Regulatory Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Revise accountability measures for yellowtail snapper

DRAFT Document

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Definitions, Abbreviations, and Acronyms Used in the Document

ABC	acceptable biological catch
ACL	annual catch limits
AM	accountability measures
ACT	annual catch target
B	a measure of stock biomass in either weight or other appropriate unit
B_{MSY}	the stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	the stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	the current stock biomass
CPUE	catch per unit effort
DEIS	draft environmental impact statement
EA	environmental assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
F	a measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	fishing mortality that will produce a static SPR = 30%
F_{CURR}	the current instantaneous rate of fishing mortality
F_{MSY}	the rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	the rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	final environmental impact statement
FMP	fishery management plan
FMU	fishery management unit
M	natural mortality rate
MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OY	optimum yield
PSE	proportional standard error
RIR	regulatory impact review
SAFMC	South Atlantic Fishery Management Council
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SIA	social impact assessment
SPR	spawning potential ratio
SSC	Scientific and Statistical Committee

Regulatory Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Documents:	Environmental Assessment Regulatory Impact Review
Proposed actions:	Revise accountability measures for yellowtail snapper
Lead agency:	Regulatory Amendment 32 – South Atlantic Fishery Management Council EA/RIR – National Marine Fisheries Service (NMFS)
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SUMMARY

Regulatory Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Why is the South Atlantic Council Taking Action?

The commercial sector for yellowtail snapper met its annual catch limit (ACL) in 2015 and triggering an in-season closure of the commercial sector from October 31 to December 31, 2015. In that same year, the recreational sector did not harvest 45% of its ACL. The South Atlantic Fishery Management Council (South Atlantic Council) began discussing possible management changes for yellowtail snapper in 2015. An amendment (Snapper Grouper Amendment 44) was initiated to consider a mechanism to allow quota sharing between the commercial and recreational sectors or reallocating a portion of the total ACL to the commercial sector. The South Atlantic Council also wanted to consider specifying a single acceptable biological catch (ABC) and single ACL for yellowtail snapper in the Gulf of Mexico and the South Atlantic. The fishing year for yellowtail snapper for both the commercial and recreational sectors was changed from January-December to August-July, on August 12, 2016 (Regulatory Amendment 25, SAFMC 2015). The commercial sector for yellowtail snapper met its ACL again in 2017 and the commercial sector was closed from June 3 to July 31, 2017. The recreational sector did not harvest 51% of its ACL in 2017. In June 2017 the South Atlantic Council requested feedback from the Gulf of Mexico Fishery Management Council (Gulf Council) on a possible joint amendment to combine ACLs for yellowtail snapper. The Gulf Council indicated their willingness to work with the South Atlantic Council on management solutions for yellowtail snapper. During the March 2018 meeting, however, the South Atlantic Council decided to postpone development of Amendment 44 pending expected revisons to recreational landings estimates as a result of changes to the Marine Recreational Information Program (MRIP). However, the South Atlantic Council acknowledged the need for short-term measures to alleviate socio-economic impacts from recent in-season closures and the 2017 hurricanes. Hence, the South Atlantic Council is developing Regulatory Amendment 32 to consider modifications to yellowtail snapper accountability measures (AM) to minimize the probability of in-season closures and consequent socio-economic impacts.

What are the trends in landings of yellowtail snapper in the South Atlantic?

Table S-1 and **Figure S-1** show commercial and recreational landings of yellowtail snapper in the South Atlantic from 2012 through 2017. The total ACL for yellowtail snapper is 3,037,500 pounds whole weight (lbs ww) that is divided into a commercial ACL of 1,596,510 lbs ww (52.56% of the total ACL) and a recreational ACL of 1,440,990 lbs ww (47.44% of the total ACL).

Table S-1. Commercial and recreational landings (lbs ww) of yellowtail snapper in the South Atlantic from 2012 through 2017.

Year	Rec. Landings (lbs ww)	Com. Landings (lbs ww)	Total Landings (lbs ww)	Total ACL (lbs ww)	% Total ACL	% Rec ACL	% Com. ACL
2012	493,409	1,439,585	1,932,994	2,627,796	74%	48%	90%
2013	666,027	1,328,968	1,994,995	3,037,500	66%	46%	83%
2014	933,760	1,575,955	2,509,715	3,037,500	83%	65%	99%
2015	791,157	1,691,804	2,482,961	3,037,500	82%	55%	106%[a]
2016*	576,578	1,398,247	1,974,825	3,037,500	65%	40%	88%
2016/17*	691,051	1,817,911	2,508,962	3,037,500	83%	48%	114%[b]

Source: SEFSC Commercial and Recreational ACL datasets. Recreational data was post-stratified to include Monroe County landings in South Atlantic landings.

*The fishing season for yellowtail snapper was modified in Regulatory Amendment 25, which took effect on August 12, 2016. Therefore, 2016 includes January through August 12, 2016 landings and 2016/17 fishing season landings are provided separately. Recreational and Commercial ACL landings data from the SEFSC were used and accessed July 10, 2018.

[a] In-season closure for commercial sector from October 31, 2015 to December 31, 2015.

[b] In-season closure for commercial sector from June 3, 2017 to July 31, 2017.

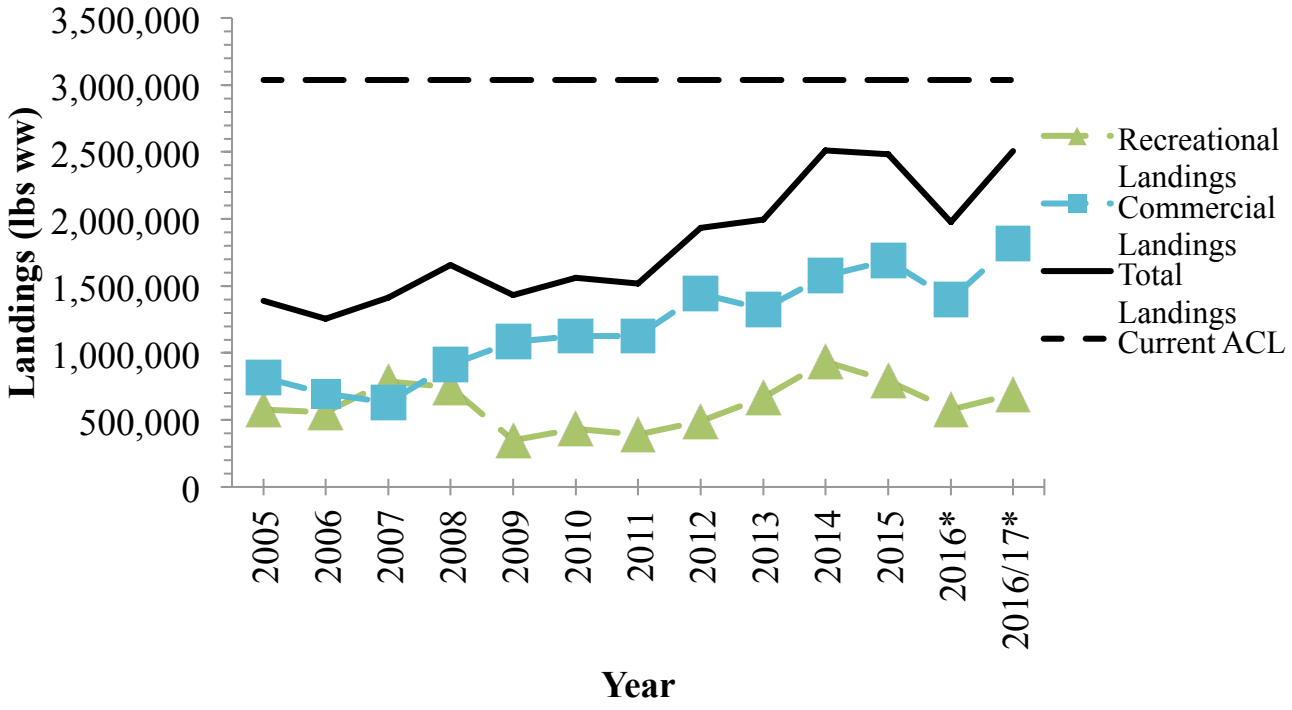

Figure S-1. Commercial and recreational landings (lbs ww) of yellowtail snapper in the South Atlantic, 2005-2017. Note: The fishing season for yellowtail snapper was modified in Regulatory Amendment 25, which took effect on August 12, 2016. Therefore, 2016 includes January through August 12, 2016 landings and 2016/2017 fishing season landings are provided separately. Recreational and Commercial ACL landings data from the SEFSC were used and accessed July 10, 2018

Chapter 1. Introduction

1.1 What Actions Are Being Proposed in Regulatory Amendment 32?

Regulatory Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 32) contains one action to revise accountability measures (AMs) for yellowtail snapper to reduce the probability of in-season closures.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks in the South Atlantic Region
- Consists of 13 voting members: 8 appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Director of NMFS and 4 non-voting members
- 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 miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West with the exception of Mackerel which is from New York to Florida, and Dolphin-Wahoo, which is from Maine to Florida

1.2 Who is Proposing the Management Measures?

The South Atlantic Council is proposing these management measures. The South Atlantic Council recommends management measures and sends them to the National Marine Fisheries Service (NMFS) who implements the actions in the amendment through the development of regulations on behalf of the Secretary of Commerce. NMFS is a line office in the National Oceanic and Atmospheric Administration within the Department of Commerce.

The South Atlantic Council will make versions of the document available during public hearings. The final amendment will be made available during the public comment period on the proposed rule. All versions of the document are or will be available on the South Atlantic Council's and NMFS's websites.

1.3 Where is the Project Located?

The federal snapper grouper fisheries are located off the eastern United States (Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone (EEZ) (**Figure 1-1**).

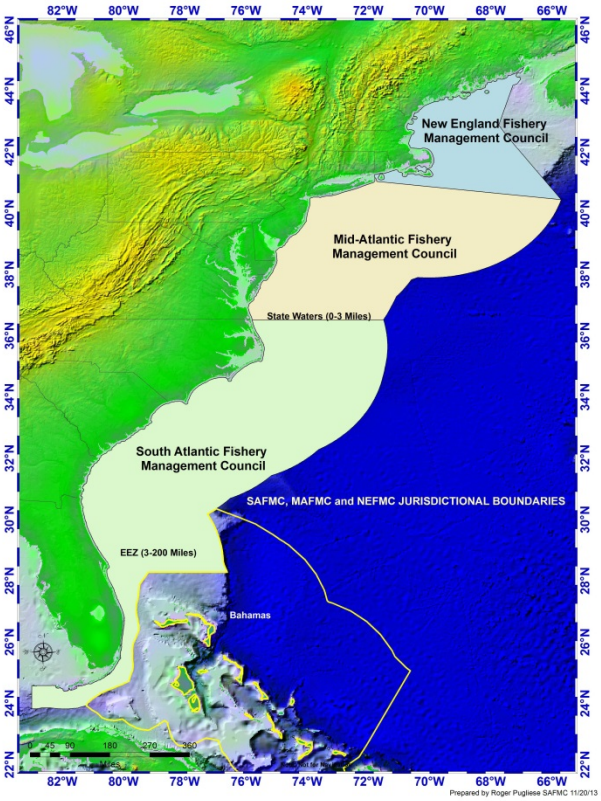

Figure 1-1. Jurisdictional boundaries of the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) as managed by the South Atlantic Council.

1.4 Why are the South Atlantic Council and NMFS Considering this Action?

The commercial sector for yellowtail snapper met its annual catch limit (ACL) in 2015 and there was an in-season closure of the commercial sector from October 31 to December 31, 2015. In that same year, the recreational sector only harvested 55% of its ACL. The South Atlantic Fishery Management Council (South Atlantic Council) began discussing possible management changes for yellowtail snapper in 2015. An amendment (Snapper Grouper Amendment 44) was initiated to consider a mechanism to allow quota sharing between the commercial and recreational sectors or reallocating the total ACL. The amendment was ultimately postponed pending revisions to recreational landings estimates as a result of changes to the Marine Recreational Information Program (MRIP). Meanwhile, the yellowtail snapper fishing year for both the commercial and recreational sectors was changed from January-December to August-July on August 12, 2016 (Regulatory Amendment 25, SAFMC 2015). The commercial sector for yellowtail snapper met its ACL again in 2017 and the commercial sector was closed from June 3 to July 31, 2017. The recreational sector only harvested 49% of its ACL in 2017. Long-term management measures for yellowtail snapper will continue to be developed through Amendment 44; however, the South Atlantic Council acknowledged the need for short-term measures to alleviate adverse social and economic effects from recent in-season closures and the 2017 hurricanes. Hence, the South Atlantic Council is developing Regulatory Amendment 32 to consider modifying the yellowtail snapper accountability measures (AM) to

minimize the probability of in-season closures for the commercial sector and consequent adverse social and economic effects.

Purpose for Action

The purpose of this amendment is to revise accountability measures to minimize the probability of in-season closures for yellowtail snapper.

Need for Action

The need for the amendment is to achieve optimum yield for yellowtail snapper while minimizing, to the extent possible, adverse social and economic effects due to in-season closures.

1.5 What is the history of management and the Federal regulations for yellowtail snapper?

Regulations affecting the snapper grouper fishery in the South Atlantic were first implemented in 1983. **Table 1.5.1** provides a summary of regulations affecting yellowtail snapper since 1983. Refer to **Appendix D** for the management history of the snapper grouper fishery.

Table 1.5.1. Summary of regulations affecting the yellowtail snapper fishery in the South Atlantic Region since 1983.

