

This proposed regulatory action would not establish any new reporting or record-keeping requirements.

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

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

Significance of Economic Impacts on a Substantial Number of Small Entities

Substantial Number of Small Entities Criterion

This proposed regulatory action, if implemented, is expected to directly regulate all 106 commercial fishing vessels that commercially harvest South Atlantic golden tilefish. These vessels represent about 17% of all commercial fishing vessels with South Atlantic snapper grouper permits. Therefore, this proposed action is expected to affect a substantial number of small entities.

Significant Economic Impact Criterion

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

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

All entities directly affected by this proposed regulatory action are considered to be small. Thus, the issue of disproportionality does not arise in the present case.

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

The proposed action to revise the ABC, annual OY, and total ACL for South Atlantic golden tilefish from 342,000 lb gw based on MRIP-CHTS data, to 435,000 lb gw in 2023, 448,000 lb gw in 2024, 458,000 lb gw in 2025, and 466,000 lb gw in 2026 and beyond based on MRIP FES data is expected to benefit commercial fishing vessels that harvest South Atlantic golden tilefish. Specifically, commercial landings of South Atlantic golden tilefish averaged 335,285 lb gw per year from 2016 through 2020. The proposed total ACLs would increase the commercial ACLs from 2023 through 2026 by an average of 105,102 lb gw per year. Given that the commercial sector typically harvests all or almost all of its ACL, it is assumed that the proposed commercial ACLs will be fully harvested. Given an average ex-vessel price of $4.71 per lb/gw, annual gross revenue is expected to increase by about $495,030 per year on average. Because economic profit is approximately 4% of annual gross revenue for the affected fleet of commercial vessels, economic profit is expected to increase by about $19,801, or by approximately $187 per vessel. Average annual economic profit for these vessels is approximately $3,309 per vessel. Thus, this proposed action is expected to increase these commercial fishing vessels' economic profits by about 5.7%.

This proposed action to reduce the commercial allocation of the total ACL for South Atlantic golden tilefish from 97% to 96.7% is expected to have very minor adverse effects on commercial fishing vessels. Even though the proposed commercial ACLs for 2023 through 2026 are higher than the current commercial ACL of 331,740 lbs gw, as well as the average commercial landings from 2016 through 2020, the reduction in the commercial allocation of the total ACL would be expected to reduce landings from what they would have been if the commercial allocation remained at 97%. However, the average reduction in commercial landings under the proposed commercial allocation of 96.7% is only 1,355 lb gw per year on average from 2023 through 2026. This reduction in landings would be expected to reduce gross revenue by $6,383 per year, and thus economic profit by $255 per year. On a per vessel basis, the reductions in gross revenue and economic profit are only $60 and $2.40 per year. Thus, economic profit per commercial fishing vessel is expected to be reduced by less than .01% on average per year as a result of reducing the commercial allocation of the total ACL. Importantly, these minor adverse effects are significantly outweighed by the positive effects of the proposed action to change the total ACL.

The proposed action to change the starting date of the fishing season for the longline component of the commercial sector from January 1 to January 15 is expected to benefit vessels that harvest South Atlantic golden tilefish using longline gear. Starting the longline season at a later date is expected to shift some of the longline landings of South Atlantic golden tilefish from January to March and April. From 2016 through 2020, the average ex-vessel price of South Atlantic golden tilefish in January was only $4.53 lb/gw. However, the average ex-vessel price was $4.86 lb/gw in March and $5.10 lb/gw in April. By shifting a higher proportion of the landings into March and April, gross revenue from commercial golden tilefish landings by longline vessels is expected to increase by approximately $27,475 per year on average. Economic profit is therefore expected to increase by about $1,100 per year on average. From 2016 through 2020, average gross revenue was approximately $106,479 per year while average economic profit per

year was about $4,259 per commercial longline vessel. Given that 20 vessels harvested South Atlantic golden tilefish per year on average during this time, gross revenue and economic profit per vessel are expected to increase by $1,374 and $55, respectively. Thus, the proposed change in the starting date for the longline season from January 1 to January 15 is expected to increase annual economic profit by about 1.3% on average per vessel.

Description of the Significant Alternatives to the Proposed Action and Discussion of How the Alternatives Attempt to Minimize Economic Impacts on Small Entities

This proposed regulatory action, if implemented, is not expected to reduce the profits of any small entities directly regulated by this action. As a result, the issue of significant alternatives is not relevant.

Appendix D. Essential Fish Habitat and Ecosystem Based Fishery Management

I. EFH and EFH-HAPC Designations and Cooperative Habitat Policy Development and Protection

The Magnuson-Stevens Act requires federal fishery management Councils and the National Marine Fisheries Service (NMFS) to designate Essential Fish Habitat (EFH) for species managed under federal fishery management plans (FMP). Federal regulations that implement the EFH program encourage fishery management Councils and NMFS also to designate subsets of EFH to highlight priority areas within EFH for conservation and management. These subsets of EFH are called EFH-Habitat Areas of Particular Concern (EFH-HAPCs or HAPCs) and are designated based on ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of the habitat type. Information supporting EFH and EFH-HAPC designations was updated (pursuant to the EFH Final Rule) in Fishery Ecosystem Plan (FEP) II.

a. South Atlantic Council EFH User Guide

The EFH Users Guide developed during the FEP II development process is available through the FEP II Dashboard and provides a comprehensive list of the designations of EFH and EFH-HAPCs for all species managed by the South Atlantic Fishery Management Council (South Atlantic Council) and the clarifications identified during FEP II development. As noted above, additional detailed information supporting the EFH designations appears in FEP, FEP II, and in individual FMPs, and general information on the EFH provisions of the Magnuson-Stevens Act and its implementing regulations (50 CFR 900 Subparts J and K). These sources should be reviewed for information on the components of EFH assessments, steps to EFH consultations, and other aspects of EFH program operation.

b. South Atlantic Council EFH Policy and EFH Policy Statements

Policy for Protection and Restoration of EFH

South Atlantic Council Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the South Atlantic Council to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the South Atlantic Council policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The South Atlantic Council will pursue these goals at state, Federal, and local levels. The South Atlantic Council shall assume an aggressive

role in the protection and enhancement of habitats important to fishery species and shall actively enter Federal decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the South Atlantic Council.

South Atlantic Council EFH Policy Statements

Considerations to Reduce or Eliminate the Impacts of Non-Fishing Activities on EFH

In addition to implementing regulations to protect habitat from degradation due to fishing activities, the South Atlantic Council in cooperation with NMFS, actively comments on non-fishing projects or policies that may impact fish habitat. The South Atlantic Council established a Habitat Protection and Ecosystem Based Management Advisory Panel (AP) and adopted a comment and policy development process. Members of the AP serve as the South Atlantic Council's habitat contacts and professionals in the field and have guided the South Atlantic Council's development of the following Policy Statements:

- EFH Policy Statement on South Atlantic Climate Variability and Fisheries (December 2016)
- EFH Policy Statement on South Atlantic Food Webs and Connectivity (December 2016)
- Protection and Restoration of EFH from Marine Aquaculture (June 2014)
- Protection and Enhancement of Marine Submerged Aquatic Vegetation (June 2014)
- Protection and Restoration of EFH from Beach Dredging and Filling, Beach Re-nourishment and Large-Scale Coastal Engineering (March 2015)
- Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing (December 2015)
- Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows (June 2014)
- Policies for the Protection of South Atlantic Marine & Estuarine Ecosystems from Non-Native and Invasive Species (June 2014)
- Policy Considerations for Development of Artificial Reefs in the South Atlantic Region and Protection of Essential Fish Habitat (September 2017)

II. Habitat Conservation and Fishery Ecosystem Plans

The South Atlantic Council, views habitat conservation as the foundation in the move to Ecosystem Based Fishery Management (EBFM) in the region. The South Atlantic Council has been proactive in advancing habitat conservation through extensive gear restrictions in all South Atlantic Council FMPs and by directly managing habitat and fisheries affecting those habitats through two FMPs, the FMP for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region (Coral FMP) and the FMP for the Sargassum Fishery of the South Atlantic Region. The FMP for the Dolphin and Wahoo Fishery in the Atlantic represents a proactive FMP which established fishery measures and identified EFH in advance of overfishing or habitat impacts from the fisheries.

Building on the long-term conservation approach, the South Atlantic Council facilitated the evolution of the Habitat Plan into the first FEP to provide a clear description and understanding of the fundamental physical, biological, and human/institutional context of ecosystems within which fisheries are managed and identify information needed and how that information should be used in the context of FMPs. Developing a South Atlantic FEP required a greater understanding of the South Atlantic ecosystem, including both the complex relationships among humans, marine life, the environment and EFH and a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from

single species management to EBFM in the region. To support the move towards EBFM, the South Atlantic Council adopted broad goals: (1) maintaining or improving ecosystem structure and function; (2) maintaining or improving economic, (3) social, and cultural benefits from resources; and (4) maintaining or improving biological, economic, and cultural diversity.

III. Ecosystem Approach to Conservation and Management of Deep-water Ecosystems

Through Comprehensive Ecosystem-Based Amendment 1, Comprehensive Ecosystem-Based Amendment 2, and Coral Amendment 8, the South Atlantic Council established and expanded deep-water coral HAPCs (CHAPCs) and co-designated them as EFH-HAPCs to protect the largest continuous distribution (>23,000 square miles) of pristine deep-water coral ecosystems in the world from fishing and non-fishing activities.

IV. FEP II Development

The South Atlantic Council developed FEP II in cooperation with NMFS, as a mechanism to incorporate ecosystem principles, goals, and policies into the fishery management process, including consideration of potential indirect effects of fisheries on food web linkages when developing harvest strategies and management plans. South Atlantic Council policies developed through the process support data collection, model and supporting tool development, and implementation of FEP II. FEP II and the FEP II Implementation Plan provide a system to incorporate of ecosystem considerations into the management process.

FEP II was developed employing writing and review teams established from the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP, and experts from state, federal, NGOs, academia and other regional organizations and associations. Unlike the original Plan, FEP II is a living continually developing online information system presenting core sections and sections with links to documents or other online systems with detailed updated information on species, habitat, fisheries and research. A core part of the FEP II development process involved engaging the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP and regional experts in developing new sections and ecosystem- specific policy statements to address South Atlantic food webs and connectivity and South Atlantic climate variability and fisheries. In addition, standing essential fish habitat policy statements were updated and a new artificial reef habitat policy statement was approved. In combination, these statements advance habitat conservation and the move to EBFM in the region. They also serve as the basis for further policy development, consideration in habitat and fish stock assessments and future management of fisheries and habitat. They also support a more comprehensive view of conservation and management in the South Atlantic and identify long-term information needs, available models, tools, and capabilities that will advance EBFM in the region.

FEP II Dashboard (In transition to new Habitat and Ecosystem Page)
The FEP II Dashboard and associated online tools provided a clear description of the fundamental physical, biological, human, and institutional context of South Atlantic ecosystems within which fisheries are managed. The Council's new website (under development) will include a new Habitat and Ecosystem page where the FEP II Dashboard layout shown below will be refined and integrated.

- Introduction
- South Atlantic Ecosystem
- South Atlantic Habitats
- Managed Species
- Social and Economic
- Essential Fish Habitat
- SAFMC Managed Areas
- Research & Monitoring
- SAFMC Tools

V. NOAA EBFM Activities Supporting FEP II

a. *NOAA EBFM Policy and Road Map*

To support the move to EBFM, NMFS developed an agency-wide EBFM Policy and Road Map (available through Ecosystem page (under revision) of the FEP II Dashboard that outlines a set of principles to guide actions and decisions over the long-term to: implement ecosystem-level planning; advance our understanding of ecosystem processes; prioritize vulnerabilities and risks of ecosystems and their components; explore and address trade-offs within an ecosystem; incorporate ecosystem considerations into management advice; and maintain resilient ecosystems.

b. *FEP II Implementation Plan Structure and Framework*

The Implementation Plan is structured to translate approved policy statements of the South Atlantic Council into actionable items. The plan encompasses chapters beginning with an introduction to the policy statement, a link to the complete policy statement, and a table which translates policies and policy components into potential action items. The actions within the plan are recommendations for activities that could support the South Atlantic Council's FEP II policies and objectives.

c. *FEP II Two Year Roadmap*

The FEP II Two Year Roadmap draws from the Implementation Plan and presents three to five priority actions for each of the nine approved policy statements of the South Atlantic Council which would be initiated or completed over the next two years (2019-2020). The Roadmap provides "Potential Partners" and other potential regional collaborators, a focused list of priority actions they could cooperate with the South Atlantic Council on to advance policies supporting the move to EBFM in the South Atlantic region.

d. *Monitoring/Revisions to FEP II Implementation Plan*

FEP II and this supporting Implementation Plan are considered active and living documents. The Implementation Plan will be reviewed and updated periodically. During their spring meeting in 2021 and every three years following, the Habitat Protection and Ecosystem Based Management AP will engage regional experts as needed, to determine whether additional actions addressing council policies should be added to the implementation plan. The South Atlantic Council's Habitat Protection and Ecosystem Based Management Committee will review, revise and refine those recommendations for South Atlantic Council consideration and approval for inclusion into the implementation plan.

VI. Regional Habitat and Ecosystem Partners

The South Atlantic Council, with the Habitat Protection and Ecosystem Based Management AP as the foundation, collaborates with regional partners to create a comprehensive habitat and ecosystem network in the region to enhance habitat conservation and EBFM.
Detailed information and links to partners are highlighted online:
https://ocean.floridamarine.org/safmc_dashboard/partners.html.

VII. Regional Ecosystem Modeling in the South Atlantic

a. *South Atlantic Ecopath with Ecosim Model*

The South Atlantic Council worked cooperatively with the University of British Columbia and the Sea Around Us project to develop a strawman and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the South Atlantic Council. This effort helped the South Atlantic Council and cooperators identify available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provided a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships. While individual efforts were underway in the South Atlantic, only with significant investment of resources through other programs was a comprehensive regional model further developed.

The current South Atlantic EwE model provides a more complete view of the system and supports potential future evaluations that may be possible with the model. With the model complete and tuned to the available data it can be used to address broad strategic issues and explore "what if" scenarios that could then be used to address tactical decision-making questions such as provide ecosystem context for single species management, address species assemblage questions, and address spatial questions using Ecospace.

A modeling team comprised of FWRI staff, South Atlantic Council staff and other technical experts as needed, will coordinate with members of the original Ecosystem Modeling Workgroup to maintain and further refine the South Atlantic Model.

VIII. Tools supporting Habitat Conservation and EBFM in the South Atlantic Region

The South Atlantic Council developed a Habitat Conservation and Ecosystem Management Section which provided access to the FEP II Digital Dashboard and associated tools which is under development with the new website. Florida's FWRI maintains and distributes GIS data,

imagery, and documents relevant to habitat conservation and ecosystem-based fishery management in their jurisdiction. Web Services and spatial representations of EFH and other habitat related layers are accessible through the Council's SAFMC Atlas, a platform for searching and visualizing GIS data relevant to the Council's mission and download of GIS layers and information on regional partners is available through the SAFMC Digital Dashboard. The online systems provide access to the following Services:

i. South Atlantic Fisheries Webservice: Provides access to species distribution and spatial presentation of regional fishery independent data from the Southeast Area Monitoring and Assessment Program (South Atlantic) SEAMAP-SA, the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP), and NOAA Southeast Fishery-Independent Survey (SEFIS).
ii. South Atlantic EFH Webservice: Provides access to spatial representation of EFH and EFH-HAPCs for South Atlantic Council-managed species and Highly Migratory Species.
iii. South Atlantic Managed Areas Service: Provides access to spatial presentations of South Atlantic Council and other managed areas in the region.
iv. South Atlantic Artificial Reefs Web Application: Provides a regional view of artificial reefs locations, contents and imagery associated with programs in the southeastern U.S. overseen by individual states (Florida, Georgia, South Carolina, North Carolina).
v. South Atlantic ACCSP Web Map and Application: The web map displays Atlantic Coastal Cooperative Statistics Program (ACCSP) Statistical Areas representing catch and values of Council-managed species across time with the application displaying charts of landings and values for ACCSP Statistical Areas.

IX. Ecosystem-Based Action, Future Challenges and Needs

One of the greatest challenges to enhance habitat conservation and EBFM in the region is funding high priority research, including comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for South Atlantic Council use in place-based management measures. Additional resources need to be dedicated to expanding regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. The FEP II Implementation Plan includes Appendix A to highlight research and data needs excerpted from the SEAMAP 5 Year Plan because they represent short and long-term research and data needs that support EBFM and habitat conservation in the South Atlantic Region.

Development of ecosystem information systems to support South Atlantic Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term South Atlantic Council needs. NOAA should support and build on the regional coordination efforts of the South Atlantic Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update information supporting FEP II, which support refinement of EFH designations and spatial representations and future EBFM actions. These are the highest priority needs to support habitat conservation and EBFM, the completion

of mapping of near-shore, mid-shelf, shelf edge, and deep-water habitats in the South Atlantic region and refinement in the characterization of species use of habitats.

Appendix E. Actions and Alternatives Removed from Consideration

The South Atlantic Council considered alternatives for establishing an incidental trip limit allowance for the golden tilefish longline component once the longline quota is caught. The Council determined allowing incidental harvest via hook-and-line could potentially result in conflict if the hook and line allocation is met early because of that allowance. Members considered comments from hook-and-line component advisors who recommended not including this action, because of the concern for a potential for a closure, or interaction with them fishing.

Action 4. Establish an incidental trip limit allowance for the golden tilefish longline component once the longline quota is caught.

Alternative 1 (No Action). Do not establish an incidental trip allowance for the longline sector once the longline quota of golden tilefish is caught. After the commercial ACL for the longline component is reached or projected to be reached, golden tilefish may not be fished for or possessed by a vessel with a golden tilefish longline endorsement.

Alternative 2. Establish a 100 lbs. gutted weight incidental trip limit allowance of golden tilefish for the longline endorsement holders using hook and line gear once the longline quota is caught.

Alternative 3. Establish a 150 lbs. gutted weight incidental trip limit allowance of golden tilefish for the longline endorsement holders using hook and line gear once the longline quota is caught.

Alternative 4. Establish a 250 lbs. gutted weight incidental trip limit allowance of golden tilefish for the longline endorsement holders using hook and line gear once the longline quota is caught.

Discussion:

- The incidental allowance would be subtracted from the annual allocation to the hook and line component. If adopted, the allowance would only be available once the longline component was closed and only until the allocation to the hook and line component was available.

4.6 Modify blueline tilefish recreational season.

Alternatives*

Preferred Alternative 1 (No Action). Do not modify the blueline tilefish recreational season. The current recreational season is May 1-August 31.

Alternative 2. Modify blueline tilefish recreational season to May 1 through July 30.

Alternative 3. Modify blueline tilefish recreational season to June 1 through August 31.

Alternative 4. Modify blueline tilefish recreational season to May 1 through June 30.

Alternative 5. Modify blueline tilefish recreational season to July 1 through

The South Atlantic Council considered modifying the blueline tilefish recreational season to optimize access to the resource. The Council discussed shortening the current four-month season (May through August) to a two-month season, also beginning in May (Alternative 4).

The majority of the recreational catch of blueline tilefish is attributed to off North Carolina, where the charter fleet targets blueline tilefish in July/August when the dolphin and tuna bite slows down. An earlier start to the blueline tilefish season would disadvantage fishermen off North Carolina and would reduce their chance of harvesting the recreational ACL. On the other hand, fishermen off Florida prefer an earlier start to the season so that it matches that for snowy grouper, since the two species co-occur in that area of the South Atlantic. The Council discussed ways to optimize access to the blueline tilefish resource for both North Carolina and Florida but did not arrive at a feasible solution for the time being. In addition, the Council reasoned that reducing the recreational season in addition to the retention limit proposed in Action 5 would overly constrain the recreational sector. The Council is hopeful that data from the SEFHIER program will prove valuable to examine future management approaches better suited to "rare-event species", such as blueline tilefish, for which there is high data uncertainty. Hence, the Council opted to retain the May-August season for blueline tilefish and selected Alternative 1 (No Action) as their preferred at their September 2022 meeting. In December 2022, the Council removed this action from further consideration in the amendment.

Appendix F. Data Analyses

South Atlantic Blueline Tilefish Recreational Closure and Bag Limit Analysis

Predicted Recreational Landings and Closure Analysis

In March of 2015 Amendment 32 closed recreational harvest of blueline tilefish from January through April then also from September through December. Therefore, the blueline tilefish recreational sector is only open for harvest from May 1 through August 31. Action 6 of Amendment 52 considers modifying the blueline tilefish recreational season by shorting the recreational season in the open months of May through August. A prediction of future landings is needed to evaluate the impact of the Action 6 alternatives. The first step is a review of recent South Atlantic blueline tilefish recreational landings. The recreational landings were provided from the Southeast Fisheries Science Center on April 28, 2022. The recreational landings are a combination of the Southeast Region Headboat Survey (Headboat) and the Marine Recreational Information Program (MRIP). MRIP has had survey changes over the last decade and, as a result, there are different MRIP datasets. This blueline tilefish recreational analysis used the MRIP Coastal Household Telephone Survey (CHTS) landings. Table 1 provides the blueline tilefish recreational landings (Headboat and MRIP CHTS landings) from 2016 through 2021 by two-month wave. Since March of 2015 Amendment 32 implemented the blueline tilefish recreational sector to only be open from May 1 through August 31, and Table 1 has this open season time period shaded in green. The summary recent recreational landings (Table 1) reveals that there is blueline tilefish harvest occurring outside of the open season. Table 2 provides the percentage of recreational landings by year from landings outside of the open season (January through April, September through December) and from inside the open season (May through August). The amount of blueline tilefish recreational landings harvested outside of the open season ranges from 1% to 38% per year (Table 2). From 2016 through 2021 about 9.8% of the blueline tilefish recreational landings occurred outside of the open season. One step to preventing the recreational landings from exceeding the ACL would be to stop the illegal blueline tilefish recreational harvest occurring during the closed season.

Table 1. South Atlantic blueline tilefish recreational landings by two-month wave from 2016 through 2021. The green shaded area is the open season when blueline tilefish harvest is legal. The landings are in pounds whole weight.

Year	Wave						
	Jan/Feb	Mar/Apr	May/Jun	July/Aug	Sep/Oct	Nov/Dec	Total
2016	10,376	2,919	15,336	156,976	391	0	185,998
2017	2,940	50,666	50,030	56,908	1,547	9,364	171,455
2018	268	4,133	34,173	71,544	346	0	110,463
2019	10,450	1,855	38,299	58,662	169	681	110,116
2020	0	1,020	46,893	340,258	0	14,631	402,802
2021	116	256	57,164	109,403	227	0	167,165

Table 2. Comparison of the South Atlantic blueline tilefish recreational landings that occur outside the open season against percentage of recreational landings from inside the open season by year. The open season is May 1 through August 31. The "2016-2021" results are from summing the recreational landings from 2016 to 2021 and calculating the percentages.

Year	% Landings Outside Open Season	% Landings from Open Season
2016	7.4%	92.6%
2017	37.6%	62.4%
2018	4.3%	95.7%
2019	11.9%	88.1%
2020	3.9%	96.1%
2021	0.4%	99.6%
2016-2021	9.8%	90.2%

Action 6 of Amendment 52 proposes changing the months the blueline tilefish recreational season is open. The recreational landings are a combination of the Headboat and the MRIP CHTS landings. The Headboat landings can be separated by month, however, the MRIP landings are collected and summarized in two-month waves. The MRIP CHTS landings were split into months assuming uniform distribution of landings for each month inside the two-month waves. The monthly landings were used to generate three potential future recreational landings scenarios: 1) three-year average of the most recent years of complete data (2019, 2020, and 2021), 2) five year average of the most recent years of complete data (2017 through 2021), and 3) the maximum landings in the last five years of complete data. The year with the maximum recreational landings in the last five years is 2020. The monthly landings are shown in Table 3 and plotted in Figure 1.

Table 3. South Atlantic blueline tilefish recreational landings by month from 2017 through 2021 for the open season. The "3-Year Average" are average monthly landings from 2019, 2020, and 2021. The "5-Year Average" are average monthly landings from 2017,2018,2019,2020, and 2021. The "Max Landings" are the landings from 2020.