Management Action	Amendment	Effective date
-Minimum size limit of 12 inches total length (TL) for yellowtail snapper	FMP	August 1983
-Prohibited longlines south of St. Lucie Inlet, Florida	Amendment 7	January 1995
-Limited entry program for snapper grouper fishery	Amendment 8	August 1998
-Maximum sustainable yield proxy for yellowtail snapper = 30% static spawning potential ratio; optimum yield (OY) proxy is 40% static spawning potential ratio; minimum stock size threshold (MSST) = 1-M*B_{MSY}	Amendment 11	December 1999

-Prohibited the sale of snapper grouper harvested or possessed in the EEZ under the bag limits and prohibited the sale of snapper grouper harvested or possessed under the bag limits by vessels with a federal charter vessel/headboat permit for South Atlantic snapper grouper were harvested.	Amendment 15B	February 2010
Reorganized fishery management units (FMUs) to 6 complexes (deepwater, jacks, snappers, grunts, shallow-water groupers, porgies); -Established ABC control rule and established ABCs, ACLs, and accountability measures (AMs) for species not undergoing overfishing, including yellowtail snapper; -Established jurisdictional allocation for yellowtail ABC between the South Atlantic and Gulf of Mexico; specified allocations between the commercial and recreational sectors for species not undergoing overfishing.	Comprehensive ACL Amendment	April 2012
-Modified ACLs and OY for yellowtail snapper	Regulatory Amendment 15	September 2013
-Modified the definition of the overfished threshold (MSST) for red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack.	Regulatory Amendment 21	November 2014
Modified AMs for snapper grouper species (including yellowtail snapper) to make them consistent.	Amendment 34	February 2016
-Revised the commercial and recreational fishing year for yellowtail snapper.	Regulatory Amendment 25	August 2016

1.6 What are the recreational regulations for yellowtail snapper in Florida State Waters?

In Florida snapper grouper species are required to be landed whole in State waters. For Florida snapper grouper regulations, see: https://www.flrules.org/gateway/ChapterHome.asp?Chapter=68B-14

1.7 What are annual catch limits and accountability measures and why are they required?

A reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) in 2007 required implementation of new tools to end and prevent overfishing to achieve the OY from a fishery. The tools are ACLs and AMs. An ACL is the level of annual catch of a stock that, if met or exceeded, triggers some corrective action. The AMs are the corrective action, and they are management controls to prevent ACLs from being exceeded and to correct overages of ACLs if they occur. Two examples of AMs include an in-season closure if catch is projected to reach the ACL and reducing the ACL by an overage that occurred the previous fishing year. The South Atlantic Council took action in Amendment 34 to the Snapper Grouper FMP (SAFMC 2015) to enhance the effectiveness of the AMs for yellowtail snapper.

Definitions

Annual Catch Limits (ACL)
The level of annual catch (pounds or numbers) that triggers accountability measures to ensure that overfishing is not occurring.

Annual Catch Targets (ACT)
The level of annual catch (pounds or numbers) that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL.

Accountability Measures (AM)
Management controls to prevent ACLs, including sector ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.

Allocations
A division of the overall ACL among sectors (e.g., recreational and commercial) to create sector ACLs.

Maximum Sustainable Yield (MSY)
Largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions.

Optimum Yield (OY)
The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Minimum Stock Size Threshold (MSST)
A status determination criterion. If current stock size is below MSST, the stock is overfished.

1.8 How does the South Atlantic Council determine the annual catch limits?

ACLs are derived from the overfishing limit (OFL) and the ABC **(Figure 1.7.1)**. The South Atlantic Council's Scientific and Statistical Committee (SSC) determines the OFL from the stock assessment and the ABC (based on the South Atlantic Council/SSC's ABC control rule), and recommends those to the South Atlantic Council. The OFL is an estimate of the catch level above which overfishing is occurring. The ABC is defined as the level of a stock or stock complex's

annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty.

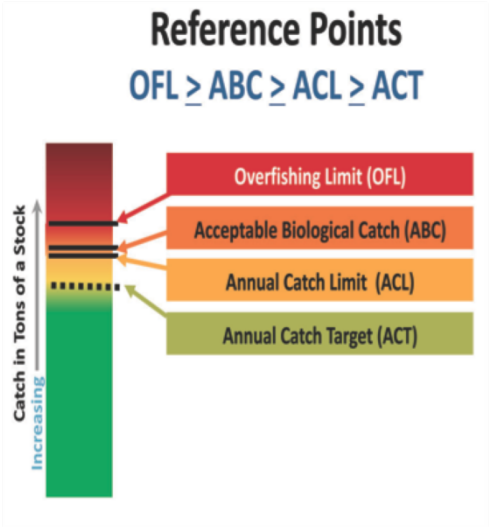

Figure 1.7.1. The relationship of the reference points to each other.

The Magnuson-Stevens Act National Standard 1 (NS 1) guidelines establish the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS 1 guidelines discuss the relationship of the OFL to the maximum sustainable yield (MSY) and ACL to OY. The OFL is an annual amount of catch that corresponds to the estimate of maximum fishing mortality threshold applied to a stock; MSY is the long-term average of such catches. The ACL is the limit that triggers AMs and is the management target for the species. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual harvesting of an ACL. The NS 1 guidelines state that, if OY is set close to MSY, the conservation and management measures in the fishery must have very good tracking of the catch to achieve the OY without overfishing.

The updated framework procedure included in Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) allows for the timely establishment and adjustment of ACLs if the South Atlantic Council and the NMFS determine they are necessary.

The NS 1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if 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 re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation of the fishery's performance concludes that the ACL is chronically exceeded for any species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework

procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the timeliest method of addressing issues associated with repeated ACL overages through permanent regulations.

With vastly improved commercial monitoring mechanisms now in place in the South Atlantic Region, it is unlikely that repeated commercial ACL overages would occur. The National Marine Fisheries Service Commercial Landings Monitoring (CLM) system came online in June 2012 and is now being used to track commercial landings of federally managed fish species. The CLM system can track dealer reporting compliance with a direct link to the permits database at the NMFS Southeast Regional Office. Additionally, the Joint Seafood Dealer Reporting Amendment (GMFMC & SAFMC 2013b), which became effective on August 7, 2014, requires electronic reporting, increases required reporting frequency for dealers to once per week, and requires a single dealer permit for all finfish dealers in the Southeast Region. The CLM system and actions in the Joint Generic Dealer Reporting amendment are expected to provide more timely and accurate data reporting and would thus reduce the incidence of quota overages in the commercial sector.

Harvest monitoring efforts in the recreational sector are also improving in the South Atlantic Region. On January 27, 2014, regulations became effective requiring headboats to report their landings electronically once per week (Generic Headboat Amendment, GMFMC & SAFMC 2013a). The Southeast Fisheries Science Center is also developing an electronic reporting system for charter boats operating in the Southeast Region and the Gulf of Mexico and South Atlantic Councils are developing amendments that would require electronic reporting for charterboats with a set reporting frequency.

1.9 How do the South Atlantic and Gulf of Mexico Councils determine the division in the ABC?

The South Atlantic and Gulf of Mexico Councils established a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic regions for yellowtail snapper acceptable biological catch (ABC) based on the following method:

South Atlantic = 75% of ABC and **Gulf of Mexico** = 25% of ABC

This was established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008. The jurisdictional allocation method was set in the South Atlantic Council's Comprehensive Annual Catch Limit (ACL) Amendment in 2011.

1.10 How does the South Atlantic Council determine the sector allocations?

The South Atlantic Council set the yellowtail snapper sector allocations using the following method:

Sector allocation = (0.5 * catch history) + (0.5 * current trend)

Whereby, the *catch history* = average landings 1986-2008 and the *current trend* = average landings 2006-2008. The commercial and recreational allocations specified and resulting sector ACLs will remain in effect until modified. The sector allocation method was set in the South Atlantic Council's Comprehensive Annual Catch Limit (ACL) Amendment in 2011.

Chapter 2. Proposed Actions

Action 1. Revise the In-season Accountability Measures for Yellowtail Snapper

Alternative 1 (No Action). The current commercial and recreational in-season accountability measures are to close the respective sector if that sector's annual catch limit is met or is projected to be met.

Alternative 2. An in-season closure will not occur for either sector until the total annual catch limit is met or is projected to be met. Close both sectors when the total annual catch limit is met or is projected to be met.

DRAFT Alternative 3. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 80% of the total annual catch limit.

DRAFT Alternative 4. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 70% of the total annual catch limit.

2.1.1 Comparison of Alternatives

Alternative 1 (No Action) would maintain the current in-season closures for both the commercial and recreational sectors when that sectors' ACL is met or projected to be met. In recent years, the commercial sector has experienced in-season closures, but the recreational sector has only reached less than half of its ACL. The in-season closures of the commercial sector have coincided with the peak spawning season of yellowtail snapper. While this could provide biological benefits to the stock, the recreational sector can technically harvest all of its ACL and continue fishing during the commercial closure, and commercial discards could continue. **Alternative 2** would maintain the current sector ACLs (**Alternative 1, No Action**), but revise the AMs to not close either sector until the total ACL is met. Harvest of yellowtail snapper would not close for either sector even when one sector harvests more than its sector ACL. The fishery would close for both sectors if the total ACL was met, regardless of which sector landed more fish. This alternative would allow some flexibility in managing the ACL in years when one sector experiences exceptionally high landings without necessarily triggering a closure or other accountability measures. However, **Alternative 2** does create the potential for increased landings in one sector to trigger the closure of yellowtail snapper harvest for both sectors, possibly leading to perceived inequitability between the sectors.

Alternatives 3 and **4** would result in the commercial sector closing in-season if its ACL were to be met and total landings (commercial and recreational) were to reach 80% or 70% of the total ACL, respectively. These alternatives seek to ensure a more balanced distribution of available resource between the sectors, by providing a buffer of 20% or 30% of the total ACL.

Alternative 4 would be the most conservative biologically, followed by **Alternative 1 (No Action)**, **Alternative 3**, and **Alternative 2**. However, the predicted closure dates for the commercial sector under **Alternative 1 (No Action)** and **Alternative 4** are essentially the same (**Table 4.4.1**). Biological benefits would be realized if fishing mortality were reduced as a result of early closures, especially during May through July, the peak of the yellowtail snapper spawning season in South Florida (see **Section 3.2.1**). Therefore **Alternative 1 (No Action)** and **Alternative 4** would result in similar potential biological benefits to spawning fish. **Alternative 3** is expected to result in commercial harvest closing in mid-June, still possibly imparting some benefit from a period of reduced fishing mortality during the spawning season. Lastly, **Alternative 4** would result in fishing activity (commercial and recreational) continuing year-round, resulting in the least biological benefit among the alternatives being considered. Hence, biological benefits would be highest under **Alternative 4** and **Alternative 1 (No Action)**, followed by **Alternative 3** and **Alternative 2** to spawning fish.

Chapter 3. Affected Environment

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

Affected Environment

- **Habitat environment (Section 3.1)**

  Examples include coral reefs and sea grass beds

- **Biological and ecological environment (Section 3.2)**

  Examples include populations of groupers, corals, and turtles

- **Socio-economic environment (Section 3.3)**

  Examples include fishing communities and economic descriptions of the fisheries

- **Administrative environment (Section 3.4)**

  Examples include the fishery management process and enforcement activities

3.1 Habitat Environment

3.1.1 Inshore/Estuarine Habitat

Many snapper grouper species utilize both pelagic and benthic habitats during several stages of their life histories; larval stages of these species live in the water column and feed on plankton. Most juveniles and adults are demersal (bottom dwellers) and associate with hard structures on the continental shelf that have moderate to high relief (e.g., coral reef systems and artificial reef structures, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings). Juvenile stages of some snapper grouper species also utilize inshore seagrass beds, mangrove estuaries, lagoons, oyster reefs, and embayment systems. In many species, various combinations of these habitats may be utilized during daytime feeding migrations or seasonal shifts in cross-shelf distributions. Additional information on the habitat utilized by species in the Snapper Grouper Complex is included in Volume II of the Fishery Ecosystem Plan (FEP; SAFMC 2009b) and incorporated here by reference. The FEP can be found at: http://www.safmc.net/ecosystem-management/fishery-ecosystem-plan-1.

3.1.2 Offshore Habitat

Predominant snapper grouper offshore fishing areas are located in live bottom and shelf-edge habitats where water temperatures range from 11º to 27º C (52º to 81º F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11º to 14º C (52º to 57º F). Water depths range from 16 to 27 meters (54 to 90 ft) or greater for live-bottom habitats, 55 to 110 meters (180 to 360 ft) for the shelf-edge habitat, and from 110 to 183 meters (360 to 600 ft) for lower-shelf habitat areas.

The exact extent and distribution of productive snapper grouper habitat on the continental shelf north of Cape Canaveral, Florida is unknown. Current data suggest from 3 to 30% of the shelf is suitable habitat for these species. These live-bottom habitats may include low relief areas, supporting sparse to moderate growth of sessile (permanently attached) invertebrates, moderate relief reefs from 0.5 to 2 meters (1.6 to 6.6 ft), or high relief ridges at or near the shelf break consisting of outcrops of rock that are heavily encrusted with sessile invertebrates such as sponges and sea fan species. Live-bottom habitat is scattered irregularly over most of the shelf north of Cape Canaveral, Florida, but is most abundant offshore from northeastern Florida. South of Cape Canaveral, Florida the continental shelf narrows from 56 to 16 kilometers (35 to 10 mi) wide off the southeast coast of Florida and the Florida Keys. The lack of a large shelf area, presence of extensive, rugged living fossil coral reefs, and dominance of a tropical Caribbean fauna are distinctive benthic characteristics of this area.

Rock outcroppings occur throughout the continental shelf from Cape Hatteras, North Carolina to Key West, Florida (MacIntyre and Milliman 1970; Miller and Richards 1979; Parker et al. 1983), which are principally composed of limestone and carbonate sandstone (Newton et al. 1971), and exhibit vertical relief ranging from less than 0.5 to over 10 meters (33 ft). Ledge systems formed by rock outcrops and piles of irregularly sized boulders are also common. Parker et al. (1983) estimated that 24% (9,443 km^2) of the area between the 27 and 101 meter (89 and 331 ft) depth contours from Cape Hatteras, North Carolina to Cape Canaveral, Florida is reef habitat. Although the bottom communities found in water depths between 100 and 300 meters (328 and 984 ft) from Cape Hatteras, North Carolina to Key West, Florida is relatively small compared to the whole shelf, this area, based upon landing information of fishers, constitutes prime reef fish habitat and probably significantly contributes to the total amount of reef habitat in this region.

Artificial reef structures are also utilized to attract fish and increase fish harvests; however, research on artificial reefs is limited and opinions differ as to whether or not these structures promote an increase of ecological biomass or merely concentrate fishes by attracting them from nearby, natural un-vegetated areas of little or no relief. There are several notable shipwrecks along the southeast coast in state and federal waters including Lofthus (eastern Florida), SS Copenhagen (southeast Florida), Half Moon (southeast Florida), Hebe (Myrtle Beach, South Carolina), Georgiana (Charleston, South Carolina), U.S.S. Monitor (Cape Hatteras, North Carolina), Huron (Nags Head, North Carolina), and Metropolis (Corolla, North Carolina).

The distribution of coral and live hard bottom habitat as presented in the Southeast Marine Assessment and Prediction Program (SEAMAP) bottom mapping project is a proxy for the distribution of the species within the snapper grouper complex. The method used to determine hard bottom habitat relied on the identification of reef obligate species including members of the snapper grouper complex. The Florida Fish and Wildlife Research Institute (FWRI), using the best available information on the

distribution of hard bottom habitat in the South Atlantic region, prepared ArcView maps for the four-state project. These maps, which consolidate known distribution of coral, hard/live bottom, and artificial reefs as hard bottom, are available on the South Atlantic Fishery Management Council's (South Atlantic Council) online map services provided by the newly developed SAFMC Habitat and Ecosystem Atlas: http://ocean.floridamarine.org/safmc_atlas/. An introduction to the system is found at: http://www.safmc.net/ecosystem-management/mapping-and-gis-data.

Plots of the spatial distribution of offshore species were generated from the Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP) data. The plots serve as point confirmation of the presence of each species within the scope of the sampling program. These plots, in combination with the hard bottom habitat distributions previously mentioned, can be employed as proxies for offshore snapper grouper complex distributions in the south Atlantic region. Maps of the distribution of snapper grouper species by gear type based on MARMAP data can also be generated through the South Atlantic Council's Internet Mapping System at the above address.

3.1.3 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (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)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region 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 183 meters [600 ft (but to at least 2,000 ft for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine-dependent and near shore snapper grouper species, EFH includes areas inshore of the 30 meter (100-ft) 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 habitats.

3.1.4 Habitat Areas of Particular Concern

Areas which meet the criteria for Essential Fish Habitat-Habitat Areas of Particular Concern (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; near shore 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; South Atlantic Council-designated Artificial Reef Special Management Zones (SMZs); and deep-water MPAs.

Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

In addition to protecting habitat from fishing related degradation though fishery management plan regulations, the South Atlantic Council, in cooperation with National Marine Fisheries Service (NMFS), actively comments on non-fishing projects or policies that may impact essential fish habitat. With guidance from the Habitat Advisory Panel, the South Atlantic Council has developed and approved policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; alterations to riverine, estuarine and near shore flows; offshore aquaculture; and marine invasive species and estuarine invasive species.

Refer to **Appendix I** for detailed information on EFH and EFH-HAPCs for all Council managed species.

3.2 Biological and Ecological Environment

The reef environment in the South Atlantic management area affected by actions in this environmental assessment is defined by two components (**Figure 3.2.1**). Each component will be described in detail in the following sections.

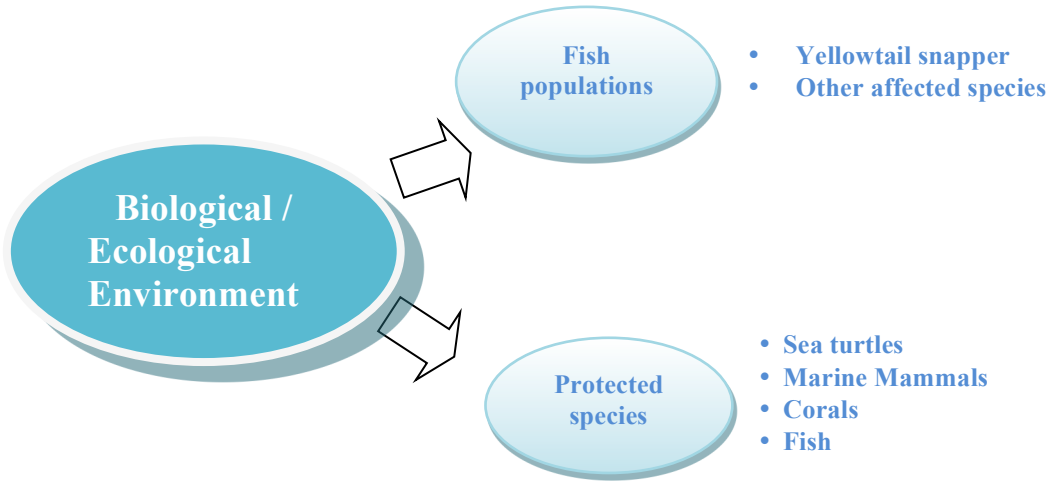

Figure 3.2.1. Two components of the biological environment described in this document.

3.2.1 Fish Populations Affected by this Amendment

The waters off the South Atlantic coast are home to a diverse population of fish. The snapper grouper fishery management unit 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 document.

The action proposed in this amendment would affect yellowtail snapper.

Life History

(from Reg 25. Obtain references from document)

Yellowtail snapper, *Ocyurus chrysurus*, occurs in the Western Atlantic, ranging from Massachusetts to southeastern Brazil, including the Gulf of Mexico and Caribbean Sea, but is most common in the Bahamas, off south Florida, and throughout the Caribbean. Most U.S. landings are from the Florida Keys and southeastern Florida. The yellowtail snapper inhabits waters as deep as 180 m (590 ft), and usually is found well above the bottom (Allen 1985). Muller et al. (2003) state that adults typically inhabit sandy

areas near offshore reefs at depths ranging from 10 to 70 m (33-230 ft). Thompson and Munro (1974) indicate that this species is most abundant at depths of 20-40 m (66-131 ft) near the edges of shelves and banks off Jamaica. Juveniles are usually found over back reefs and seagrass beds (Thompson and Munro 1974; Muller et al. 2003). Yellowtail snapper exhibits schooling behavior (Thompson and Munro 1974).

Maximum reported size is 86.3 cm (34.2 in) TL (male) and 4.1 kg (9.1 lbs) (Allen 1985). Maximum age is 17 years (Manooch and Drennon 1987). Natural mortality is estimated at 0.20 with a range of 0.15-0.25 (Muller et al. 2003). There is a truncation in the size and age structure of yellowtail snapper near human population centers.

Yellowtail snapper have separate sexes throughout their lifetime (i.e., they are gonochoristic). Figuerola et al. (1997) estimated size at 50% maturity as 22.4 cm (8.9 in) FL (males) and 24.8 cm (9.8 in) FL (females), based on fishery independent and dependent data collected off Puerto Rico.

Spawning occurs over a protracted period and peaks at different times in different areas. In southeast Florida, spawning occurs during spring and summer with peak spawning in May-July (Grimes 1987, Muller et al. 2003). The spawning season for yellowtail snapper held in captivity was March to October with peak periods in March and July (Soletchnik et al.1989). Spawning may occur year-round in the Bahamas and Caribbean (Grimes 1987). Figuerola et al. (1997) reported that, in the U.S. Caribbean, spawning occurs during February to October, with a peak from April to July. Erdman (1976) reported that 80% of adult yellowtail snapper captured off San Juan spawn during March through May. Spawning occurs in offshore waters (Figuerola et al. 1997; Thompson and Munro 1974) and during the new moon (Figuerola et al. 1997). Large spawning aggregations are reported to occur seasonally off Cuba, the Turks and Caicos, and USVI. A large spawning aggregation occurs during May-July at Riley's Hump near the Dry Tortugas off Key West, Florida (Muller et al. 2003).

Yellowtail snapper are nocturnal predators. Juveniles feed primarily on plankton (Allen 1985; Thompson and Munro 1974). Adults eat a combination of planktonic (Allen 1985), pelagic (Thompson and Munro 1974), and benthic organisms, including fishes, crustaceans, worms, gastropods, and cephalopods (Allen 1985). Bortone and Williams (1986) stated that both juveniles and adults feed on fish, shrimp, and crabs.

Stock Status

Yellowtail snapper are assessed as a single stock but are managed separately by the South Atlantic and Gulf Councils. The South Atlantic and Gulf of Mexico regions are combined for the assessment, and the resulting ABC is divided with 75% of the ABC assigned to the South Atlantic jurisdiction and 25% to the Gulf of Mexico jurisdiction. Currently, the stock ABC is 2.9 million pounds, with 0.725 million pounds (25% of ABC) going to the Gulf of Mexico. This value is currently being used for the Gulf of Mexico yellowtail snapper stock ACL.

In 2012, the Florida Fish and Wildlife Research Institute (FWRI) conducted a yellowtail snapper benchmark stock assessment (O'Hop et al. 2012). The assessment was conducted with a statistical catch-at-age model (ASAP2). Fishery-dependent data included commercial logbooks, Marine Recreational Fishery Statistics Survey (MRFSS), and the headboat survey. The MRFSS data were used rather than the new Marine Recreational Information Program (MRIP) data to maintain consistency with older data that

had not yet been converted from MRFSS to MRIP. Fishery-independent data came from the NMFS/University of Miami Reef Visual Census. Results from the assessment indicate that, as of 2010, the yellowtail snapper stock is neither overfished nor experiencing overfishing. A more complete description of the benchmark assessment is contained in Chapter 3.

Because the yellowtail snapper stock assessment straddled the jurisdictions of the Gulf and South Atlantic Councils, the assessment was reviewed in October 2012 by a joint meeting of the South Atlantic Council's SSC and the Gulf Council's Standing and Special Reef Fish SSC. The joint SSC established OFL at the equilibrium MSY yield is 4.61 million pounds (mp) total removals (landings plus dead discards), or 4.51 mp in landings. Using the Gulf and South Atlantic Councils ABC control rules resulted in an ABC of 4.13 mp total removals, or 4.05 mp in landings. When divided between the South Atlantic and Gulf of Mexico jurisdictions, the resulting regional ABCs recommended by the joint SSC in terms of landed catch were **South Atlantic: 3.0375 mp ww and Gulf of Mexico: 1.0125 mp ww.**

The next stock assessment for yellowtail snapper is expected to start in 2018 and be completed by the spring of 2019.

3.2.2 Other Species Affected

Species that co-occur with yellowtail snapper are: gray snapper, lane snapper, cubera snapper and mutton snapper. For details on the life histories and ecology of co-occurring species, the reader is referred to South Atlantic EcoSpecies Database[1].

3.2.3 Bycatch

(to be completed)

[1] http://saecospecies.azurewebsites.net

3.2.4 The Stock Assessment Process

SEDAR is a cooperative Fishery Management Council process initiated to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. The Caribbean, Gulf of Mexico, and South Atlantic Fishery Management Councils manage SEDAR in coordination with the National Marine Fisheries Service (NMFS) and the Atlantic and Gulf States Marine Fisheries Commissions. 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 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 South Atlantic Council's Scientific and Statistical Committee (SSC). The SSC considers whether the assessment represents the best available science and develops fishing level recommendations for South Atlantic Council consideration.

SEDAR workshops are public meetings organized by SEDAR. Workshop participants appointed by the lead Council are drawn from state and federal agencies, non-government organizations, Council members, Council advisors, and the fishing industry with a goal of including a broad range of disciplines and perspectives. All participants are expected to contribute to this scientific process by preparing working papers, contributing data, providing assessment analyses, evaluating and discussing information presented, and completing the workshop report.

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 (DPSs) of marine mammals, sea turtles, fish, and corals managed by NMFS that may occur in the EEZ 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 (NARWs), and humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA. 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) classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals. More information about the LOF and the classification process can be found at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

Five of the marine mammal species (NARW, and sperm, sei, fin, and blue whales) 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 fish (the smalltooth 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 South Atlantic Council's jurisdiction.

NMFS has conducted specific analyses ("Section 7 consultations") to evaluate the potential adverse effects from the South Atlantic snapper grouper fishery on species and critical habitat protected under the ESA. On December 1, 2016, NMFS completed its most recent biological opinion (2016 Opinion) on the snapper grouper fishery of the South Atlantic Region (NMFS 2016). In the 2016 Opinion, NMFS concluded that this fishery's continued authorization is likely to adversely affect but is not likely to jeopardize the continued existence of the NARW, loggerhead sea turtle Northwest Atlantic DPS, leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper. NMFS also concluded that designated critical habitat and other ESA-listed species in the South Atlantic Region were not likely to be adversely affected. Summary information on the species that may be adversely affected by the snapper grouper fishery and how they are affected is presented below. The 2016 Opinion provides additional information on these species, how they are affected by the snapper grouper fishery, and the authorized incidental take levels of these species in the snapper grouper fishery.

Since publication of the 2016 Opinion, NMFS has published two additional final listing rules. On January 22, 2018, NMFS listed the giant manta ray (Manta birostris) as threatened under the ESA, effective February 21, 2018. On January 30, 2018, NMFS listed the oceanic whitetip shark (Carcharinus longimanus) as threatened under the ESA, effective March 1, 2018. Giant manta rays and oceanic whitetip sharks are found in the South Atlantic and may be affected by the subject fishery via incidental capture in snapper grouper fishing gear. In a June 11, 2018, memo NMFS documented ESA Section 7(a)(2) and Section 7(d) determinations for allowing the continued authorization of fishing managed by the Snapper Grouper FMP, during reinitiation of ESA consultation on this fishery, for its effects on the giant manta ray and the oceanic whitetip shark. Based on the analysis, NMFS determined that allowing the proposed action to continue during the reinitiation period will not violate Section 7(a)(2) or 7(d). This Section 7(a)(2) determination is only applicable to the proposed action during the reinitiation period and does not address the agency's long-term obligation to ensure its actions are not likely to jeopardize the continued existence of any listed species or destroy or adversely modify critical habitat.