Year	May	June	July	August	Total
2017	23,923	26,108	28,576	28,332	106,939
2018	16,531	17,642	36,536	35,009	105,717
2019	19,347	18,953	29,151	29,511	96,962
2020	23,811	23,082	169,839	170,421	387,152
2021	28,877	28,286	54,792	54,611	166,566
Scenario 1: 3-Year Average	24,012	23,440	84,594	84,848	216,893
Scenario 2: 5-Year Average	22,498	22,814	63,779	63,577	172,667
Scenario 3: Max Landings	23,811	23,082	169,839	170,421	387,152

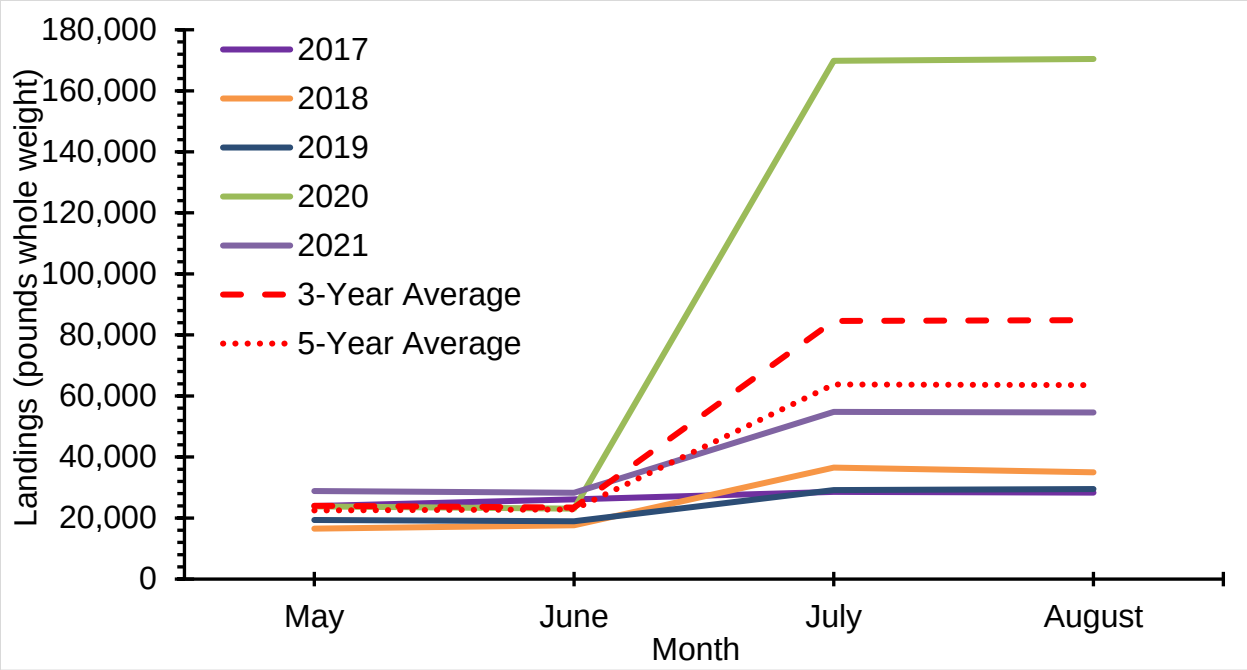

Figure 1. South Atlantic blueline tilefish recreational landings by month from 2017 through 2021, three-year average, and five-year average for the open season.

Season lengths were projected by cumulatively summing the open season recreational landings for the three landings scenarios and compare the results to the Action 6 open season alternatives. The landings were cumulatively summed by day and compared to the recreational ACL. The recreational ACL is 116,820 pounds whole weight (lbs ww). Closure dates were determined when the recreational landings reached the ACL. Table 4 provides the results of the closure analysis.

Table 4. The projected closure dates for the South Atlantic blueline tilefish recreational sector for the Amendment 52 Action 6 open season alternatives. The closure dates were generated from the three different landings scenarios of 1) three-year average of the most recent years of complete data, 2) five-year average of the most recent years of complete data, and 3) the maximum landings in the last five years of complete data. The closure dates were determined with cumulatively summing the recreational landings and comparing them to the ACL (116,820 lbs ww).

Open Season Alternatives	Closure Date		
	Scenario 1: 3-Year Average	Scenario 2: 5-Year Average	Scenario 3: Max Landings
1. May 1-August 31	26-Jul	4-Aug	13-Jul
2. May 1-July 30	26-Jul	None	13-Jul
3. June 1-August 31	4-Aug	15-Aug	18-Jul
4. May 1-June 30	None	None	None
5. July 1-August 31	12-Aug	26-Aug	22-Jul

Bag Limit Analysis

Action 5 of Amendment 52 considers reducing the blueline tilefish bag limit with the goal of reducing recreational harvest. As stated earlier, South Atlantic blueline tilefish recreational landings data are collected from two different recreational surveys: Headboat and MRIP. Headboat data were provided from the Southeast Fisheries Science Center in May of 2022 and catch per person came from using the Headboat ANGLERS and CAUGHT variables. MRIP data came from the trip and catch files from downloaded from the NOAA fisheries recreational landings website (fisheries.noaa.go) in May of 2022. The MRIP trip and catch files were merged and a trip was defined as data coming from the same party identification code (defined as the PRT_CODE variable in the data). Blueline tilefish harvest for each party was calculated by summing all blueline tilefish harvest (harvest data came from the LANDING variable) from each party (defining each party from the distinct party identification code: PRT_CODE). Both the Headboat and MRIP data were explored and appropriate fish per person per day bins were chosen.

Currently captains and crew of for-hire vessels with valid Federal South Atlantic Charter/Headboat Snapper Grouper Permits are allowed to retain bag limit quantities of all snapper grouper species during the open recreational season. Action 6 Alternative 4 of Amendment 52 removes the option of allowing the retention of blueline tilefish by captain and crew. To analyze the impact of not allowing the retention of blueline tilefish by captain and crew the number of participating anglers that contributed to the harvest were modified. The Headboat and MRIP datasets have the number of anglers, but these surveys do not collect the number of captain and crew on a trip. This was analyzed by assuming Headboat trips had two crew members (one captain and one crew), and MRIP charter trips had one crew member

(captain) and modifying the number of anglers in the fish per person calculations. MRIP private trips were not modified. The harvest per person was calculated two ways: including crew members and also without crew members. The percentage of trips by blueline tilefish harvest per person per day and by mode (Headboat, charter, and private) are shown in two figures: including the crew members in Figure 2 and excluding the crew members in Figure 3.

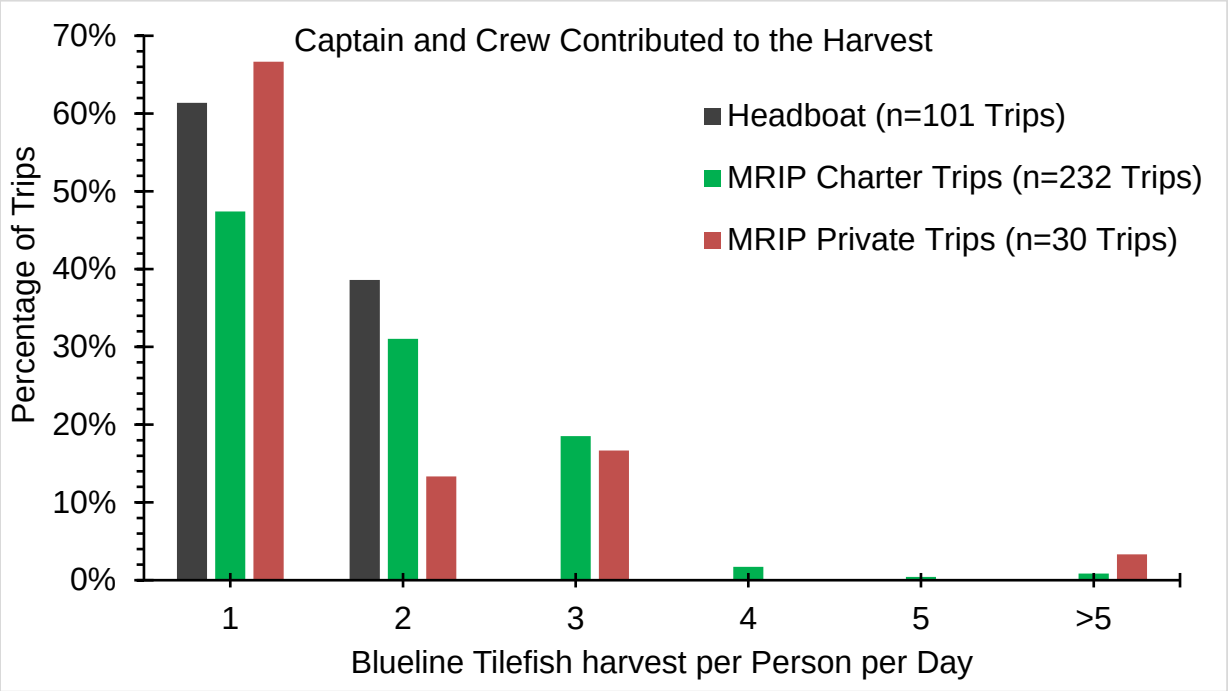

Figure 2. Percentage of trips for a range of South Atlantic blueline tilefish harvested per person by dataset and by mode. The harvest per person includes captain and crew to the contribution of the fish per person per day harvest. Data are from 2017 through 2021, and data from both Headboat and MRIP are provided.

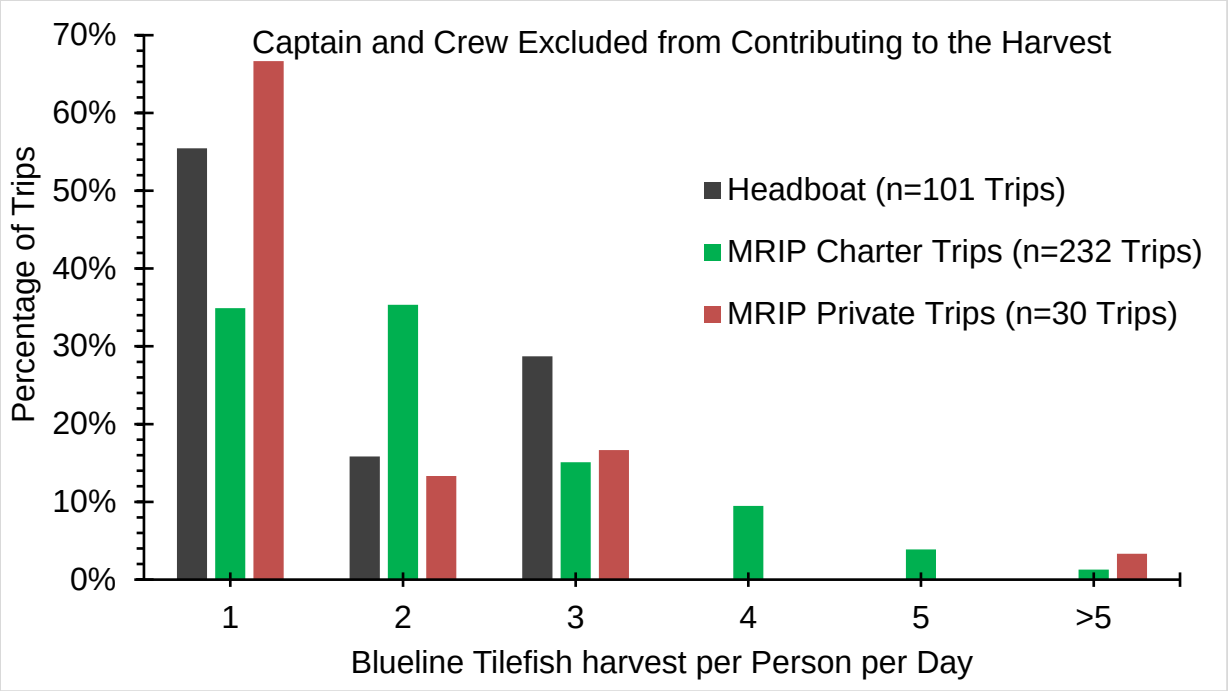

Figure 3. Percentage of trips for a range of South Atlantic blueline tilefish harvested per person by dataset and by mode. The harvest per person excludes captain and crew from contributing to the fish per person per day harvest. Data are from 2017 through 2021, and data from both Headboat and MRIP are provided.

Percent reductions for the bag limit alternatives of Action 5 were calculated by modifying trips that harvested blueline tilefish. Data from 2017 through 2021 were used and any trips that harvested less than the bag limit being considered were not modified. Trips that met or exceeded the bag limit being considered were changed to meet the Action 5 alternative bag limit under consideration. For example, if a bag limit of 2 blueline tilefish per person is being analyzed then a trip that landed 3 blueline tilefish per person would be changed to a harvest of 2 blueline tilefish per person. Trips that harvested above the current bag limit of 3 per person were not modified since these trips exceeded the current bag limit, and it was assumed in the future there will still be a similar proportion of trips that exceed the bag limit. The unmodified data were compared to the new bag limit modified data to determine percent reduction in landings. Also, Amendment 52 Action 5 has an alternative that only impacts the charter and headboat modes, so the bag limit analysis was done for each mode. Action 5 Alternative 4 assumes no retention of harvest for the captain and crew so Alternatives 1, 2, and 3 included captain and crew in the fish per person harvest calculations. However, Alterative 4 did not include captain and crew in the fish per person harvest calculations. The results of the percent reduction in landings are shown in Table 5.