3.2.5.1 North Atlantic Right Whales (NARW)

The NARW, *Eubalaena glacialis* (Rosenbaum et al. 2000), is a large baleen whale. NARWs feed on larger species of zooplankton and almost exclusively on copepods. Feeding takes place subsurface (subsurface feeding) or at the water's surface (surface skim feeding), depending on the vertical distribution of their food species. NARW dive as deep as 306 m (1,003 ft) (Mate et al. 1992).

The coastal waters of the southeastern U.S. are a wintering and the sole known calving area for NARW. NARW generally occur off South and North Carolina from November 1 through April 30 and have been sighted as far as about 30 nautical miles (nmi) offshore (Knowlton et al. 2002; Pabst et al. 2009). Sighting records of NARW spotted in the core calving area off Georgia and Florida consist of mostly mother-calf pairs and juveniles but also some adult males and females without calves (Cole et al. 2013; Kraus and Rolland 2007; Parks et al. 2007). The NARW minimum stock size is based on a census of individual whales identified using photo-identification techniques. A review of the photo-ID recapture database as it existed on 17 November 2015 indicated that 440 individually recognized whales in the catalog were known to be alive during 2012. This number represents a minimum population size. This is a direct count and has no associated coefficient of variation (Hayes et al. 2017). Since June 7, 2017, elevated NARW mortalities began in 2017, primarily in Canada and were declared an Unusual Mortality Event (UME). In 2017 a total of 17 confirmed dead stranded whales (12 in Canada; 5 in the U.S.), and five live whale entanglements in Canada have been documented. To date in 2018, one whale stranded in the U.S. bringing the total mortalities to 18 confirmed dead stranded whales (12 in Canada; 6 in the U.S.). More information on this UME is provided at: https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2018-north-atlantic-right-whale-unusual-mortality-event

Right whale concentrations are highest in the core calving area from November 15 through April 15 (71 FR 36299, June 26, 2006); on rare occasions, right whales have been spotted as early as September and as late as July (Taylor et al. 2010). Most calves are likely born early in the calving season. NARW distribution off Georgia and Florida is restricted to the south and east by the warm waters of the Gulf Stream, which serves as a thermal limit for NARW (Keller et al. 2006). Water temperature, bathymetry, and surface chop are factors in the distribution of calving NARW in the southeastern U.S. (Good 2008; Keller et al. 2012). Systematic surveys conducted off the coast of North Carolina during the winters of 2001 and 2002 sighted eight calves, suggest the calving grounds may extend as far north as Cape Fear. Four of the calves were not sighted by surveys conducted further south. One of the cows photographed was new to researchers, having effectively eluded identification over the period of its maturation (McLellan et al. 2003).

Commercial and recreational fishers in the South Atlantic snapper grouper fishery use hook-and-line gear, spear/powerheads, and pot/traps to target black sea bass, but only pots may adversely affect NARWs (NMFS 2016). The black seas bass pot component of the snapper grouper fishery is the only component of the fishery that may adversely affect NARWs; effects from all the other gear types were discounted in the 2016 Opinion. NMFS estimated that the number of annual lethal takes for NARWs from black sea bass trap/pot gear ranged from an estimated minimum of 0.005 to a maximum of 0.08. This equates to 1 estimated lethal entanglement approximately every 25 to 42 years.

3.2.5.2 ESA-Listed Sea Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the South Atlantic. The following sections are a brief overview of the general life history characteristics of the sea turtles found in the South Atlantic region. Several volumes exist that cover the biology and ecology of these species more thoroughly (i.e., Lutz and Musick (eds.) 1997, Lutz et al. (eds.) 2002).

Green sea turtle (*Chelonia mydas*) hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994). On April 6, 2016, NMFS and the U.S. Fish and Wildlife Service published a Final Rule in the Federal Register (81 FR 20057) removing the range-wide and breeding population ESA listings of the green sea turtle, and in their place, listing 8 green sea turtle DPSs as threatened and 3 green sea turtle DPSs as endangered, effective May 6, 2016. Two of the green sea turtle DPSs, the North Atlantic DPS and the South Atlantic DPS, occur in the South Atlantic Region.

The **hawksbill sea turtle's** (*Eretmochelys imbricata*) pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (Van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Kemp's ridley sea turtle (*Lepidochelys kempii*) hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50 m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp (Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985, Byles 1988). Their maximum diving range is unknown. Depending on the life stage, Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985, Mendonca and Pritchard 1986, Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985, Byles 1988).

Leatherback sea turtles (*Dermochelys coriacea***)** are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1,000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984, Eckert et al. 1986, Eckert et al. 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerhead sea turtle (*Caretta caretta*) hatchlings forage in the open ocean and are often associated with *Sargassum* rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles eat a wide range of organisms including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads range from 211 m to 233 m (692-764ft.) (Thayer et al. 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyan et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyan et al. 1989).

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine DPSs (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic DPS, which remains listed as threatened. The February 15, 2012, memorandum stated that because the 2006 Opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the Northwest Atlantic DPS, the 2006 Opinion's conclusion that the fishery is not likely to jeopardize the continued existence of loggerhead sea turtles remains valid.

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. Hook-and-line gear used in the fishery includes commercial bottom longline gear and commercial and recreational vertical line gear (e.g., handline, bandit gear, and rod-and-reel). The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was most recently evaluated in the 2016 biological opinion (i.e., NMFS (2016a). In **Table 3.2.5.1** the 3-year estimated captures and mortalities authorized for the fishery in the 2016 biological opinion are specified. Section 5.2 of the 2016 biological opinion presents a summary of the data sources considered for the sea turtle analyses, estimation methods, and data limitations and assumptions associated with the estimates for each fishery component. Loggerhead sea turtles are the species most affected by the proposed action. The majority of estimated sea turtle captures appear to occur in the recreational vertical lines targeting snapper grouper

species due to the large amount of recreation fishing effort. However, it is also important to recognize that the sea turtle capture estimates for the recreational vertical line are also likely the most uncertain.

Table 3.2.5.1. Estimated 3-year sea turtle (T) and mortalities (M) estimates in the South Atlantic Snapper Grouper Fishery by fishery component and overall.

Fishery Component	Loggerhead		Kemp's ridley		Green		Hawksbill		Leatherback	
	T	M	T	M	T	M	T	M	T	M
Commercial Bottom Longline*	9	5	1	1	1	1	1	1	3	2
Commercial Vertical Line**	62	26	18	8	11	5	1	1	1	1
Recreational Vertical Line ***	546	165	159	48	96	30	2	1	1	1
All Components Combined	617	196	178	57	108	36	5	3	5	4
*Only 10 hardshell sea turtles combined are estimated to be captured every 3 years; only 1 hawksbill, Kemp's ridley or green sea turtle is expected to be captured and killed every 3 years in this component. **No more than 90 hardshell sea turtles combined are estimated for this component. ***No more than 801 hardshell sea turtle combined are estimated for this component.										

Regulations implemented through Amendment 15B to the Snapper Grouper FMP (74 FR 31225; June 30, 2009; SAFMC 2008) require all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles. Comprehensive Ecosystem-Based Amendment 2 modified these requirements (76 FR 82183; December 30, 2011; SAFMC 2011e) by requiring different gear for vessels with different freeboard heights, mirroring the requirements in the Gulf of Mexico. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles.

Snapper grouper vessels transiting to and from fishing areas and moving during fishing activity also pose a potential threat to sea turtles (NMFS 2016a). As explained in the 2016 biological opinion, it is very difficult to definitively or even approximately evaluate the potential risk to sea turtles stemming from specific vessel traffic from any action because of the numerous variables (e.g., vessel type, speed, traffic, environmental conditions, sea turtle abundance in area transited) that may impact vessel strike rates. This difficulty is compounded by a general lack of information on vessel use trends, particularly in regard to offshore vessel traffic.

3.2.5.3 ESA-Listed Marine Fish

Smalltooth sawfish (*Pristis pectinata*)

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 [the first was captured off North Carolina in 1963 and the other off Georgia in 2002 (National Smalltooth Sawfish Database, Florida Museum of Natural History)]. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25

meters (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food sources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

On June 29, 2016, NMFS published a final rule in the *Federal Register* listing **Nassau grouper** as threatened under the ESA due to a decline in its population (81 FR 42268). The final rule became effective on July 29, 2016. The Nassau grouper's confirmed distribution currently includes "Bermuda and Florida (USA), throughout the Bahamas and Caribbean Sea" (e.g., Heemstra and Randall 1993, Hill and Sadovy de Mitcheson, 2013). The Nassau grouper is primarily a shallow-water, insular fish species that has long been valued as a major fishery resource throughout the wider Caribbean, South Florida, Bermuda, and the Bahamas (Carter et al. 1994). As larvae, Nassau grouper are planktonic. After an average of 35-40 days and at an average size of 32 millimeters total length (TL), larvae recruit from an oceanic environment into demersal habitats (Colin 1992, Eggleston 1995). Juvenile Nassau grouper (12-15 centimeters TL) are relatively solitary and remain in specific areas (associated with macroalgae, and both natural and artificial reef structure) for months (Bardach et al.1958). As juveniles grow, they move progressively to deeper areas and offshore reefs (Tucker et al. 1993, Colin et al. 1997). Smaller juveniles occur in shallower inshore waters (3.7-16.5 meters [m]) and larger juveniles are more common near deeper (18.3-54.9 m) offshore banks (Bardach et al. 1958, Cervigón 1966, Silva Lee 1974, Radakov et al. 1975, Thompson and Munro 1978). Adult Nassau grouper also tend to be relatively sedentary and are commonly associated with high-relief coral reefs or rocky substrate in clear waters to depths of 130 m. Generally, adults are most common at depths less than 100 m (Hill and Sadovy de Mitcheson 2013) except when at spawning aggregations where they are known to descend to depths of 255 m (Starr et al. 2007). Nassau grouper form spawning aggregations at predictable locations around the winter full moons, or between full and new moons (Smith 1971, Colin 1992, Tucker et al. 1993, Aguilar-Perera 1994, Carter et al. 1994, Tucker and Woodward 1994). The most serious threats to the status of Nassau grouper today are fishing at spawning aggregations and inadequate law enforcement protecting spawning aggregations in many foreign nations. There are no known spawning aggregations within the South Atlantic Region.

Of the 3 basic types of gear used in the South Atlantic snapper grouper fishery by commercial and/or recreational fishers (i.e., hook-and-line gear, spear/powerheads, and black sea bass pots), we believe only snapper grouper hook-and-line gear may adversely affect smalltooth sawfish and Nassau grouper. Interactions with smalltooth sawfish are limited to the coast of Florida; and are quite rare. In the 2016 Opinion, NMFS anticipates only 8 smalltooth sawfish interactions every three years in all snapper grouper hook-and-line-gear components combined and they are anticipated to all be non-lethal. Nassau grouper incidental captures appear to be more frequent. Farmer (2016) estimated that over the last 10 years, a total of approximately 1,387 Nassau grouper have been captured annually in the fishery. Based on an estimated 20% mortality rate, Farmer (2016) estimated an annual average expected mortality of approximately 282 fish. Future anticipated captures and mortalities are expected to remain at these same levels.

Giant Manta Ray - *Manta birostris*

Giant manta rays are circumglobal in range, but within this broad distribution, individual populations are scattered and highly fragmented (CITES 2013). The giant manta ray can be found in all ocean basins. In terms of range, within the Northern Hemisphere, the species has been documented as far north as southern California and New Jersey on the United States west and east coasts, respectively (CITES 2013; Gudger 1922; Kashiwagi et al. 2010; Moore 2012). Clark (2010) suggests that giant manta rays may forage in less productive pelagic waters and conduct seasonal migrations following prey abundance. Satellite tracking studies using pop-up satellite archival tags registering movements of the giant manta ray from the Yucatan, Mexico, into the Gulf of Mexico (Gulf) (448 km) (Marshall et al. 2011a). Despite this large range, sightings are often sporadic. The timing of these sightings also varies by region (for example, the majority of sightings in Brazil occur during June and September, while in New Zealand sightings mostly occur between January and March) and seems to correspond with the movement of zooplankton, current circulation and tidal patterns, seawater temperature, and possibly mating behavior (Armstrong et al. 2016; Couturier et al. 2012; De Boer et al. 2015). However, a recent study by Stewart et al. (2016a) suggests that the species may not be as highly migratory as previously thought. Using pop-up satellite archival tags in combination with analyses of stable isotope and genetic data, the authors found evidence that giant manta rays may actually exist as well structured subpopulations off Mexico's coast that exhibit a high degree of residency (Stewart et al. 2016a). Additional research is required to better understand the distribution and movement of the species throughout its range. Within its range, the giant manta ray inhabits tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines (Kashiwagi et al. 2011; Marshall et al. 2009). As such, giant manta rays can be found in cooler water, as low as 19 °C, although temperature preference appears to vary by region (Duffy and Abbott 2003; Freedman and Roy 2012; Graham et al. 2012; Marshall et al. 2009). Additionally, giant manta rays exhibit a high degree of plasticity in terms of their use of depths within their habitat, with tagging studies that show the species conducting night descents of 200-450 meters (m) depths (Rubin et al. 2008; Stewart et al. 2016b) and capable of diving to depths exceeding 1,000 m (A. Marshall et al. unpubl. data 2011 cited in Marshall et al. [2011a]). In areas where the species is not subject to fishing, populations may be stable. For example, Rohner et al. (2013) reported that giant manta ray sightings remained constant off the coast of Mozambique over a period of eight years. Given the migratory nature of this species, population declines in waters where the manta rays are protected have also been observed but attributed to overfishing of the species in adjacent areas within its large home range.

Although manta rays have been reported to live for at least 40 years (Kitchen-Wheeler 2013; Marshall and Bennett 2010; Marshall et al. 2011b) with low rates of natural mortality (Couturier et al. 2012), the time needed to grow to maturity and the low reproductive rates mean that a female will be able to produce only 5-15 pups in her lifetime (CITES 2013). Generation time (based on *M. alfredi* life history parameters) is estimated to be 25 years (Marshall et al. 2011a; Marshall et al. 2011b). In the Atlantic, very little information on *M. birostris* populations is available, but there is a known, protected population within the Flower Garden Banks National Marine Sanctuary in the Gulf. However, researchers are still trying to determine whether the manta rays in this area are only giant manta ray individuals or potentially also comprise individuals of a new, undescribed species (Hinojosa-Alvarez et al. 2016; Marshall et al. 2009). With populations potentially ranging from around 100 to 1,500 individuals (see Table 4 in Miller and Klimovich [2016]), their life history traits and productivity estimates, particularly their low reproductive output and sensitivity to changes in adult survival rates, giant manta ray populations are inherently vulnerable to depletions, with low likelihood of recovery.

The most serious threat to giant manta rays is overfishing. Manta rays are caught throughout their global warm water range in the Atlantic, Pacific, and Indian Oceans in commercial and artisanal fisheries. Fishermen targeting manta rays primarily use harpoons and nets, while significant manta ray bycatch occurs in purse seine, gillnet, and trawl fisheries targeting other species. The prebranchial appendages (or gill plates), which *Manta spp.* use to filter planktonic food from the water, are highly valued in international trade for use in traditional medicine. Cartilage and skins are also traded internationally while meat is consumed or used for bait locally. Due to their association with nearshore habitats, manta rays are at elevated risk for exposure to a variety of contaminants and pollutants, including brevetoxins, heavy metals, polychlorinated biphenyls, and plastics. Many pollutants in the environment have the ability to bioaccumulate in fish species, however, only a few studies have specifically examined the accumulation of heavy metals in the tissues of manta rays (Essumang 2010; Ooi et al. 2015).

Plastics within the marine environment may also be a threat to the giant manta ray, as the animals ingest microplastics (through filter feeding) or become entangled in plastic debris, potentially contributing to increased mortality rates. Because giant manta rays are migratory and considered ecologically flexible (e.g., low habitat specificity), they may be less vulnerable to the impacts of climate change compared to other sharks and rays (Chin et al. 2010). However, as giant manta rays frequently rely on coral reef habitat for important life history functions (e.g., feeding, cleaning) and depend on planktonic food resources for nourishment, both of which are highly sensitive to environmental changes (Brainard et al. 2011; Guinder and Molinero 2013), climate change is likely to have an impact on the distribution and behavior of the giant manta ray. There is insufficient information to indicate how and to what extent changes in the reef community structure will affect the status of the giant manta ray.

Oceanic Whitetip Shark - *Carcharinus lonigmanus*

The oceanic whitetip is considered the only truly oceanic (i.e., pelagic) shark of its genus (Bonfil et al. 2008). They are distributed worldwide in epipelagic tropical and subtropical waters between 30° North latitude and 35° South latitude (Baum et al. 2006). In the western Atlantic, oceanic whitetips occur from Maine to Argentina, including the Caribbean and Gulf. The oceanic whitetip shark is a highly migratory species of shark that is usually found offshore in the open ocean, on the outer continental shelf, or around oceanic islands in deep water, occurring from the surface to at least 152 m depth. It has a clear preference for open ocean waters between 10° South latitude and 10° North latitude (Backus et al. 1956; Bonfil et al. 2008; Compagno 1984; Strasburg 1958). The species can be found in water temperatures between 15 °C and 28 °C, but it exhibits a strong preference for the surface mixed layer in water with temperatures above 20 °C, and is considered a surface-dwelling shark. Little is known about the movement or possible migration paths of the oceanic whitetip shark. Although the species is considered highly migratory and capable of making long distance movements, tagging data provides evidence that this species also exhibits a high degree of philopatry (i.e., site fidelity) in some locations. To date, there have been three tagging studies conducted on oceanic whitetip sharks in the Atlantic. Mark recapture data (number tagged=645 and recaptures=8) from the NMFS Cooperative Shark Tagging Program between 1962 and 2015 provide supporting evidence that the range of movement of oceanic whitetip sharks is large, with potential for transatlantic movements (Kohler et al. 1998; NMFS unpublished data).

The oceanic whitetip has an estimated maximum age of 17 years, with confirmed maximum ages of 12 and 13 years in the North Pacific and South Atlantic, respectively (Lessa et al. 1999; Seki et al. 1998).

However, other information from the South Atlantic suggests the species likely lives up to around 20 years old based on observed vertebral ring counts (Rodrigues et al. 2015). Sexual maturity is estimated to occur at ages of 6-7 years and the gestation period is 10-12 months. The number of pups in a litter ranges from 1-14 (mean=6) (Bonfil et al. 2008; Compagno 1984; IOTC 2015; Seki et al. 1998). Oceanic whitetip sharks are considered to have low genetic diversity and rank the fourth lowest in global mtCR genetic diversity (Ruck 2016). Ruck (2016) also notated that the relatively low mtDNA genetic diversity raises potential concern for the future genetic health of the species. Furthermore, Camargo et al. (2016) observed low levels of genetic variability for the species throughout his study area, and noted that these low genetic variability rates may represent a risk to the adaptive potential of the species leading to a weaker ability to respond to environmental changes (Camargo et al. 2016). Overall, the best available data indicate that the oceanic whitetip shark is a long-lived species (at least 20 years) and can be characterized as having relatively low productivity (based on the Food and Agriculture Organization of the United Nations productivity indices for exploited fish species, where $r < 0.14$ is considered low productivity), making them generally vulnerable to depletion and potentially slow to recover from overexploitation.

Currently, the most significant threat to oceanic whitetip sharks is mortality in commercial fisheries, largely driven by demand of the international shark fin trade, bycatch related mortality, as well as illegal, unreported, and unregulated fishing. Although generally not targeted, oceanic whitetip sharks are frequently caught as bycatch in many fisheries, including pelagic longline fisheries targeting tuna and swordfish, purse seine, gillnet, and artisanal fisheries. Oceanic whitetip sharks are also a preferred species for their large, morphologically distinct fins, as they obtain a high price in the Asian fin market. The oceanic whitetip shark's vertical and horizontal distribution significantly increases its exposure to industrial fisheries, including pelagic longline and purse seine fisheries operating within the species' core tropical habitat throughout its global range. The oceanic whitetip population size has likely declined significantly in the South Atlantic region due to historical exploitation of the species since the onset of industrial fishing; however, results of the extinction risk analysis team's analysis show that the oceanic whitetip shark population in the South Atlantic region has potentially stabilized since the 1990s/early 2000s (Young et al. 2016). The potential stabilization of oceanic whitetip sharks occurred concomitantly with the first Federal Fishery Management Plan for Sharks in the Northwest Atlantic Ocean and Gulf of Mexico, which directly manages oceanic whitetip shark under the pelagic shark group, and includes regulations on trip limits and quotas.

3.3 Economic Environment

3.3.1 Economic Description of the Commercial Sector

(to be completed)

3.3.2 Economic Description of the Recreational Sector

(to be completed)

3.3.3 Social Environment

Descriptions of the social and cultural environment of the snapper grouper fishery are contained in Jepson et al. (2005), Amendment 17A (SAFMC 2010a), and the Comprehensive ACL Amendment (SAFMC 2011c) and are incorporated herein by reference.

Since 2001, South Atlantic Snapper Grouper Unlimited Permits and Snapper Grouper 225-pound Trip Limit Permits have shown a downward trend (**Figure 3.3.3.1**) as would be expected with a limited entry program in place since 1998 and a "2 for 1" requirement for new permits. That trend will likely continue as long as the criteria are a continued part of management for the snapper grouper commercial fishery. The decline in the number of permits has slowed in recent years but continues to trend lower with the number of unlimited permits in 2013 going from 593 to 554 in 2017 and limited permits dropping from 130 in 2013 to 114 in 2017.

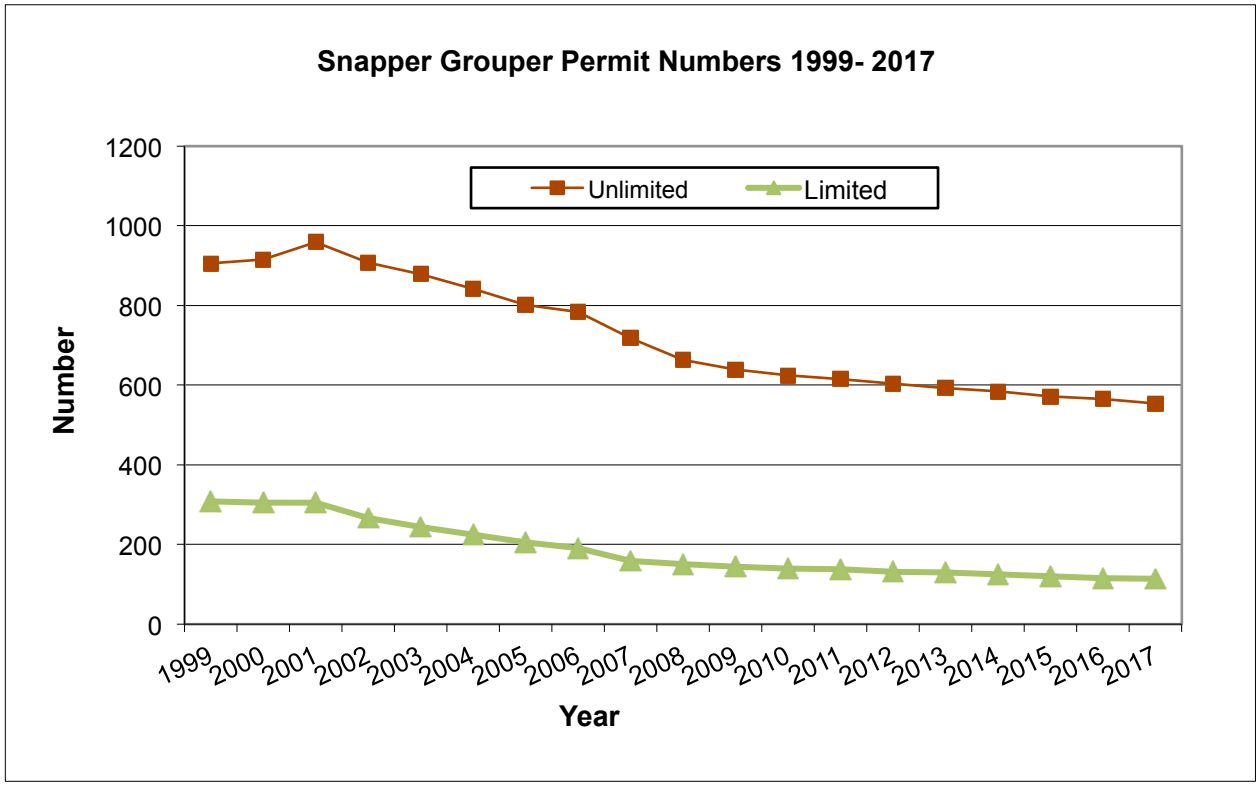

Figure 3.3.3.1. Snapper grouper Unlimited and 225-pound trip limit permits 1999-2017.
Source: NMFS SERO Permits (2017).

With a limited entry program in place since 1998 and a "2 for 1" requirement, a reduction in permits would be expected over time and will likely continue as long as the criteria are a continued part of management. More in-depth descriptions of many of the communities included in the figures below can be found in Jepson et al. (2005), Amendment 17A (SAFMC 2010a) and the Comprehensive Annual Catch Limit Amendment (SAFMC 2011c).

The geographical distribution of South Atlantic Snapper Grouper Unlimited and Limited Permits appears in **Figure 3.3.3.2**. There are several concentrations of unlimited permits (SG1) with the largest in

the Florida Keys and a smaller concentration near Jacksonville, FL. The northern South Carolina coast and southern North Carolina coast have the second largest concentration of unlimited permits with a smaller concentration in the Outer Banks and Wanchese in North Carolina. Although not concentrated in any particular zip code, Florida's southeastern coast does have a considerable number of permits spread throughout many different zip codes. Limited (SG2) permits are concentrated in Southern Florida with the majority in the Florida Keys communities.

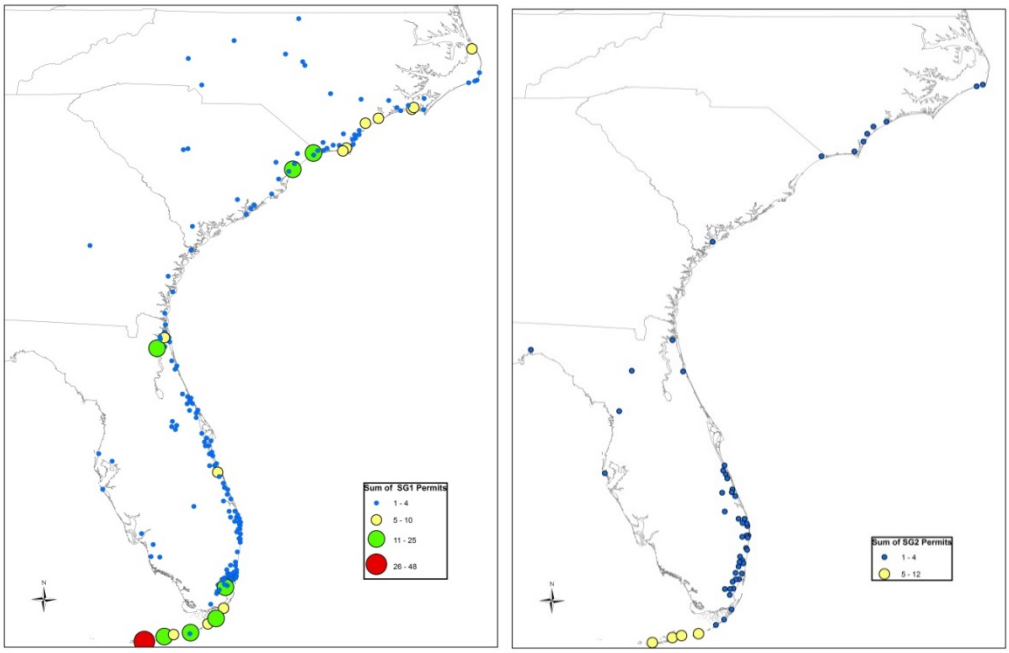

Figure 3.3.3.2. Snapper grouper unlimited (SG1) and limited (SG2) permits by owner's zip code. Source: NMFS SERO Permits (2017).