Table 5. Percent reduction in South Atlantic blueline tilefish recreational landings for Amendment 52 Action 6 Alternatives. Data comes from the recreational data from Headboat and MRIP from 2017 to 2021. "NA" is listed under MRIP Private for Alternative 4 because there were no captain and crew included in the private mode calculations.

Alternative	Headboat	MRIP Charter	MRIP Private
Alternative 1: 3 Fish per Person	0.0%	0.0%	0.0%
Alternative 2: 2 Fish per Person	0.0%	11.5%	10.2%
Alternative 3: 1 Fish per Person	27.9%	38.0%	28.6%
Alternative 4: No Retention for Captain and Crew	4.3%	3.6%	NA

Since the recreational landings are a combination of Headboat, MRIP Charter, and MRIP Private landings a percent reduction was calculated for each Amendment 52 Action 5 alternative by weighting the percent reductions in Table 5 by the recreational landings for each mode. Table 6 provided the percentage of recreational landings by mode from 2017 to 2021 during the open season (May 1 through August 31). In recent years the majority (about 72%) of the South Atlantic recreational blueline tilefish landings came from MRIP charter mode (Table 6). Therefore, by weighting the percent reduction by the landing by mode the percent reductions generated from the MRIP charter mode data will have a greater impact then the Headboat and MRIP private percent reductions. Table 7 provides the percent reductions from Table 5 that were weighted by each mode's contribution to the landings.

Table 6. Percent of South Atlantic blueline tilefish recreational landings by mode during the open season from 2017 to 2021. The open season is May 1 through August 31. Percentages were based on the recreational landings in pounds whole weight.

Mode	Percentage of Landings
MRIP Charter	71.6%
MRIP Private	1.9%
Headboat	26.6%

Table 7. Adjusted percent reductions of South Atlantic blueline tilefish recreational landings. The percent reductions were adjusted by weighting the percent reductions by mode (Table 5) by the recreational landings for each mode during the open season from 2017 to 2021. Percentages were based on the recreational landings by mode in pounds whole weight.

Alternative	Adjusted Reductions
Alternative 1: 3 Fish per Person	0.0%
Alternative 2: 2 Fish per Person	8.5%
Alternative 3: 1 Fish per Person	35.1%
Alternative 4: No Retention for Captain and Crew	3.7%

Season lengths were projected by cumulatively summing the open season recreational landings that were reduced by the adjusted percent reductions (Table 7) for the three landings scenarios and compare the results to the Action 6 open season alternatives. The landings were cumulatively summed by day and compared to the recreational ACL. The recreational ACL is 116,820 pounds whole weight (lbs ww). Closure dates were determined when the recreational landings reached the ACL. Table 8 provides the results of the closure analysis.

Table 8. The projected closure dates for the South Atlantic blueline tilefish recreational sector for the Amendment 52 Action 6 open season alternatives with the impact of the Action 5 bag limit Alternatives. The closure dates were generated from the three different landings scenarios of 1) three-year average of the most recent years of complete data, 2) five-year average of the most recent years of complete data, and 3) the maximum landings in the last five years of complete data. The closure dates were determined with cumulatively summing the recreational landings and comparing them to the ACL (116,820 lbs ww).

Open Season Alternatives	Closure Date		
	Scenario 1: 3-Year Average	Scenario 2: 5-Year Average	Scenario 3: Max Landings
Alternative 1: 3 Fish per Person per Day (Status Quo)			
1. May 1-August 31	26-Jul	4-Aug	13-Jul
2. May 1-July 30	26-Jul	None	13-Jul
3. June 1-August 31	4-Aug	15-Aug	18-Jul
4. May 1-June 30	None	None	None
5. July 1-August 31	12-Aug	26-Aug	22-Jul
Alternative 2: 2 Fish per Person per Day			
1. May 1-August 31	30-Jul	10-Aug	15-Jul
2. May 1-July 30	30-Jul	None	15-Jul
3. June 1-August 31	8-Aug	20-Aug	20-Jul
4. May 1-June 30	None	None	None
5. July 1-August 31	16-Aug	None	24-Jul
Alternative 3: 1 Fish per Person per Day			
1. May 1-August 31	18-Aug	None	25-Jul

2. May 1-July 30	None	None	25-Jul
3. June 1-August 31	27-Aug	None	29-Jul
4. May 1-June 30	None	None	None
5. July 1-August 31	None	None	2-Aug
Alternative 4: No Retention for Captain and Crew			
1. May 1-August 31	28-Jul	6-Aug	14-Jul
2. May 1-July 30	28-Jul	None	14-Jul
3. June 1-August 31	5-Aug	17-Aug	18-Jul
4. May 1-June 30	None	None	None
5. July 1-August 31	14-Aug	29-Aug	23-Jul

South Atlantic Golden Tilefish Commercial Sector Season Length Analyses for Snapper-Grouper Amendment 52

The South Atlantic Fishery Management Council's Snapper-Grouper Amendment 52 (Amendment 52) is considering changes to management regulations for the golden tilefish stock. Amendment 52 is considering changes to the commercial sector's Annual Catch Limit (ACL).

The South Atlantic golden tilefish commercial sector is separated into two gear specific components with individual ACLs: 1) hook and line and 2) long line. This amendment analysis was conducted to make predictions of the commercial landings for both of these gear components.

Hook and Line Component

Commercial landings data for South Atlantic golden tilefish were obtained from the Southeast Fisheries Science Center (SEFSC) on May 13, 2022. All of the South Atlantic golden tilefish commercial landings are in pounds gutted weight (lbs gw). Future commercial landings were determined from reviewing recent commercial landings data; however, the recent commercial landings data are limited due to numerous closures of the hook and line component. Table 1 provides the past closure dates for the golden tilefish hook and line component from 2015 to 2021. A three-year average of landings by month was assumed to reflect future landings. Due to the numerous closures of the hook and line component different years were used to determine the average monthly landings. Average monthly landings for January through April came from 2020, 2021, and 2022. Average monthly landings for May came from 2019, 2020, and 2021. Average monthly landings for June came from 2018, 2019, and 2020. Average monthly landings for July came from 2018, however, the 2019 and 2020 landings were not open full the full month of July. The July landings for 2019 and 2020 came from determining the daily catch rate for the open days in July then applying the catch rate to the full 31 days in July. No predicted landings were done from August through December because this time period was frequently closed due to the commercial ACL being met in the past 10 years. Figure 1 shows the landings used in this analysis, and Table 2 provides the predicted landings for each month.

Table 1. Past closure dates for the South Atlantic golden tilefish hook and line component from 2015 to 2021. The commercial hook and line component was closed because the hook and line ACL was met.

Closure Date
December 8, 2015
None
November 29, 2017
August 14, 2018
July 23, 2019
July 23, 2020
June 1, 2021

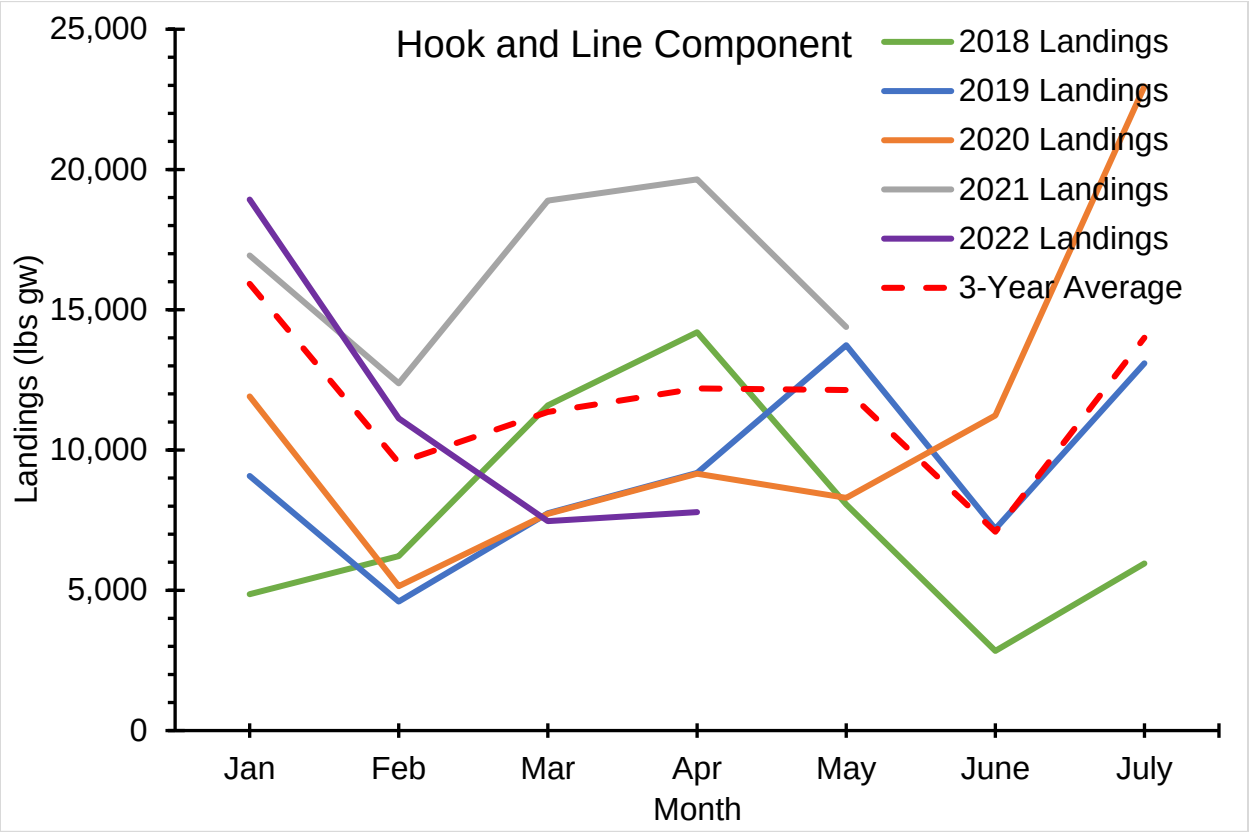

Figure 1. South Atlantic golden tilefish commercial hook and line component landings by month from 2018 to 2022, and a three-year average of available monthly landings. The figure only displays the landings from months when the hook-and-line commercial component was open in recent years. All the landings are in pounds gutted weight.

Table 2. Predicted South Atlantic golden tilefish hook and line component commercial landings by month. The landings are in pounds gutted weight.

Month	Landings
January	15,925
February	9,552
March	11,359
April	12,197
May	12,139
June	7,087
July	14,002
Total	82,262

Amendment 52 is considering a range of commercial Annual Catch Limits (ACLs) for the hook and line component. Season lengths were projected by cumulatively summing the hook and line

component 3-year average landings and compare the results to the ACLs show in Table 3. Alternative 2 has a different ACL for each year from 2023 through 2026 and all four of them were included in Table 3. Closure dates were determined if the landings reached the ACL. Table 3 provides the predicted closure dates and none of the commercial hook and line ACLs were being met with the predicted landings. However, the 3-year average landings (which total 68,259 lbs gw) were only available for the time period of January 1 through July 31. Therefore, the analysis shows that no closures are expected with any of the ACLs for the time period of January 1 through July 31. However, closure dates from August 1st to December 31 were not addressed in this analysis, due to available landings data, and are a possibility.

Table 3. The projected closure dates for the golden tilefish commercial hook and line component for a range of commercial ACLs in Action 2 of Amendment 52. The closure dates came from comparing the 3-year average landings against the ACLs. However, the 3-year average landings are only available from January 1 through June 30. The results determined no closure dates are expected for these ACLs before August 1st.

Action 2	ACL	Closure Date
Alternative 1	82,935	No Closure Projected before August 1st
Alternative 2 2023	105,161	No Closure Projected before August 1st
Alternative 2 2024	108,304	No Closure Projected before August 1st
Alternative 2 2025	110,722	No Closure Projected before August 1st
Alternative 2 2026+	112,656	No Closure Projected before August 1st

Longline Component

As stated earlier, commercial landings data for South Atlantic golden tilefish were obtained from the SEFSC on May 13, 2022. All of the South Atlantic golden tilefish commercial landings are in pounds gutted weight (lbs gw). Future commercial landings were determined from reviewing recent commercial landings data, however the recent commercial landings data are limited due to numerous closures of the longline component. Table 4 provides the past closure dates for the golden tilefish longline component from 2015 to 2022. A three-year average of longline component landings by month were assumed to reflect future landings. Due to the closures different years were used to determine the average monthly landings. Average monthly landings for January came from 2020, 2021, and 2022. Average monthly landings for February came from 2018, 2019, and 2022. Figure 2 shows the longline component landings used in this analysis, and Table 5 provides the predicted landings for each month. The numerous closures in Table 4 show that the longline component experiences "derby-like" conditions with high landings per day until the ACL is met. Therefore, it was assumed the catch rates are high until the ACL is met. Due to the limited longline component commercial landings data from March through December a daily catch rate was determined from the January and February landings. The daily catch rate generated from the 3-year average of the January and February landings (Table 5) is 3,976 lbs gw a day. This daily catch rate was used in this analysis for the March through December time period, and then projected forward until the ACL is met.