A regional quotient (RQ) measure was used to identify commercial fishing involvement at the community level by species or species group, in this case yellowtail snapper. The RQ measures the relative importance of a given species or species group across all communities in the region and represents the proportional distribution of commercial landings. This proportional measure does not provide the actual number of pounds or the value of the catch; data that might be confidential at the community level. The RQ is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities in the region. The measure is a way to quantify the importance of a particular species or species group to communities around the South Atlantic and suggest where impacts from management actions are more likely to be experienced. The time series for the describing the RQ was from 2010 to 2016. The data used for the RQ measure were assembled from the accumulated landings system (ALS), which includes commercial landings of all species from both state and federal waters and is based on dealer reports. These data were converted to provide landings by (dealer's) address.

As seen in **Figure 3.3.3.3**, most South Atlantic fishing communities with high regional quotient values for weight of yellowtail snapper are located in Florida. All other communities demonstrated considerably lower regional quotients.

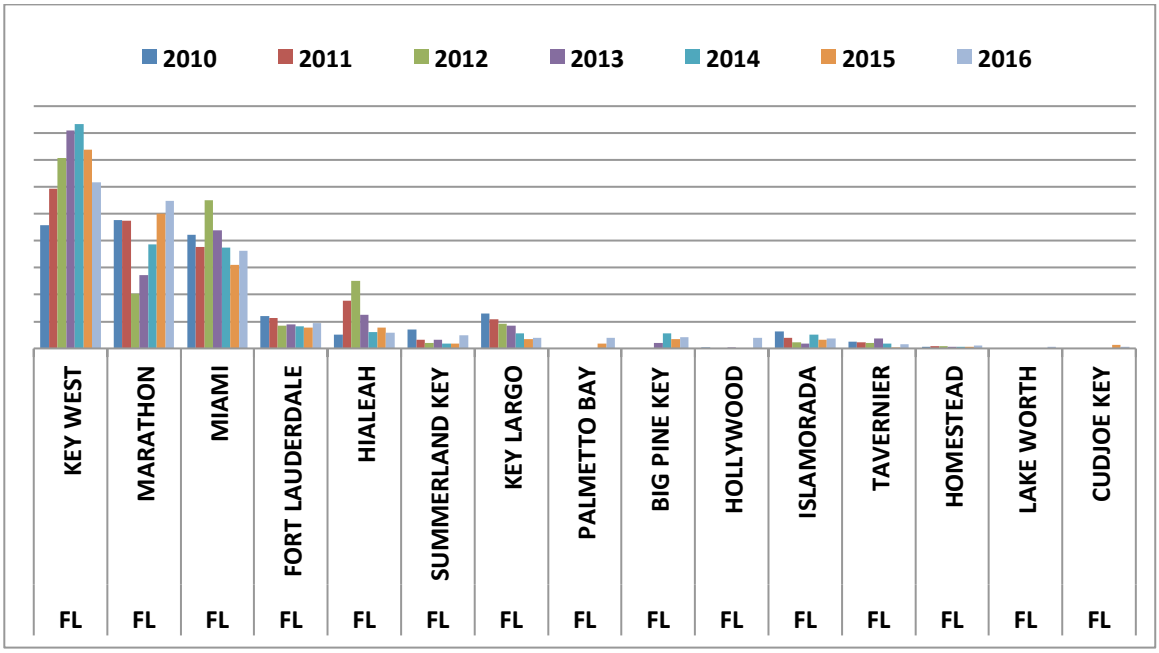

Figure 3.3.3.3. Regional quotient of pounds for yellowtail snapper by community 2010-2016
Source: NMFS SERO (2018).
*The quotients are not revealed in the x-axis to maintain confidentially.

Southeast Commercial and Recreational Engagement and Reliance on Fishing

Selecting the subset of communities from the figures depicting regional quotient, a comparison of two indices recently developed to understand overall dependence on commercial and recreational fishing is presented below. To better capture how South Atlantic fishing communities are engaged and reliant on fishing overall, these indices were created using secondary data from permit and landings information for the commercial and recreational sectors (Colburn and Jepson 2012; Jacob et al. 2013; Jepson and Colburn 2013). Fishing engagement is primarily the absolute numbers of permits, landings, and value within a community. Fishing reliance has many of the same variables as engagement divided by population to give an indication of the per capita impact of this activity within a given community.

Using a principal component and single solution factor analysis, each community receives a factor score for each index to compare to other communities. Using the 15 communities that were identified in the regional quotient figures, factor scores of both engagement and reliance for commercial fishing were plotted onto bar graphs. Each community's factor score is represented by a colored bar. Two thresholds of 1 and ½ standard deviation above the mean are plotted onto the graphs as trend lines to help determine a threshold for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation. A score above ½ standard deviation is considered moderately engaged or reliant, while over 1 standard deviation is considered very engaged or reliant.

Several of the communities in **Figure 3.3.3.4** exhibit both high commercial and recreational engagement. The communities of Big Pine Key, Fort Lauderdale, Islamorada, Key Largo, Key West, Marathon, Summerland Key, Tavernier and Miami are all highly engaged in both. The communities of Cudjoe Key, Islamorada, Key West, Marathon, and Tavernier are highly engaged and reliant on

recreational fishing. As discussed the community of Tavernier exceeds the highest threshold for both engagement and reliance upon both recreational and commercial fishing.

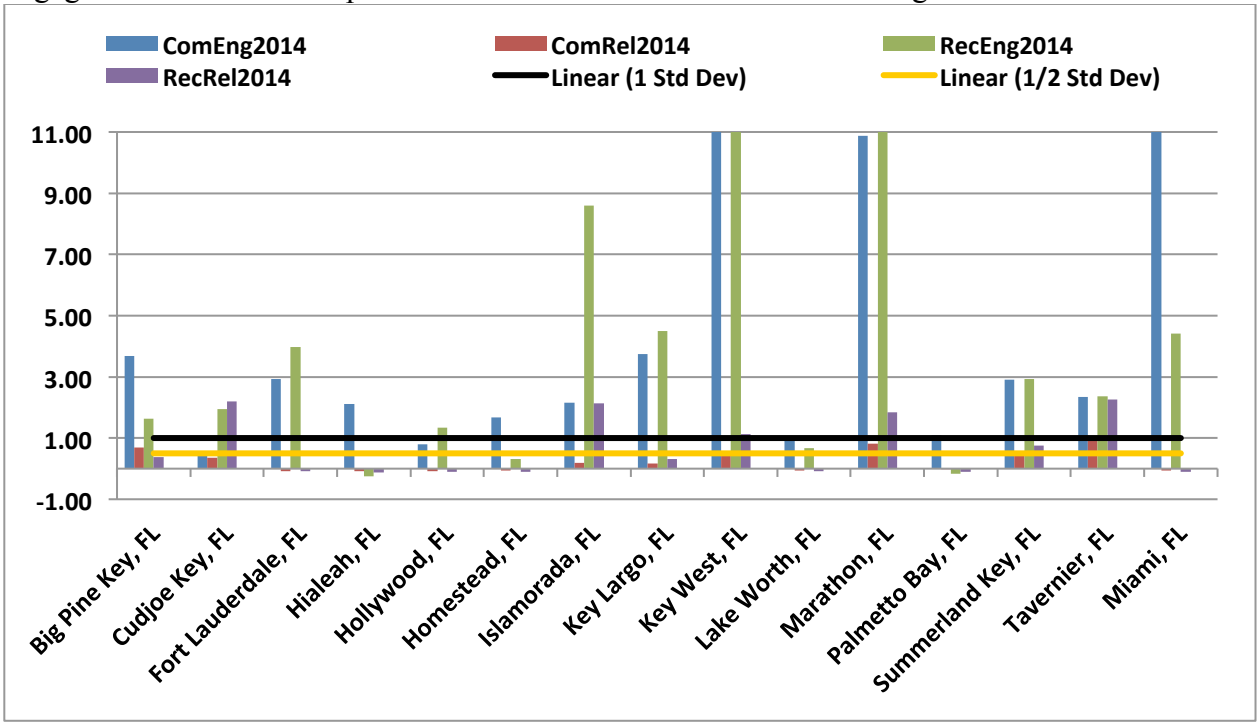

Figure 3.3.3.4. Commercial and recreational fishing engagement and reliance for fishing communities (FL) with landings of yellowtail snapper
Source: SERO Social Indicators Database 2017 (American Community Survey 2014)

3.3.4 Environmental Justice

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

Commercial fishermen and coastal communities in the South Atlantic may experience some impacts by the proposed action depending upon the alternatives selected and whether they have negative or positive social effects. However, information on the race and income status for many of the individuals involved in fishing is not available. To evaluate where EJ concerns might exist, census data have been combined to create a suite of indices that address issues of environmental justice, like number of minorities and poverty.

The aforementioned suite of indices was created to examine the social vulnerability of coastal communities and is depicted in **Figure 3.3.4.1**; the three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability (Jepson and Colburn 2013; Jacob et al. 2013). Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the age of 5, disruptions such as higher separation rates, higher crime rates and unemployment all are signs of populations experiencing vulnerabilities. These vulnerabilities signify that it may be difficult for someone living in these communities to recover from significant social disruption that might stem from a change in their ability to work or maintain a certain income level.

There are four Florida communities that exceed both thresholds for all three social vulnerability indices in **Figure 3.3.4.1**: Hialeah, Homestead, Lake Worth, and Miami. Other demonstrates some vulnerability with scores above the ½ standard deviation threshold for some indices with Fort Lauderdale, Hollywood and Marathon exhibiting some social vulnerability.

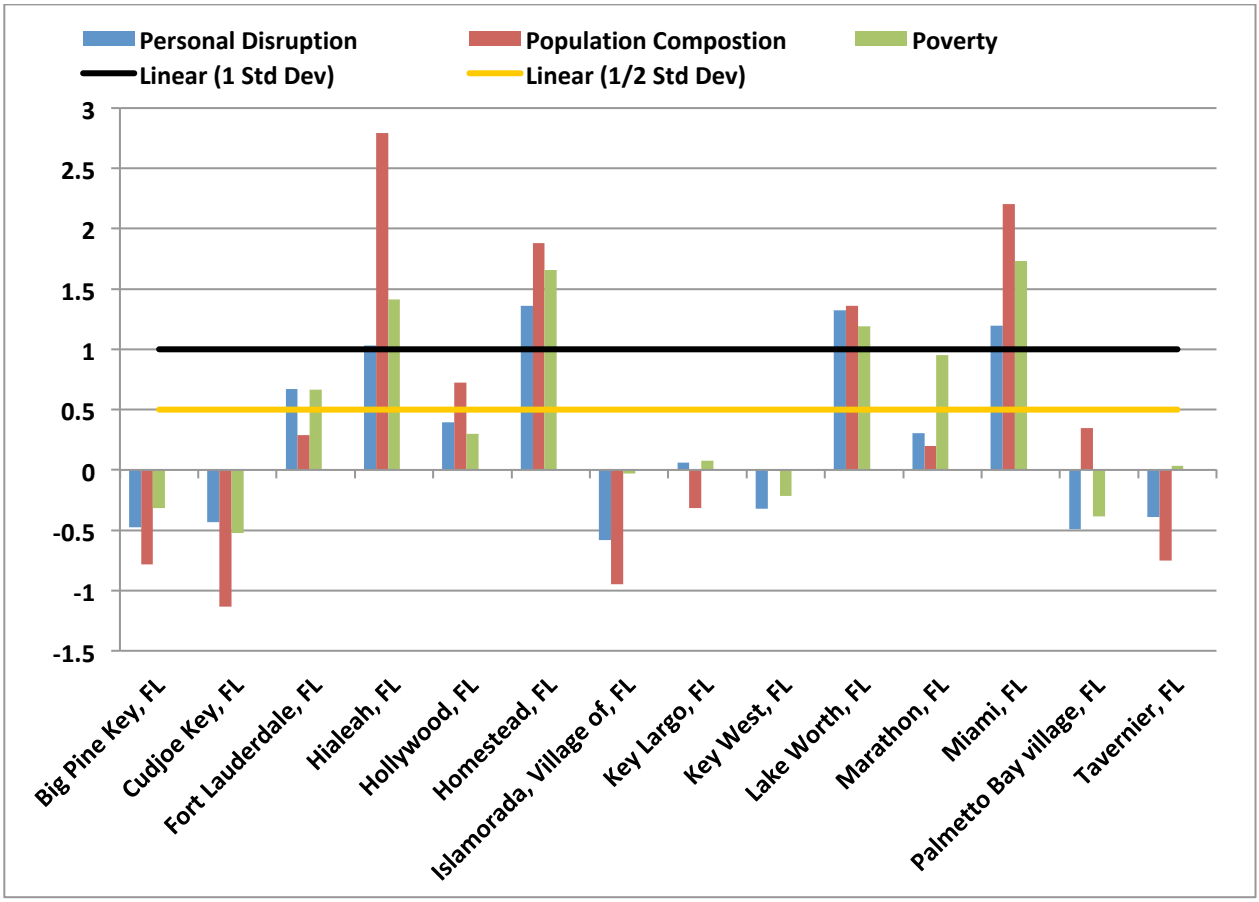

Figure 3.3.4.1. Social Vulnerability Indices for South Atlantic Fishing Communities (FL)
Source: SERO Social Indicators Database 2017 (American Community Survey 2014)

In summary, four communities exhibit high social vulnerabilities: Hialeah, Homestead, Lake Worth, and Miami. Those communities that exhibit high social vulnerabilities may experience negative social effects if the alternatives within this amendment have adverse impacts. This is not to say that these communities will be negatively affected, but they may experience difficulties if there were to be adverse impacts from the actions within this amendment. These are the communities that would be most at risk depending upon their fishing engagement and reliance. Of course, there are communities that do not show high vulnerabilities and may have high involvement without exhibiting high engagement and reliance. In these cases, there could be specific populations within those communities that might be vulnerable. However, we are not able to demonstrate that type of vulnerability at this time. In other cases, like Summerland Key, Florida we do not have sufficient information to determine social vulnerability because census data do not exist at the CDP level.