Table 4. Past closure dates for the South Atlantic golden tilefish longline component from 2015 to 2022. The commercial longline component was closed because the longline ACL was met.

Closure Date
February 19, 2015
None
May 9, 2017
March 25, 2018
March 14, 2019
February 18, 2020
February 10, 2021
March 16, 2022

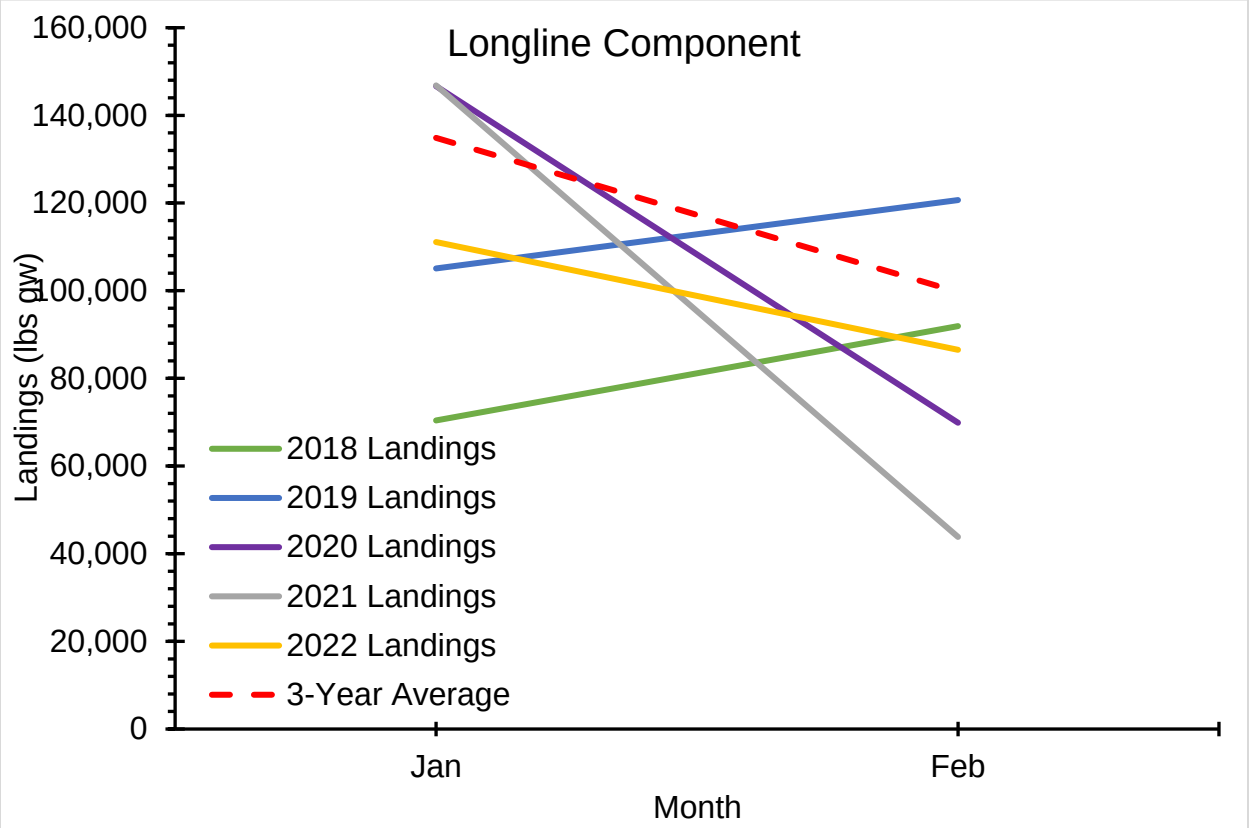

Figure 2. South Atlantic golden tilefish commercial longline component landings by month from 2018 to 2022 and a three-year average of available monthly landings. The landings are in pounds gutted weight.

Table 5. Predicted South Atlantic golden tilefish longline component commercial landings by month. The landings are in pounds gutted weight.

Month	Landings
January	134,866
February	99,701
Total	234,567

Amendment 52 is considering a range of commercial ACLs for the longline component. Season lengths were projected by cumulatively summing the commercial 3-year average landings for January and February and then applying the daily catch rate (3,976 lbs gw per day) from March through December. Closure dates were determined when the landings reached the ACL. Table 6 provides the predicted closure dates. The analysis shows that all of the closure dates are in the month of March.

Table 6. The projected closure dates for the golden tilefish commercial longline component for a range of commercial ACLs in Amendment 52. These closure dates assume the golden tilefish commercial longline component opens on January 1st.

Year	ACL	Closure Date
2021	248,805	March-4
2022	303,155	March-18
2023	315,484	March-21
2024	324,912	March-23
2025	332,165	March-25
2026	337,967	March-27

Amendment 52 also has an Action to modify the start of the fishing season for the golden tilefish commercial longline component. Action 3 modifies the fishing season from starting on January 1 to January 15, January 22, or February 1st. This was analyzed by applying the same predicted landings method from above but starting the commercial sector on the different Action 3 start dates. Table 7 provides the predicted closure dates for the longline component ACLs for the four different start date options.

Table 7. The projected closure dates for the golden tilefish commercial longline component for a range of commercial ACLs and a range of opening commercial sector dates. These closure dates assume the golden tilefish commercial longline component opens on either January 1st, January 15, January 22, or February 1st.

	Start Date			
ACL	January 1	January 15	January 22	February 1
248,805	4-Mar	19-Mar	27-Mar	7-Apr
303,155	18-Mar	2-Apr	10-Apr	21-Apr
315,484	21-Mar	5-Apr	13-Apr	24-Apr
324,912	23-Mar	8-Apr	15-Apr	26-Apr
332,165	25-Mar	9-Apr	17-Apr	28-Apr
337,967	27-Mar	11-Apr	18-Apr	29-Apr

Appendix G. Bycatch Practicability Analysis

Background

Amendment 52 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) would modify management of South Atlantic golden tilefish and blueline tilefish. Actions include revising annual catch limits (ACL), sector allocations, recreational accountability measures (AM), and management measures for the commercial and recreational sectors. Development of Amendment 52 is a response to the most recent stock assessment for South Atlantic golden tilefish (SEDAR 66 2021) as well as a need for continuing management for blueline tilefish. National Marine Fisheries Service (NMFS) outlines at 50 CFR §600.350(d) (3) (i) ten factors that should be considered in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable.

1. Population effects for the bycatch species.
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
4. Effects on marine mammals and birds.
5. Changes in fishing, processing, disposal, and marketing costs.
6. Changes in fishing practices and behavior of fishermen.
7. Changes in research, administration, and enforcement costs and management effectiveness.
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources.
9. Changes in the distribution of benefits and costs.
10. Social effects.

Bycatch Reporting Requirements and Methodology

For the commercial sector, the vessel reporting requirement is achieved through logbooks. Fishermen with Commercial South Atlantic Unlimited Snapper Grouper or 225-lb Trip Limit Snapper Grouper Permits, who are selected by the Science and Research Director, are required to maintain and submit fishing records through the National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) Commercial Logbook. Discard data are collected using the Supplemental Discard Logbook that is sent to a 20% stratified random sample of the active commercial permit holders in the fishery. In addition to the number of self-reported discards per trip and gear, the SEFSC Supplemental Discard Logbook attempts to quantify the reason why discarding occurs using four codes.[10] Fishermen can specify multiple reasons for a species discarded on the same trip and gear.

[10] More information on the discard logbook is available here https://www.fisheries.noaa.gov/about/southeast-fisheries-science-center.

1) Regulation – Not legal size: Animals that would have been sold, however local or federal size limits forbid it.
2) Regulation – Out of season: Animals that would have been sold, however the local or federal fishing season is closed.
3) Regulation – Other: Animals that would have been sold, however a local or federal regulation other than size or season, forbids it (Other than size or season; i.e., protected species, not properly permitted).
4) Market conditions: Animals that have no market value (rotten, damaged).

For the recreational sector, estimates of discards from private recreational and charter fishermen are collected through the Marine Recreational Information Program (MRIP)/Fishing Effort Survey (FES). MRIP/FES replaced the Marine Recreational Fishery Statistics Survey. The Southeast Region Headboat Survey, which includes limited headboat observer sampling, collects discard information from headboat vessels. In addition, in January 2021, NMFS implemented the Southeast For-Hire Electronic Reporting Program, which implemented mandatory electronic reporting of for-hire vessel catch data for over 3,000 vessels in the Gulf of Mexico and South Atlantic. The purpose of this program is to provide more accurate and reliable fisheries information about for-hire catch, effort, and discards.

1. Population Effects for the Bycatch Species

1.1 Amount and Type of Bycatch and Discards

Commercial Sector

The South Atlantic snapper grouper fishery is characterized by moderately high discards, especially of black sea bass, vermilion snapper, and red porgy (Table G.1.1.1 and Figure G.1.1.1). Most discards originate from handline/electric rig and trap gear, with some discards from trolling gear and relatively low discards from longline and diving gear. Trap/pot gear show high levels of discarded black sea bass, which is the targeted species of this gear type, but low levels of bycatch for other species. It is possible that trip-level reporting leads to the relatively high discard estimates from trolling gear; these may be sets using another gear type (i.e., handline/electric rig) on a trip declared as a trolling gear trip. The ratio of commercial landings to commercial discards is not compared because commercial landings are reported in pounds and discards are reported in numbers of fish.

Table G.1.1.1. Top ten species with mean estimated South Atlantic commercial discards (number of fish) during snapper grouper trips (defined as trips with >50% of landings from snapper grouper stocks), sorted from largest to smallest, by gear, for the 2015-2019 period.

Stock	Diver	Stock	Handline / Electric	Stock	Longline	Stock	Trap / Pot	Stock	Troll
Gray Snapper	133	Vermilion Snapper	23,324	Red Grouper	176	Black Sea Bass	25,581	Black Sea Bass	1,114
Hogfish	57	Red Porgy	20,337	Snowy Grouper	157	Trigger-fishes	1,507	Grunts	66
Black Grouper	28	Red Snapper	16,805	**Blueline Tilefish**	**32**	Vermilion Snapper	662	King Mackerel	34
Ocean Triggerfish	10	Black Sea Bass	7,797	Greater Amberjack	26	Gray Triggerfish	407	White Grunt	24
Mutton Snapper	8	Yellowtail Snapper	7,278	Red Snapper	20	White Grunt	207	Gag	19
Red Grouper	5	Gray Triggerfish	3,966	Red Porgy	18	Grunts	161	Dolphin	16
Yellow Jack	2	Trigger-fishes	2,652	Trigger-fishes	5	Red Porgy	94	Black Grouper	13
Yellowtail Snapper	2	Almaco Jack	2,004	**Golden Tilefish**	**2**	Red Snapper	65	Rock Sea Bass	6
Groupers	1	Blue Runner	1,956	Amberjacks	1	Gag	23	Trigger-fishes	5
King Mackerel	1	Greater Amberjack	1,510	Blackfin Snapper	1	Red Grouper	6	Greater Amberjack	3

Source: SEFSC Coastal Logbook (accessed May 2020) and Discard Logbook (accessed May 2020). Note: Commercial gray triggerfish includes the "triggerfishes, unclassified" category.

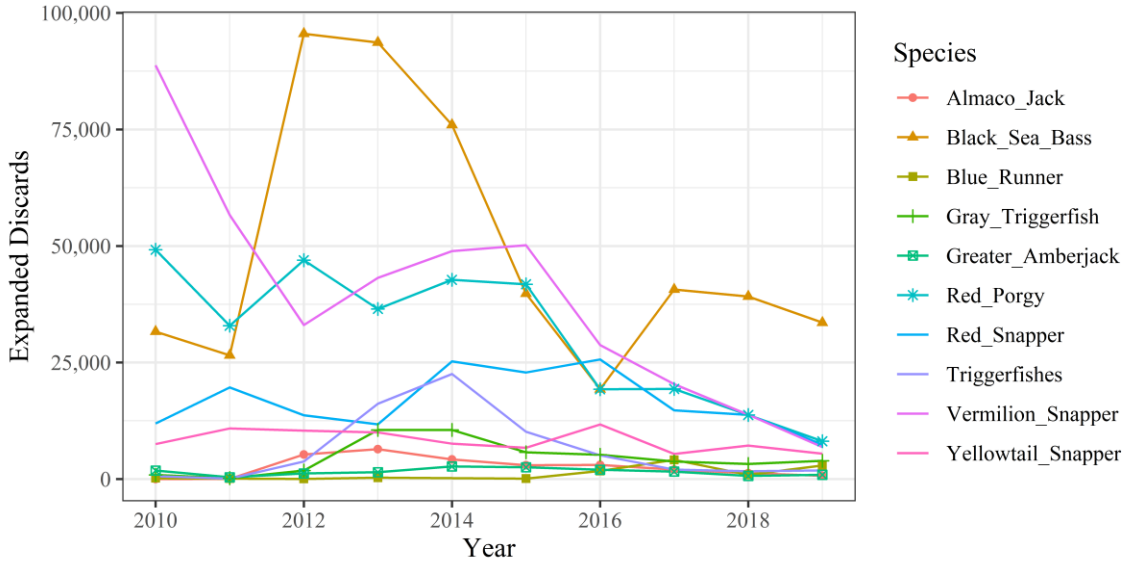

Figure G.1.1.1. Expanded self-reported commercial discards (numbers of fish) for the top ten species discarded during snapper grouper trips (defined as trips with >50% of landings from snapper grouper stocks) from 2010-2019 for all gear types.
Source: SEFSC Coastal Logbook (accessed May 2020) and Discard Logbook (accessed May 2020).

Recreational Sector

From 2015 through 2019, the most discarded species on trips capturing a snapper grouper species was black sea bass for all three modes (Table G.1.1.3). Red snapper, tomtate, yellowtail snapper, and grunt species were in the top ten for all modes. Since blueline and golden tilefish are rarely caught in the recreational sector, their discards are relatively low.

Table G.1.1.3. From 2015 through 2019, the top ten species with discards reported on trips capturing a snapper grouper species by recreational mode. Species are sorted by number of total discards for each mode from 2015-2019.

Rank	HEADBOAT		CHARTER		PRIVATE	
	Species	Discards (N)	Species	Discards (N)	Species	Discards (N)
1	Black Sea Bass	2,362,007	Black Sea Bass	1,464,909	Black Sea Bass	40,129,026
2	Vermilion Snapper	461,562	Red Snapper	601,973	Gray Snapper	21,989,786
3	Tomtate	327,379	Yellowtail Snapper	529,770	Pinfish	10,632,466
4	White Grunt	294,025	Tomtate	472,005	Red Snapper	9,907,110
5	Yellowtail Snapper	278,821	Vermilion Snapper	416,724	Yellowtail Snapper	6,926,752
6	Red Snapper	258,627	Gray Snapper	275,171	Tomtate	6,619,263
7	Gray Triggerfish	183,024	Mutton Snapper	149,472	Hardhead Catfish	5,036,604
8	Blue Runner	121,476	Blue Runner	133,872	Grunt (family)	4,961,629
9	Grunts (unidentified)	99,496	Grunt (family)	128,757	Atlantic Croaker	4,675,997
10	Atlantic Sharpnose Shark	90,504	Greater Amberjack	112,017	Gray Triggerfish	3,828,858

Sources: MRIP FES data from SEFSC Recreational ACL Dataset (September 2020); Headboat data from SEFSC Headboat Logbook CRNF files (expanded; July 2020).

1.2 Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Expected Impacts on Bycatch for the Subject Amendment Actions

Action 1 would revise the golden tilefish overfishing limit, acceptable biological catch, total annual catch limit, and annual optimum yield. Action 2 would revise the overfishing limit (OFL) acceptable biological catch (ABC), total annual catch limit (ACL), and annual optimum yield (OY) for golden tilefish. The Council selected Alternative 2 as the preferred alternative, which proposes an ABC, total ACL, and annual OY that are equal to the ABC level recommended by the Council's SSC. The proposed ABCs, ACLs, and OYs would lead to a slight increase in harvest of golden tilefish. Since the magnitude of the proposed increase in the ACL is small, substantial changes in fishing effort or behavior are not expected as a result of this action. Therefore, no changes to the bycatch are discards are expected under Action 1.

Action 2 would revise the sector allocations for golden tilefish and sector ACLs to reflect the updated ABC level recommended by the Council's SSC and chosen by the Council. The

Council selected Alternative 2 as the preferred alternative, which proposes an allocation of 96.70% of the total annual catch limit for golden tilefish to the commercial sector and 3.30% to the recreational sector. This allocation scenario slightly increases the recreational sector allocation from the status quo to account for a difference between FES and CHTS landings.

With the small increase in recreational allocation, it is possible that Preferred Alternative 2 could slightly increase overall discard mortality of golden tilefish. However, the change in allocation is very small and the proposed allocations are not expected to result in changes to fishing activity or behavior in the snapper grouper fishery; thus, no changes in bycatch of co-occurring species are expected as a result of Action 2.

Action 3 would modify commercial fishing year for golden tilefish. The Council selected Alternative 3, Sub-alternative 3a as the preferred alternatives, which proposes a start date for the commercial longline sector to be January 15. This two week adjustment in the start date would result in a gap between the hook and line and longline sectors. The preferred alternative would shift the longline fishing year slightly but would not be expected to change bycatch or discards of co-occurring species.

Action 4 would modify the recreational accountability measure for golden tilefish. The Council has selected Preferred Alternative 3 in which NMFS would annually announce the length of the recreational fishing season based on catch rates from the previous season. While the end date for golden tilefish may shift each year, announcing at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance. However, if an unforeseen increase in recreational effort occurred rendering the season length projections inaccurate, this alternative could result in negative biological impacts and increased discards as it would not correct for an overage if it occurred. Because golden tilefish are incidentally harvested while recreational fishers target other snapper grouper species, no substantial changes to fishing activity or behavior are expected; thus, no changes in bycatch are expected for Action 4.

Action 5 would modify the recreational bag limits for blueline tilefish. The Council selected Alternative 2 and Alternative 4 as preferred. Alternative 2 would reduce the recreational bag limit to two fish per person and Alternative 4 would eliminate the retention of blueline tilefish by captain and crew. A reduction in the recreational bag limit could lead to an increase in discards due to high grading. Not allowing captain and crew to catch and keep a bag limit may reduce discards slightly.

Action 6 would modify the recreational accountability measure for blueline tilefish. The Council has selected Preferred Alternative 3 in which NMFS would annually announce the length of the recreational fishing season based on catch rates from the previous season. While the end date for blueline tilefish may shift each year, announcing at the beginning of the season would allow private anglers and for-hire businesses to plan their activities around the closure in advance. However, if an unforeseen increase in recreational effort occurred rendering the season length projections inaccurate, this alternative could result in negative biological impacts and increased discards as it would not correct for an overage if it occurred. Because blueline tilefish are

incidentally harvested while recreational fishers target other snapper grouper species, no substantial changes to fishing activity or behavior are expected; thus, no changes in bycatch are expected for Action 6.

Past, Current, and Future Actions to Prevent Bycatch and Improve Monitoring of Harvest, Discards, and Discard Mortality

Actions taken in the Snapper Grouper FMP related to management of golden tilefish and blueline tilefish, including actions that could reduce bycatch and bycatch mortality of blueline and golden tilefish and other snapper grouper species, are outlined in Section 1.7 of this amendment. Other past, current, and future actions that could prevent bycatch and/or improve monitoring of harvest, discards, and discard mortality are included below.

Amendment 16 to the Snapper Grouper FMP (SAFMC 2009) required the use of dehooking devices, which could help reduce bycatch mortality of snapper grouper species. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly without removing the fish from the water. If a fish does need to be removed from the water, de-hookers reduce handling time thus increasing survival (Cooke et al. 2001).

Amendment 17A to the Snapper Grouper FMP (SAFMC 2010) required circle hooks for snapper grouper species north of 28 degrees latitude, which has likely reduced bycatch mortality of some snapper grouper species.

The Comprehensive Ecosystem-Based Amendment 2 (SAFMC 2011a) included actions that modified management of special management zones (SMZ) off South Carolina; revised sea turtle release gear requirements for the snapper grouper fishery and designated new EFH and EFH-HAPCs in the South Atlantic. CE-BA 2 also included an action that limited harvest and possession of snapper grouper and coastal migratory pelagic (CMP) species to the bag limit in SMZs off South Carolina. This action likely reduced bycatch around SMZs by restricting commercial harvest in the area but has probably had limited effect on the magnitude of overall bycatch of snapper grouper species in the South Atlantic.

The Comprehensive ACL Amendment (SAFMC 2011b) implemented ACLs and AMs for species not undergoing overfishing in the FMPs for snapper grouper, dolphin and wahoo, golden crab, and *Sargassum*, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. ACLs and AMs have likely reduced bycatch of target species as well as incidentally caught species.

The Council's Headboat Electronic Reporting Amendment (SAFMC 2013) changed the reporting frequency by headboats from monthly to weekly and required that reports be submitted electronically. The action provided more timely information on landings and discards. Improved information on landings would help ensure ACLs are not exceeded. Furthermore, more timely and accurate information provides a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, and lead to better decisions regarding additional measures to reduce bycatch.

Amendment 36 to the Snapper Grouper FMP (SAFMC 2016b) established SMZs and is expected to reduce bycatch of many snapper grouper species, especially speckled hind and Warsaw grouper.

The Council developed a joint For-Hire Reporting Amendment (SAFMC 2017) with the Gulf of Mexico Fishery Management Council that requires all federally permitted charter vessels report landings information weekly to the SEFSC electronically. Additionally, the Councils will also begin development of a joint amendment to require that all federally permitted commercial fishing vessels in the southeast also report their logbook landings information electronically. These actions helped to improve estimates on the composition and magnitude of catch and bycatch of species affected by this amendment, as well as all other federally managed species in the southeast region.

Amendment 42 to the Snapper Grouper FMP (SAFMC 2019) modified sea turtle release gear regulations for the commercial snapper grouper fishery and modified the snapper grouper framework so the Council may more quickly modify sea turtle and other protected resources release gear and handling requirements in the future.

Regulatory Amendment 29 to the Snapper Grouper FMP (SAFMC 2020) required descending devices be on board all commercial, for-hire, and private recreational vessels while fishing for or possessing snapper grouper species; the use of non-offset, non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural baits north of 28° N latitude; and all hooks be non-stainless steel when fishing for snapper grouper species with hook-and-line gear and natural baits throughout South Atlantic federal waters. The Council has also implemented an extensive outreach and public education program, which along with its citizen science initiative is promoting best fishing practices for all the species it manages.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational AMs Amendment) could include actions to revise recreational AMs to allow more flexibility in managing recreational fisheries is on hold.

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit and reporting. This amendment is currently being developed.

These past, current, and potential future actions will help to improve estimates on the composition and magnitude of catch and bycatch of federally managed species in the southeast region and minimize discard mortality. Additional information on fishery related actions from the past, present, and future considerations can be found in Chapter 6 (Cumulative Effects) of the amendment.

2. Ecological Effects Due to Changes in Bycatch

Release mortality rates for the snapper grouper fishery are widely variable species to species and sector to sector and are dependent on fishing mode (Table G.2.2.1). However, discard mortality estimates for snapper grouper species are variable and highly uncertain. Generally, release mortality is highly correlated with depth for snapper grouper species, with highest mortality

among fish captured in deep water (Campbell et al. 2014; Pulver 2017; Rudershausen et al. 2014; Stephen and Harris 2010; Wilson and Burns 1996). Blueline tilefish are a deep-water species which results in a high discard mortality. Discards were considered so low for golden tilefish that the most recent assessment (SEDAR 66, 2021) did not include or model golden tilefish discards.

Table G.2.2.1. Release mortality rates of select recreationally and commercially important snapper grouper species from recent stock assessments.