Although we have information concerning the community's overall status with regard to minorities and poverty and other social indicators, we do not have such information for fishermen themselves. Therefore, we can only place fishing activity within the community as a proxy for understanding the role that minorities and poverty and social vulnerability overall have in those being affected by regulatory change. While subsistence fishing is also an activity that can be affected by regulatory

change, we have very little, if any, data on this activity at this time. We assume that the effects to other sectors will be similar to those that affect subsistence fishermen who may rely on yellowtail snapper.

3.4 Administrative Environment

3.4.1 The Fishery Management Process and Applicable Laws

3.4.1.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (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 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 South Atlantic 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. On the South Atlantic Council, 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, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the South Atlantic Council Committees have full voting rights at the Committee level but not at the full South Atlantic Council level. The South Atlantic Council also established two voting seats for the Mid-Atlantic Council on the South Atlantic Mackerel Committee. South Atlantic 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 South Atlantic 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.

3.4.1.2 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 regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division 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 South Atlantic 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 the Atlantic States Marine Fisheries Commission (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 consistent state regulations to conserve coastal species. The ASFMC is also represented at the South Atlantic Council level, but does not have voting authority at the South Atlantic 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.

3.4.1.3 Enforcement

Both the NMFS Office for Law Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce South Atlantic Council 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 In-season Accountability Measures for Yellowtail Snapper

4.1.1 Biological Effects

Commercial and recreational landings of yellowtail snapper have remained below the current annual catch limit (ACL) since 2012, when ACLs were first implemented for South Atlantic Council-managed species not undergoing overfishing through the Comprehensive ACL Amendment (SAFMC 2011) (**Figure 3.2.1**). An in-season closure for the commercial sector would be expected in mid-May under **Alternative 1 (No Action)** whereas **Alternative 2** would not result in an in-season closure and combined ladings are expected to amount to 93% of the total ACL (**Tables 4.1.1** and **4.1.2**). **Alternatives 3** and **4** are expected to result in the commercial sector harvesting its ACL before the end of the season and combined landings (commercial and recreational) reaching 84% and 76% of the total ACL, respectively (**Tables 4.1.1** and **4.1.2**), resulting in in-season closures for the commercial sector.

Alternatives*

1 (No Action). The current commercial and recreational in-season accountability measures are to close the respective sector if that sector's annual catch limit is met or is projected to be met.

2. An in-season closure will not occur for either sector until the total annual catch limit is met or is projected to be met. Close both sectors when the total annual catch limit is met or is projected to be met.

DRAFT 3. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 80% of the total annual catch limit.

DRAFT 4. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 70% of the total annual catch limit.

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

The fishing year for yellowtail snapper was recently revised to extend from August 1 through July 1 (Regulatory Amendment 25; SAFMC 2015) so that, if an in-season closure were triggered due to landings reaching the ACL, the closure would coincide with the peak of the spawning season. Yellowtail snapper spawn over a protracted period with peaks at different times in different areas. In southeast Florida, spawning occurs during spring and summer with peak spawning in May-July (Grimes 1987, Muller et al. 2003).

Landings data show that an average of 90% of the commercial ACL has been harvested from 2012-2017 (**Table 3.2.1**). **Alternative 4** would be the most conservative biologically, followed by **Alternative 1 (No Action)**, **Alternative 3**, and **Alternative 2**. However, the predicted closure dates for the commercial sector under **Alternative 1 (No Action)** and **Alternative 4** are essentially the same (**Table 4.1.2**). Biological benefits would be realized if fishing mortality were reduced as a result of early closures, especially during May through July, the peak of the yellowtail snapper spawning season in South Florida (see **Section 3.2.1**). Therefore, **Alternative 1 (No Action)** and **Alternative 4** would result in similar potential biological benefits to spawning fish. **Alternative 3** is expected to result in commercial harvest closing in mid-June, still possibly imparting some benefit from a period of reduced fishing mortality during the spawning season. Lastly, **Alternative 4** would result in fishing activity (commercial and recreational) continuing year-round, resulting in the least biological benefit among the alternatives being considered. Hence, biological benefits would be highest for spawning fish under **Alternative 4** and **Alternative 1 (No Action)**, followed by **Alternative 3** and **Alternative 2**.

Table 4.1.1. Projected landings [pounds (lbs) whole weight (ww)] of yellowtail snapper under each proposed alternative in Action 1. The current recreational ACL is 1,440,990 lbs ww; current commercial ACL is 1,596,510 lbs ww. The combined (total) ACL is 3,037,500 lbs ww.

Alternative	Pounds (whole weight) available for harvest by Rec. Sector	Projected Rec Landings	Pounds (whole weight) available for harvest by Rec. Sector	Projected Comm Landings	Projected Total Landings	% Total ACL Landed
No Action	1,440,990	738,194	1,596,510	1,596,510	2,334,704	77%
Alt 2	3,037,500 (Total ACL)	738,194	3,037,500 (Total ACL)	2,078,627	2,816,821	93%
Alt 3	3,037,500 (Total ACL)	738,194	2,430,000 (80% Total ACL)	1,798,473	2,536,667	84%
Alt 4	3,037,500 (Total ACL)	738,194	2,126,250 (70% Total ACL)	1,578,954	2,317,148	76%

Table 4.1.2. The projected South Atlantic yellowtail snapper commercial and recreational closure dates under each proposed alternative in Action 1.

Alternative	Projected Rec Closure Date	Projected Comm Closure Date
Alt 1 (No Action)	No closure	May 14
Alt 2	No closure	No closure
Alt 3	No closure	June 11
Alt 4	No closure	May 12

4.1.2 Economic Effects

In general, revising accountability measures to allow more harvest can result in positive short term, direct economic effects. For the recreational sector, it is assumed that overall harvest levels and rates will not change, therefore there are no anticipated direct economic effects. **Action 1** does have the

potential to indirectly affect recreational harvest rates if additional commercial harvest leads to localized depletion of yellowtail snapper in areas used by anglers targeting yellowtail snapper. Should a reduction in harvest occur as a result for the recreational sector, it would create negative economic effects through a reduction in consumer surplus (CS). Additionally, under **Alternative 2**, while a harvest closure in the yellowtail snapper fishery is not anticipated, should commercial landings increase by a greater amount than projected, there is the potential that harvest may close for both sectors. In this case, it can be expected that negative economic effects would occur if recreational fishery participants reduce effort, switch to substitute species that exhibit a lower CS, or reduce fishing expenditures, thereby negatively affecting the revenue of for-hire and other fishing related businesses. These potential negative economic effects are far more unlikely for the recreational sector under **Alternative 3** and **Alternative 4**, as there is a commercial harvest closure provision in place once 80 percent or 70 percent of the total ACL is landed respectively for these two alternatives.

With increasing an trend in yellowtail snapper harvest, the commercial sector has met its sector ACL in recent years, triggering a harvest closure for the remainder of the fishing year as part of the current commercial accountability measures (AMs) for yellowtail snapper. As such, it is assumed that the commercial sector will be able to fully harvest beyond its ACL for the foreseeable future if provided the opportunity to do so. **Alternative 2** and **Alternative 3** are projected to increase commercial landings of yellowtail snapper, while commercial landings are projected to decrease under **Alternative 4** (**Table 4.1.1**). The estimated change in yellowtail snapper landings for the alternatives of **Action 1** in comparison to **Alternative 1 (No Action)** is provided in **Table 4.2.1**. In computing these values, commercial landings in pounds whole weight (lbs ww) provided in **Table 4.1.1** were converted to pounds gutted weight (lbs gw) using a conversion factor of 1.11. Additionally, to calculate the ex-vessel value of the difference between the baseline landings and projected landings, an ex-vessel price of $3.47 (2017 dollars) per pound (gw) was applied, which is the average ex-vessel price per pound (gw) of yellowtail snapper over the past three years of available data (2015-2017) (SEFSC-SSRG Socioeconomic Panel v.7 as accessed August 16, 2018). Inflation adjustments were made using the annual gross domestic product implicit price deflator provided by the U.S. Bureau of Economic Analysis. The estimated change in ex-vessel value ranges from approximately $1,507,000 under **Alternative 2** to -$54,882 under **Alternative 4** (2017 dollars).

Table 4.2.1. Estimated change in ex-vessel value for commercial landings of yellowtail snapper relative to **Alternative 1 (No Action)** for **Action 1**.

Alternative	Estimated change in commercial landings (lbs gw)	Estimated change in ex-vessel value (2017 dollars)
Alternative 2	434,340	$1,507,159
Alternative 3	181,949	$631,362
Alternative 4	-15,816	-$54,882

In addition to the increase in ex-vessel value described above, the commercial sector may also experience a prolonged season for yellowtail snapper under **Alternative 2** and **Alternative 3** which would be beneficial for both fishery participants and seafood dealers, as a longer season would provide a source of potential revenue for commercial participants during trips occurring later in the fishing year and additional product for seafood dealers to sell to and maintain customers. Conversely, **Alternative 4**

is projected to decrease the commercial season for yellowtail snapper, which would provide the inverse of the positive economic effects previously described. The estimated change in the commercial season for yellowtail snapper in comparison to **Action 1 (No Action)** ranges from an increase of 78 days under **Alternative 2** to an increase of 58 days under **Alternative 3** (**Table 4.1.2**). **Alternative 4** is projected to decrease the commercial harvest season for yellowtail snapper by 2 days (**Table 4.1.2**).

Long-term indirect economic effects may also occur due to **Action 1** and would depend on aggregate harvest levels, changes in seasonal fishing patterns, and potential changes in discard levels. If the yellowtail stock is negatively impacted by this action as a result of increased fishing pressure or discards, it could result in future reductions in allowable harvest levels and associated ex-vessel revenue as well as CS in the long-term.

In terms of the anticipated direct positive economic effects of **Action1**, **Alternative 2** is expected to generate the most positive effects followed by **Alternative 3**, **Alternative 1 (No Action)**, and **Alternative 4**.

4.1.3 Social Effects

In-season AMs can result in direct and indirect social effects because, when triggered, they restrict harvest in the current season. 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. Restrictions usually translate into reduced opportunity for harvest, which in turn can change fishing behaviors, such as switching to alternative species if the opportunity exists. That behavior can increase pressure on other stocks and/or amplify conflict. If there are no alternative fishing opportunities then loss of income may occur, which can act have a negative effect on the economy for fishing communities affected. If these economic consequences are substantial, increased unemployment and other disruptions community dynamics may occur, especially for vulnerable communities. While these negative effects are usually short lived, they may at times induce other indirect effects through the loss of fishing infrastructure, which would have a long-term negative effect on fishermen participating in the fishery experiencing the closure as well as other fisheries prevalent in the community. In general, the most beneficial in-season AMs in the long term are those that prevent overharvest from occurring, ensuring a healthy stock and continued sustainable fishing opportunities. However, some flexibility in how these AMs are triggered can help to mitigate the negative short-term impacts on fishermen and associated businesses and communities.

Maintaining the current commercial yellowtail snapper AMs under **Alternative 1 (No Action)** would be expected to result in negative effects on communities in Florida resulting from continued in-season closures of the commercial sector. More flexibility in when an in-season closure will occur, as proposed under **Alternative 2**, **Alternative 3**, and **Alternative 4** would be expected to be more beneficial to fishing communities. This flexibility is particularly important for fishing communities in southern Florida working to recover and rebuild following the 2017 hurricane season. For the recreational sector of the yellowtail snapper fishery, maintaining the current AMs under **Alternative 1 (No Action)** would not be expected to result in additional negative effects as the recreational ACL has not been met in recent years.

Alternative 2 is not projected to result in an in-season closure and would be most beneficial to commercial fishermen, followed by **Alternative 3** and **Alternative 4** with projected closure dates of June 11th and May 12th, respectively (**Table 4.1.2**). However, if recreational harvest of yellowtail snapper increases unexpectedly, fishermen and fishing communities could experience negative social effects associated with a decrease in private recreational and for-hire fishing opportunities resulting from an in-season closure. Experiencing in-season closures for both the recreational and commercial sector would result in the negative effects associated with restricted access being more severe, particularly for fishing communities that are highly engaged in both the commercial and recreational yellowtail snapper fishery.

4.1.4 Administrative Effects

Alternative 2 is not projected to result in an in-season closure for both the commercial and recreational sector and would yield the most beneficial administrative effects. There would be no need to prepare a closure package; publish a notice in the Federal Register followed by a fishery bulletin announcing the closure to the public; and compliance and enforcement of the closure. **Alternative 1 (No Action)**, **Alternative 2**, and **Alternative 3** would result in an in-season closure of the commercial sector and would therefore be expected to result in similar and additional administrative burdens, when compared with **Alternative 2**.

Chapter 5. Council's Choice for the Preferred Alternatives

Action 1. Revise the In-season Accountability Measures for Yellowtail Snapper

5.1.1 Snapper Grouper Advisory Panel (AP) Comments and Recommendations

5.1.2 Law Enforcement AP Comments and Recommendations

5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

5.1.4 Public Comments and Recommendations

5.1.5 South Atlantic Council's Conclusion

Alternatives*

1 (No Action). The current commercial and recreational in-season accountability measures are to close the respective sector if that sector's annual catch limit is met or is projected to be met.

2. An in-season closure will not occur for either sector until the total annual catch limit is met or is projected to be met. Close both sectors when the total annual catch limit is met or is projected to be met.

DRAFT 3. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 80% of the total annual catch limit.

DRAFT 4. An in-season closure will occur for the commercial sector if the commercial annual catch limit has been met and the total catch (commercial and recreational) reaches, or is projected to reach, 70% of the total annual catch limit.

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

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

Chapter 6. Cumulative Effects

(from VB Reg 27 as placeholder)

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 (South Atlantic 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 **Chapter 3**. For the actions found in Vision Blueprint Regulatory Amendment 27 (Regulatory Amendment 27) 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 2014 through 2018.

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 (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 C (History of Management)**.