Species	Fishery	Release mortality	Data Source
Blueline Tilefish	**Commercial**	**95%**	**SEDAR 50 (2017)**
Blueline Tilefish	**Recreational**	**82%**	**SEDAR 50 (2017)**
Black Sea Bass	Recreational	13.7%	SEDAR 56 (2018)
Black Sea Bass	Commercial Trap/Pot (2007- present)	6.8%	SEDAR 56 (2018)
Black Sea Bass	Commercial Vertical Line	19%	SEDAR 56 (2018)
Gag	Recreational	25%	SEDAR 10 Update (2014)
Gag	Commercial	40%	SEDAR 10 Update (2014)
Gray Triggerfish	Recreational & Commercial	12.5%	SEDAR 41 (2016)
Greater Amberjack	Recreational & Commercial	20%	SEDAR 59 (2020)
Red Porgy	Recreational	41%	SEDAR 60 (2020)
Red Porgy	Commercial	53%	SEDAR 60 (2020)
Red Snapper	Recreational - Private	23%	SEDAR 73 (2021)
Red Snapper	Recreational - Charter & Headboat	22%	SEDAR 73 (2021)
Red Snapper	Commercial	32%	SEDAR 73 (2021)
Vermilion snapper	Recreational	38%	SEDAR 55 (2018)
Vermilion snapper	Commercial	41%	SEDAR 55 (2018)
Yellowtail snapper	Recreational	15%	SEDAR 64 (2020)
Yellowtail snapper	Commercial	12.5%	SEDAR 64 (2020)

It is likely that most mortality is a function of hooking and handling of the fish when the hook is being removed. Regulatory Amendment 29 to the Snapper Grouper FMP (SAFMC 2020) required descending devices be on board all commercial, for-hire, and private recreational vessels while fishing for or possessing snapper grouper species; the use of non-offset, non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural baits north of 28° N latitude; and all hooks be non-stainless steel when fishing for snapper grouper species with hook-and-line gear and natural baits throughout South Atlantic federal waters. The Council also implemented an extensive outreach and public education program, which along with its citizen science initiative is promoting best fishing practices for all the species it manages. The goal of these regulations is to reduce discard mortality for snapper grouper species.

The actions contained in this amendment are not expected to result in substantial changes to bycatch in the snapper grouper fishery; thus, ecological effects due to changes in bycatch in this fishery are expected to be negligible. For more details on ecological effects, see Chapters 3 and 4 of this amendment.

3. Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Amendment 52 is not expected to result in changes in bycatch of other fish species. The snapper grouper fishery is characterized by a high number of discards for all species and sectors (Table G.1.1.1 and G.1.1.3). Both sectors likely target a wide range of species, including dolphin wahoo, snapper grouper, and coastal migratory pelagic species during each trip. This results in a varied amount and type of bycatch of species. However, the actions in this amendment are not expected to alter overall fishing activity or behavior in the fishery; thus, no changes in bycatch of other species are expected.

4. Effects on Marine Mammals and Birds

Marine Mammals

Under Section 118 of the Marine Mammal Protection Act (MMPA), the NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The longline and hook-and-line gear components of the snapper grouper fishery are determined to have remote likelihood of / no known interactions with marine mammals (Category III, LOF, 50 CFR Part 229; March 21 2023).

Sea Birds

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished US Fish and Wildlife Service data). Interaction with fisheries has not been reported as a concern for either of these species. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the snapper grouper fishery. Thus, the fishery is not likely to adversely affect the Bermuda petrel and the roseate tern.

5. Changes in Fishing, Processing, Disposal, and Marketing Costs

The actions proposed in Amendment 52 are not expected to substantially alter fishing practices, processing, disposal, or marketing costs in the near or short term in relation to bycatch or discards in the snapper grouper fishery. As shown in the analyses in Chapter 4 of the preferred alternatives for actions potentially affecting catch, costs are not expected to change. Similarly in the long term, it is more likely that current fishing, processing, disposal, and marketing costs would be maintained at or near their status quo levels, thus leading to no anticipated changes.

6. Changes in Fishing Practices and Behavior of Fishermen

As discussed above, the actions proposed in Amendment 52 are not expected to change fishing practices or fishing behavior and are likely to have little effect on the overall magnitude of discards. Also, any changes to fishing behavior and subsequent changes in the level of discards or discard mortality that may result from the actions in the amendment are expected to be small and would not jeopardize the sustainability of any target or non-target species.

7. Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research

Research and monitoring is ongoing to understand the effectiveness of implemented management measures and their effect on bycatch. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Further, a joint Commercial Logbook Reporting Amendment is being developed by the Council and the Gulf of Mexico Fishery Management Council, which would require electronic reporting of landings information by federally permitted commercial vessels to increase the timeliness and accuracy of landings and discard data. The For-Hire Reporting Amendment could improve timeliness and quality of data for the charter and headboat components of the recreational sector. NOAA Fisheries also increased observer coverage for all gears types in the snapper grouper fishery on July 1, 2022.

Cooperative research projects between science and industry are available each year in the form of grants from Marine Fisheries Initiative, Saltonstall-Kennedy program, and the Cooperative Research Prom. These programs can provide research funds for observer programs, as well as gear testing and testing of electronic devices. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Administration

The proposed actions are not expected to significantly impact administrative costs.

Enforcement

The proposed actions are not expected to significantly impact enforcement costs.

8. Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Changes in economic, social, or cultural values are discussed in Chapter 4. None of the actions and alternatives in Amendment 52 are likely to change the current level of bycatch of target or non-target species in the South Atlantic and thus are unlikely to change the social, economic, or cultural value of fishing activities and non-consumptive uses of the snapper grouper fishery.

9. Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from the proposed actions in Amendment 52 are discussed in the economic and social effects analysis in Chapter 4. These effects are discussed in relation to the baseline economic and social conditions of the fishery and fishing communities outlined in Chapter 3 of the document. Additionally, the Regulatory Impact Review (Appendix B) and Regulatory Flexibility Act Analysis (Appendix C) provide additional information on changes in the distribution of benefits and costs. Overall, almost no such alterations would be caused by changes to bycatch resulting from this amendment.

10. Social Effects

The baseline social environment and social effects of the proposed actions are described in Chapters 3 and 4 of Amendment 52, respectively. In general, fishermen become frustrated as waste of the resource due to regulatory bycatch of target and non-target species increases. This often results in a distrust of science in that regulations are intended to protect stocks and rebuild overfished stocks by reducing such bycatch. However, none of the actions and alternatives in Amendment 52 are likely to change the current level of bycatch of target or non-target species in the South Atlantic and thus are unlikely to result in the negative social effects described.

11. Conclusion

This BPA evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR Section 600.350(d)(3)(i). In summary, the proposed actions in Amendment 52 are not likely to significantly contribute or detract from the current level of bycatch in the snapper grouper fishery. The Council, NMFS, and the SEFSC have implemented and plan to implement numerous management measures and reporting requirements that have improved or are likely to improve monitoring efforts of discards and discard mortality.

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Appendix H. Fishery Impact Statement

The Magnuson-Stevens Act requires a Fishery Impact Statement (FIS) be prepared for all amendments to fishery management plans (FMP). The FIS contains an assessment of the expected and potential biological, economic, and social effects of the conservation and management measures on: 1) fishery participants and their communities; 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and 3) the safety of human life at sea. Detailed discussion of the expected effects for all proposed changes is provided in Chapters 1 and 2. The FIS provides a summary of these effects.

The actions in Amendment 52 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) would modify management of South Atlantic golden tilefish and blueline tilefish. For golden tilefish, actions include revising the acceptable biological catch (ABC), total annual catch limit (ACL), annual optimum yield (OY), sector allocations, sector ACLs, recreational accountability measures (AM), and management measures for the commercial sector. For blueline tilefish, actions include revising recreational bag limits, and recreational accountability measures.

- **Action 1: Revise the golden tilefish acceptable biological catch, total annual catch limit, and annual optimum yield.**
    - **Preferred Alternative 2.** Revise the acceptable biological catch and set it equal to the most recent **recommendation** from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for golden tilefish and set them equal to the recommended acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

- **Action 2: Revise sector allocations and sector annual catch limits for golden tilefish**
    - **Preferred Alternative 2.** Allocate 96.70% of the revised total annual catch limit for golden tilefish to the commercial sector and 3.30% of the revised total annual catch limit for golden tilefish to the recreational sector. Within the commercial sector 25% is allocated to the hook and line (HL) component and 75% to the longline (LL) component.

- **Action 3. Modify the fishing season for the commercial golden tilefish hook and line and longline components.**
    - **Preferred Alternative 3. Modify the fishing season for the commercial longline component.**
        - **Preferred Sub-Alternative 3a.** Modify the fishing season to start January 15.
        - **Sub-Alternative 3b.** Modify the fishing season to start January 22.
        - **Sub-Alternative 3c.** Modify the fishing season to start February 1.

- **Action 4. Modify recreational accountability measures for golden tilefish.**
    - **Preferred Alternative 3.** Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on January 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

- **Action 5. Modify blueline tilefish recreational bag limit.**

    - **Preferred Alternative 2.** Reduce recreational blueline tilefish bag limit to 2 fish per person per day.

    - **Preferred Alternative 4.** Do not allow retention of blueline tilefish by captain and crew.

- **Action 6. Modify recreational accountability measures for blueline tilefish.**
    - **Preferred Alternative 3.** Remove the current recreational accountability measure that closes the recreational sector in-season. The National Marine Fisheries Service will annually announce the length of the recreational fishing season based on catch rates from the previous season. The fishing season will start on May 1 and end on the date National Marine Fisheries Service projects the recreational annual catch limit will be met.

Assessment of Biological Effects

Revision of the ACL and OY under Action 1 would result in the least biological benefit to the golden tilefish as there would be no buffer between the ABCs and the total ACLs. Though the alternative selected under this action would allow the greatest amount of harvest of the action alternatives considered, it is equal to the SSC's ABC recommendation, is considered the best scientific information available and represents a catch level that does not result in overfishing.

Allocation specifications between recreational and commercial golden tilefish fishermen will remain similar to the status quo and are constrained by the total ACL specified by Action 1 and will not result in additional biological impacts.

Action 3 adjusts the fishing year for the longline sector to start two weeks later. This will not affect the way the fishery is prosecuted and would have minimal biological impacts.

Action 4 addresses AMs for golden tilefish. Biological benefits to golden tilefish would be expected to be greater for the alternative that provides the most timely and realistic option chosen to trigger and implement an AM. This action is likely to prevent in-season overages of the recreational ACL since NMFS would be predicting the length of the season ahead of time. However, this alternative would not correct for an overage if it were to occur due to an unforeseen increase in recreational effort.

Modifying the bag limit by reducing to two blueline tilefish per person per day and prohibiting retention of the bag limit by captain and crew would result in an overall 12.2% reduction in harvest for the recreational sector; which would provide biological benefits to the stock.

Action 6 addresses AMs for blueline tilefish. Biological benefits to blueline tilefish would be expected to be greater for the alternative that provides the most timely and realistic option chosen to trigger and implement an AM. This action is likely to prevent in-season overages of the recreational ACL since NMFS would be predicting the length of the season ahead of time. However, this alternative would not correct for an overage if it were to occur due to an unforeseen increase in recreational effort.

Assessment of Economic Effects

In general, total ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measure. In the case of golden tilefish, the revised total ACL being considered in Action 1 would be constraining on harvest and is projected to increase net economic benefits for the commercial sector and decrease net economic benefits for the recreational sector as well as for both sectors combined.

In general, sector ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measure. In the case of golden tilefish, the revised sector allocations and resulting ACLs being considered in Action 2 would be constraining on harvest for both sectors and shifts between sectors would create distributional economic effects by sector. This action would result in comparatively lower potential benefits for the commercial sector and higher potential benefits for the recreational sector. In terms of total estimated net economic benefits for the action, net benefits are expected to increase.

There may be some economic benefits from the commercial hook and line component starting at a different time than the commercial longline component in Action 3 if the start times vary which would presumably reduce the amount of golden tilefish being landed at any single time, thereby potentially avoiding oversupplying the market and leading to elevated prices. Improved prices could lead to higher net operating revenue for commercial vessels. Additionally, a later start time for the commercial longline component would allow harvest to remain open later in the year which would allow vessels harvesting under the longline component to remain fishing for golden tilefish during Lent when demand and prices tend to be relatively high. This notion is backed by elevated prices for golden tilefish typically observed in March and April compared to prices in January and February. This action is expected to result in an increase in net economic benefits.

Recreational AMs typically consist of corrective measures that create short-term indirect negative economic effects by curtailing harvest and fishing activity when harvest has exceeded the sector ACL, thus potentially affecting net revenues of for-hire operations and CS on

recreational fishing trips. In the long-term, these measures also help reduce the risk of overfishing a stock to the point of depletion, which results long-term economic benefits through sustained harvest and fishing activity as well as the for-gone need for more stringent restrictive management measures that may be needed to rebuild a depleted stock. Action 4 would result in a fishing season that is announced annually with set start and end dates. This change in the AM would limit overall long-term harvest of golden tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

Generally, angler satisfaction increases with the number of fish that can be harvested and the size of the fish. The smaller the bag limit the greater the probability that the satisfaction from an angler trip could be reduced. Anglers tend to land two or fewer blueline tilefish on a single trip. Setting the bag limit at 2 fish in Action 5 would have some negative economic effects on a trip-level due to constraining harvest and related economic benefits. Removing a captain and crew bag limit may also constrain harvest leading to similar economic effects. Conversely, more restrictive retention limits would allow for longer open harvest seasons.

The change in the recreational AM for blueline tilefish in Action 6 would result in a fishing season that is announced annually with set start and end dates. This action would limit overall long-term harvest of blueline tilefish but could result in economic benefits that mitigate the short-term cost of the AM itself by allowing more time to adjust to the changing harvest regulations through a consistent announcement of the season length.

Assessment of the Social Effects

The ACL (Action 1) for any stock does not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict, or close harvest could negatively impact the commercial, for-hire, and private recreational sectors. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects, such as increased pressure on another species, or fishermen having to stop fishing altogether due to regulatory closures. Generally, the higher the ACL the greater the short-term social benefits that would be expected to accrue if harvest is sustainable.

Revising sector allocations (Action 2) for the recreational and commercial sectors can result in many different social effects as perceptions are formed. Social effects would also depend upon other actions in conjunction with this one. Therefore, the choice of an allocation would need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. Based on recent commercial and recreational landings, no closures are expected with the exception of the longline component of the commercial sector, which is anticipated to close early to mid-March.

The effects on commercial fishermen and related businesses of modifying the commercial hook and line and longline seasons for golden tilefish (Action 3) would be associated with access to golden tilefish stock during periods when the dockside price is highest, and if the commercial ACL is met and an early closure occurs. Staggering the commercial hook and line and commercial longline seasons may reduce the number of fish on the market at a given time and

increase the profitability of commercial longline businesses. It would also allow the longline fishery to remain open closer to the Lenten season when prices for fish increase.

Modifying post-season AMs for golden tilefish (Action 4) can have direct and indirect social effects because, when triggered, they can restrict harvest in the subsequent seasons. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Those restrictions usually translate into reduced opportunity for harvest, which in turn can change fishing behaviors. Having NMFS announce the length of the recreational season for golden tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

In general, a reduction in the recreational bag limit or prohibiting retention of fish by captain and crew (Action 5) may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded. However, bag and vessel limits that are too low may make fishing trips inefficient and lower angler satisfaction. Slowing the rate of harvest and ensuring sustainable of harvest of the blueline tilefish stock would provide for long-term social benefits.

Modifying post-season AMs for blueline tilefish (Action 6) can have direct and indirect social effects because, when triggered, they can restrict harvest in the subsequent seasons. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Those restrictions usually translate into reduced opportunity for harvest, which in turn can change fishing behaviors. Having NMFS announce the length of the recreational season for golden tilefish in the *Federal Register* prior to the start date each year, with an end date corresponding to when the recreational ACL is projected to be met for that year would allow private anglers and for-hire businesses to plan their activities around the closure in advance.

Assessment of Effects on Safety at Sea

Amendment 52 is not expected to result in direct impacts to safety at sea.

Appendix I. History of Management

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The following webpage includes a summary of the amendments to the original Snapper Grouper Fishery Management Plan (FMP), as well as some events not covered in amendment actions: https://safmc.net/fishery-management-plans/snapper-grouper/

Appendix J. Allocation Review Trigger Policy

In a letter to the NOAA Assistant Administrator dated July 16, 2019, the South Atlantic Fishery Management Council (Council) responded to NOAA's Fisheries Allocation Review Policy (NMFS Policy Directive 01-119) and the associated Procedural Directive on allocation review triggers (NMFS Procedural Directive 01-119-01). The Policy established the responsibility for the Regional Fishery Management Councils to set allocation review triggers and consider three types of trigger criteria: indicator, public interest, and time. Councils were directed to establish triggers for consideration of allocation reviews by August 2019. The Council's response follows:

The Council has reviewed species allocations on numerous occasions in the past. However, these reviews may not have been formally documented in a fishery management plan amendment if a decision was made not to modify sector allocations. This new policy will ensure all species currently having sector allocations will be reviewed on a regular basis and will formalize the allocation review process so the Council's consideration of allocations will be documented.

The Council reviewed their current sector allocations and began discussions on the Policy and Procedural Directives and criteria for considering fishery allocation reviews at their December 2018 meeting. At their June 2019 meeting, the Council adopted two types of criteria for triggering consideration of an allocation review: indicator and time.

The Council chose several indicator-based criteria as triggers:

- Either sector exceeds its ACL or closes prior to the end of its fishing year three out of five consecutive years,
- Either sector under harvests its ACL or OY by at least 50% three out of five consecutive years,
- After a stock assessment is approved by the SSC and presented to the Council, and
- After the Council reviews a species Fishery Performance Report.

The Council chose a time-based trigger to ensure allocation reviews are regularly considered. Each species will have its sector allocations reviewed not less than every seven years. Table 1 shows by species when the next sector allocation review will be considered by the Council should an indicator-based criterion not be triggered. Regardless of whether consideration of an allocation review is triggered by an indicator or time criterion once it occurs the next one will automatically be scheduled for consideration seven years later. For species which are jointly managed with the Gulf of Mexico Fishery Management Council, the timing for consideration of allocation reviews was coordinated with that council.

A public interest-based criterion was not selected because the Council currently receives substantial and regular comment from the public through scoping and public hearing sessions, general public comment periods held at every Council meeting, the public comment form on the

Council's website, and through other more informal channels. Thus, the Council decided the existing Council process provides sufficient opportunity for public input on allocation.

Table J.1.1. Next year for allocation reviews (as of 2019) for SAFMC managed species.

Assessed Species	Review Year	Unassessed Species	Review Year	Grunts Complex	Review Year
Black grouper	2026	Atlantic spadefish	2022	White grunt	2024
Black sea bass	2023	Bar jack	2022	Sailor's choice grunt	2024
Blueline Tilefish	2020	Scamp	2022	Tomtate	2024
Gag	2022	Speckled hind	*	Margate	2024
Golden tilefish	2021	Warsaw grouper	*	**Shallow-Water Groupers Complex**	**Review Year**
Gray triggerfish	2023	**Deepwater Species**		Red hind	2026
Greater amberjack	2021	Yellowedge grouper	2024	Rock hind	2026
GA-NC Hogfish	2023	Silk snapper	2024	Yellowmouth grouper	2026
FLK/EFL Hogfish	2023	Misty grouper	2024	Yellowfin grouper	2026
Mutton napper	2023	Sand tilefish	2024	Coney	2026
Red grouper	2023	Queen Snapper	2024	Graysby	2026
Red porgy	2021	Blackfin snapper	2024	**Porgy Complex**	**Review Year**
Red snapper	2024	**Jacks Complex**	**Review Year**	Jolthead porgy	2027
Snowy grouper	2021	Almaco jack	2025	Knobbed porgy	2027
Vermilion snapper	2021	Banded rudderfish	2025	Saucereye porgy	2027
Wreckfish	2019	Lesser amberjack	2025	Scup	2027
Yellowtail snapper	2021	**Snappers Complex**	**Review Year**	Whitebone porgy	2027
Atlantic Group King mackerel	2021	Gray snapper	2025	**Dolphin/Wahoo**	**Review Year**
Atlantic Group Spanish mackerel	2022	Lane snapper	2025	Dolphin	2019
Gulf Group Cobia FL East Coast zone	2021	Cubera snapper	2025	Wahoo	2019

*ACL=0 for this species. If ACL>0 in the future, allocations will be reviewed when the ACL is increased.

Appendix K. SEDAR 66 Golden Tilefish Projections

SEDAR 66 Golden Tilefish Projections

Projection results for tilefish are shown in Tables 20, 21, 22, and 23 (SEDAR 66 2021). Among all scenarios considered, the probability that SSBMSY exceeds MSST [*P*(> MSST)] is at least 0.55 in all years of all projections. Thus, under no management prescription considered in the projections thus far is the South Atlantic Tilefish stock predicted to be overfished.

Table 20. Projection results with fishing mortality rate fixed at F = FP∗ starting in 2022 and projecting forward to 2027. From 2019 to 2021 the fishing mortality rate was fixed at Fcurrent. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or gutted weight (GW, in 1000 lb), P (> MSST)= proportion of stochastic projection replicates with SSB ≥ MSST. The extension b indicates expected values (deterministic) from the base run; the extension med indicates median values from the stochastic projections.

Year	R_b	R_{med}	F_b	F_{med}	S_b (mt)	S_{med} (mt)	L_b (n)	L_{med} (n)	L_b (GW)	L_{med} (GW)	P(> MSST)
2019	294	255	0.26	0.28	19	18	54	58	440	457	0.558
2020	297	257	0.26	0.28	19	18	57	59	457	465	0.565
2021	297	258	0.26	0.28	20	18	58	60	472	472	0.569
2022	298	256	0.30	0.25	20	18	68	57	552	442	0.579
2023	298	258	0.30	0.25	20	18	67	58	546	457	0.600
2024	298	262	0.30	0.25	19	18	67	58	539	461	0.620
2025	297	266	0.30	0.25	19	18	66	59	533	465	0.636
2026	297	265	0.30	0.25	19	18	65	59	529	467	0.650
2027	297	268	0.30	0.25	19	18	65	59	526	466	0.660

Table 21. Projection results with fishing mortality rate fixed at F = F_{MSY} starting in 2022 and projecting forward to 2027. From 2019 to 2021 the fishing mortality rate was fixed at $F_{current}$. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or gutted weight (GW, in 1000 lb*), P* (> MSST)*= proportion of stochastic projection replicates with* SSB ≥ MSST. *The extension* b *indicates expected values (deterministic) from the base run; the extension* med *indicates median values from the stochastic projections.*

Year	R_b	R_{med}	F_b	F_{med}	S_b (mt)	S_{med} (mt)	L_b (n)	L_{med} (n)	L_b (GW)	L_{med} (GW)	P(> MSST)
2019	294	260	0.26	0.28	19	18	54	58	440	457	0.558
2020	297	259	0.26	0.28	19	18	57	59	457	465	0.562
2021	297	258	0.26	0.28	20	18	58	60	472	471	0.567
2022	298	258	0.30	0.25	20	18	68	57	552	445	0.576
2023	298	263	0.30	0.25	20	18	67	58	546	459	0.597
2024	298	261	0.30	0.25	19	18	67	59	539	464	0.617
2025	297	263	0.30	0.25	19	18	66	59	533	468	0.631
2026	297	265	0.30	0.25	19	18	65	59	529	468	0.644
2027	297	266	0.30	0.25	19	18	65	59	526	468	0.657

Table 22. Projection results with fishing mortality rate fixed at F = FP∗ starting in 2022 and projecting forward to 2027. From 2019 to 2021 the fishing mortality rate was fixed at Fcurrent. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or gutted weight (GW, in 1000 lb), P (> MSST)= proportion of stochastic projection replicates with SSB ≥ MSST. The extension b indicates expected values (deterministic) from the base run; the extension med indicates median values from the stochastic projections.

Year	R_b	R_{med}	F_b	F_{med}	S_b (mt)	S_{med} (mt)	L_b (n)	L_{med} (n)	L_b (GW)	L_{med} (GW)	P(> MSST)
2019	294	259	0.26	0.28	19	18	54	58	440	457	0.557
2020	297	259	0.26	0.28	19	18	57	59	457	465	0.562
2021	297	257	0.26	0.28	20	18	58	60	472	471	0.568
2022	298	257	0.20	0.17	20	19	47	39	386	307	0.590
2023	300	258	0.20	0.17	21	20	50	42	407	335	0.636
2024	301	268	0.20	0.17	22	20	51	44	424	355	0.678
2025	303	271	0.20	0.17	22	21	53	46	438	373	0.716
2026	304	276	0.20	0.17	23	21	54	47	449	389	0.746
2027	305	281	0.20	0.17	23	22	54	48	457	401	0.772

Table 23. Projection results with fishing mortality rate fixed at $F = 0.75F_{MSY}$ starting in 2022 and projecting forward to 2027. From 2019 to 2021 the fishing mortality rate was fixed at $F_{current}$. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or gutted weight (GW, in 1000 lb*), P* (> MSST)= *proportion of stochastic projection replicates with* SSB ≥ MSST. *The extension* b *indicates expected values (deterministic) from the base run; the extension* med *indicates median values from the stochastic projections.*

Year	R_b	R_{med}	F_b	F_{med}	S_b (mt)	S_{med} (mt)	L_b (n)	L_{med} (n)	L_b (GW)	L_{med} (GW)	P(> MSST)
2019	294	259	0.26	0.28	19	18	54	58	440	457	0.559
2020	297	259	0.26	0.28	19	18	57	59	457	465	0.563
2021	297	259	0.26	0.28	20	18	58	61	472	472	0.568
2022	298	261	0.22	0.19	20	19	52	43	425	340	0.587
2023	299	257	0.22	0.19	21	19	54	46	442	366	0.630
2024	301	266	0.22	0.19	21	20	55	48	455	385	0.671
2025	302	269	0.22	0.19	22	20	56	49	465	399	0.705
2026	302	275	0.22	0.19	22	20	57	51	472	411	0.734
2027	303	276	0.22	0.19	22	21	57	52	478	420	0.757