Past Actions

The Blueline Tilefish Emergency Rule to the Snapper Grouper FMP implemented temporary measures to reduce overfishing of blueline tilefish while permanent measures were being developed in Amendment 32. The temporary rule removed the blueline tilefish portion from the deep-water complex annual catch limits (ACL), and established separate commercial and recreational ACLs and accountability measures (AMs). The emergency rule published on April 17, 2014 (79 FR 21636). Those measures were extended through a temporary rule on October 14, 2014 (79 FR 61262, October 10, 2014), and were effective through April 18, 2015, while Amendment 32 and the associated rulemaking were being developed.

The Generic Dealer Reporting Amendment, which became effective on August 7, 2014, established one dealer permit for the Gulf of Mexico and South Atlantic regions and increased the reporting frequency requirements for species managed by the South Atlantic Council and Gulf of Mexico Fishery Management Council. This amendment was expected to improve fisheries data collection, through more timely and accurate dealer reporting, and streamline the dealer permit system.

Regulatory Amendment 14 to the Snapper Grouper FMP, which became effective on December 8, 2014, in part, modified the commercial and recreational fishing year for greater amberjack, and modified the recreational AM for vermilion snapper.

Regulatory Amendment 21 to the Snapper Grouper FMP, which became effective on November 6, 2014, modified the definition of the overfished threshold for red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack.

Amendment 32 to the Snapper Grouper FMP, which became effective on March 30, 2015, implemented meaures to end overfishing of blueline tilefish. The amendment removed blueline tilefish from the deepwater complex, specified AMs, recreational ACLs, and a commercial trip limit, and adjusted the recreational bag limit. The amendment also specified ACLs and revised the AMs for the recreational section of the deepwater complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, black snapper, and blackfin snapper).

Amendment 29 to the Snapper Grouper FMP, which became effective on July 1, 2015, updated the South Atlantic Council's acceptable biological catch (ABC) control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Stocks," adjusted ABCs for the affected unassessed species, specified ACLs for 7 species based on the updated ABCs, and modified management measures for gray triggerfish.

Regulatory Amendment 20 to the Snapper Grouper FMP, which became effective on August 20, 2015, adjusted the recreational and commercial ACLs for snowy grouper, as well as adjusted the rebuilding strategy, modified the commercial trip limit and the recreational bag limit, and modified the recreational fishing season.

Amendment 33 to the Snapper Grouper FMP (also included with Amendment 7 to the FMP for the Dolphin and Wahoo Fishery of the Atlantic), which became effective on December 28, 2015, in part, was implemented to allow recreational fishermen to bring dolphin and wahoo fillets from The Commonwealth of The Bahamas (The Bahamas) into the U.S. exclusive economic zone (EEZ), and update regulations allowing recreational fishermen to bring snapper grouper fillets from the Bahamas into the U.S. EEZ.

Amendment 34 to the Snapper Grouper FMP (included in the Generic AM and Dolphin Allocation Amendment), in part, modified AMs for snapper grouper species to make them more consistent with AMs already implemented for other species and other FMPs. The regulations became effective on February 22, 2016.

Regulatory Amendment 25 to the Snapper Grouper FMP, in part, revised the commercial and recreational ACLs for blueline tilefish. The reguations for blueline tilefish became effective on July 13 2016.

Present Actions

The Vision Blueprint Recreational Regulatory Amendment 26 (Regulatory Amendment 26) for the Snapper Grouper FMP considers actions to establish a recreational deep-water aggregate, and specify the recreational season and bag limit for species in the deep-water aggregate. The amendment would also remove the recreational minimum size limit for deep-water species, modify the recreational minimum size limit for gray triggerfish off east Florida, and modify the bag limit for the 20-Fish aggregate.

Reasonably Foreseeable Future Actions

At the March 2018 meeting, the South Atlantic Council directed staff to continue to work on actions through Regulatory Amendment 29 to the Snapper Grouper FMP to address the use of best fishing practices and powerhead regulations in a framework amendment to expedite development (these actions were previously included in Amendment 46). The amendment was approved for scoping at the June 2018 meeting.

At the March 2018 meeting, the South Atlantic Council directed staff to conduct scoping webinars for Amendment 42 (Modifications to Sea Turtle Release Gear and Snapper Grouper Framework) to the Snapper Grouper FMP for proposed modifications to regulations for vessels with South Atlantic snapper grouper commercial or for-hire permits to allow the use of three additional sea turtle release gear types. The amendment also proposes changes to the snapper grouper framework procedure to facilitate modifying protected resources' release gear and handling requirements in the future. Scoping hearings were conducted in April 2018. South Atlantic Council staff delivered a summary of scoping comments and an overview of the decision document at the June 2018 meeting.

At the June 2018, meeting, the South Atlantic Council directed staff to begin development of an abbreviated framework (Abbreviated Framework Amendment 2) to define the ACLs for vermilion snapper and black sea bass based on the results of recent SEDAR stock assessments. Public hearings and final approval for Secretarial review are scheduled to be held at the September 2018 South Atlantic Council meeting.

At the June 2018 meeting, the South Atlantic Council reviewed Amendment 45 to the Snapper Grouper FMP (included in the Comprehensive ABC Control Rule Amendment) Options Paper and comments, and approved the document for scoping in late 2018. The amendment 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.

Expected Impacts from Past, Present, and Future Actions

In recent years, participants in the snapper grouper commercial 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, and weather/temperature, affect availability of some species to the commercial fleets in different parts of the South Atlantic Council's jurisdiction.

The proposed actions in Regulatory Amendment 27 are not expected to result in significant cumulative adverse biological or socio-economic effects (see **Chapter 4**). The proposed actions are

intended to address commercial stakeholder input to enable equitable access for fishermen participating in the snapper grouper fishery, and to minimize discards. The actions are expected to improve management of the commercial sector of the snapper grouper fishery to order to achieve optimum yield, while minimizing, to the extent practicable, adverse socio-economic effects for commercial fishermen in the South Atlantic Region.

The proposed actions to consider split seasons for blueline tilefish, snowy grouper, greater amberjack, and red porgy, are intended to "line up" harvest for species that are often caught together to level out accessibility in different areas and to reduce regulatory discards, for the commercial sectors to snapper grouper species in the South Atlantic region. This may maximize efficiency on trips targeting multiple species and increase fishing opportunities, thus providing some economic relief for commercial fishermen who harvest snapper grouper species.

Modifying or specifying trip limits for blueline tilefish, greater amberjack, red porgy, vermilion snapper, and the Other Jacks Complex may help slow the rate of harvest, lengthen a season, and allow the commercial sector to better utilize ACLs. However, trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Yet, a longer open season could be beneficial to the commercial fleet and to end users (restaurant owners, fish houses, and consumers) by improving consistency of availability. The likely cumulative socioeconomic effects would be improved commercial fishing opportunities, and benefits to associated businesses and communities.

Actions that remove size limits for deepwater species are expected to reduce discard mortality. And actions that address almaco jack and gray triggerfish size limits were intended to respond to stakeholder's concerns over the small size and resulting poor commercial value of the fish being landed, and to stakeholders regarding increasing discards of gray triggerfish in south Florida where the average size of gray triggerfish is smaller than that in northeast Florida, respectively.

When combined with the impacts of past, present, and future actions affecting the snapper grouper fishery, specifically for the species in Regulatory Amendment 27, minor cumulative impacts are likely to accrue, such as monitoring ACLs for the commercial sector, and socio-economic benefits associated with improved management strategies.

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.st.nmfs.noaa.gov/ecosystems/climate/index), 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 marina 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 will occur. In the near term, it is unlikely that the management measures contained in Amendment 43 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.

Deepwater-Horizon Oil Spill

On April 20, 2010, an explosion occurred on the Deepwater Horizon MC252 oil rig, resulting in the release of an estimated 4.9 million barrels of oil into the Gulf of Mexico (Gulf). In addition, 1.84 million gallons of Corexit 9500A dispersant were applied as part of the effort to constrain the spill. The cumulative effects from the oil spill and response may not be known for several years. The oil spill affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil is dispersed on the surface, and because of the heavy use of dispersants, oil is also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf, as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are more persistent in the environment and can be transported hundreds of miles. Oil on the surface of the water could restrict the normal process of

atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. Zooplankton that feed on algae could also be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

The highest concern is that the oil spill may have impacted spawning success of species that spawn in the summer months, either by reducing spawning activity or by reducing survival of the eggs and larvae. Effects on the physical environment, such as low oxygen, could lead to impacts on the ability of larvae and post-larvae to survive, even if they never encounter oil. In addition, effects of oil exposure may create sub-lethal effects on the eggs, larva, and early life stages. The stressors could potentially be additive, and each stressor may increase the susceptibility to the harmful effects of the other. The oil from the spill site was not detected in the South Atlantic region, and does not likely pose a threat to the South Atlantic species addressed in this amendment. However, the effects of the oil spill on fish species would be taken into consideration in future Southeast Data Assessment and Review assessments. Indirect and inter-related effects on the biological and ecological environment of the fisheries in concert with the Deepwater Horizon MC252 oil spill are not well understood. Changes in the population size structure could result from shifting fishing effort to specific geographic segments of populations, combined with any anthropogenically induced natural mortality that may occur from the impacts of the oil spill. The impacts on the food web from phytoplankton, to zooplankton, to mollusks, to top predators may be significant in the future.

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 alternative on the human environment appear in **Chapter 4** of this document. None of the impacts of the action 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. This action is 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 action is 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 action is 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 commercial 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 action relates to the harvest of indigenous species in the Atlantic, and the activities/regulations being altered does not introduce non-indigenous species, and is 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 (IPT) Members

(update)

Name	Agency/Division	Title
Brian Cheuvront	SAFMC	Deputy Executive Director for Management
Myra Brouwer	SAFMC	IPT Lead/Fishery Biologist
John Hadley	SAFMC	Fishery Economist
Christina Wiegand	SAFMC	Social Scientist
Roger Pugliese	SAFMC	Senior Fishery Biologist
Mike Errigo	SAFMC	Data analyst
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Scott Sandorf	SERO/SF	Technical Writer and Editor
Alisha DiLeone	SERO/SF	Fishery Analyst
Mike Travis	SERO/SF	Economist
Nikhil Mehta	SERO/SF	Fishery Biologist/NEPA
Mike Jepson	SERO/SF	Social Scientist
Pat O'Pay	SERO/PR	Protected Resources Specialist
David Dale	SERO/HC	EFH Specialist
Noah Silverman	NMFS/SER	Regional NEPA Coordinator
Monica Smit-Brunello	NOAA GC	General Counsel
TBD (Manny Antonaras)	SERO/OLE	Criminal Investigator
Scott Crosson	SEFSC	Economist
Kyle Shertzer	SEFSC	Biologist

NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, GC = General Counsel.

Chapter 8. Agencies and Persons Consulted

Responsible Agency

South Atlantic
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
(843) 769-4520 (FAX)
safmc@safmc.net

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

Environmental Assessment:

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
Gulf and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fishery Management Council
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

Chapter 9. References

Appendix A. Considered But Rejected Alternatives

Action 2. Revise the Post-season Accountability Measures for Yellowtail Snapper

Sub-Action 2.1. Post-season accountability measures for the commercial sector.

Alternative 1 (No Action). The current commercial post-season accountability measure is to reduce the commercial annual catch limit by the amount of the commercial overage in the following fishing year only if the species is overfished and the total annual catch limit is exceeded.

Alternative 2. If the commercial landings are estimated by the Science and Research Director to have exceeded the commercial annual catch limit in the previous fishing year, the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to reduce the commercial annual catch limit by the amount of the overage to prevent the commercial sector's annual catch limit from being exceeded. The reduction in commercial annual catch limit would occur if, based on the most recent Status of U.S. Fisheries Report to Congress, the stock is determined to be:

Sub-Alternative 2a. undergoing overfishing
Sub-Alternative 2b. overfished
Sub-Alternative 2c. regardless of stock status

Alternative 3. If the commercial landings are estimated by the Science and Research Director to have exceeded the commercial annual catch limit in the previous fishing year, implement a trip limit for the commercial sector the following fishing year by the amount estimated to prevent the commercial annual catch limit from being exceeded.

Sub-Action 2.2. Post-season accountability measures for the recreational sector.

Alternative 1 (No Action). The current recreational post-season accountability measure is a shortening of the recreational season which may be triggered in the following fishing year if the recreational annual catch limit is exceeded, but only after recreational landings have be monitored for persistence in increased landings. The length of the recreational season is not reduced if the Regional Administrator determines the best available science shows it is not necessary. If a reduction is necessary, the recreational season may be shortened and the recreational annual catch limit reduced in the following fishing year by the amount of the recreational overage only if the species is overfished and the total annual catch limit is exceeded. Yellowtail snapper are included in the 10-snapper recreational aggregate bag limit.

Alternative 2. If the recreational landings are estimated by the Science and Research Director to have exceeded the recreational annual catch limit in the previous fishing year, the AA will file a

notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to reduce the recreational annual catch limit by the amount of the overage to prevent the recreational sector's annual catch limit from being exceeded. The reduction in recreational annual catch limit would occur if, based on the most recent Status of U.S. Fisheries Report to Congress, the stock is determined to be:

Sub-Alternative 2a. undergoing overfishing
Sub-Alternative 2b. overfished
Sub-Alternative 2c. regardless of stock status

Alternative 3. If the recreational landings are estimated by the Science and Research Director to have exceeded the recreational annual catch limit in the previous fishing year, implement a bag limit reduction for the recreational sector the following fishing year, if applicable, by the amount estimated to prevent the recreational annual catch limit from being exceeded.

Disussion: The South Atlantic Council stated their intent to continue development of Amendment 44 to consider long-term management solutions for yellowtail snapper. Therefore, the South Atlantic Council determined it was not immediately necessary to revise post-season accountability measures at this time. The action in Regulatory Amendment 32 is intended as a temporary, short-term solution to avoid further negative socio-economic effects to coastal communities as a result of early closures.

Appendix B. Glossary

Allowable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY}.

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Caribbean Fishery Management Council (CFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (See year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached BMSY at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The % of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

$F_{30\%SPR}$: Fishing mortality that will produce a static SPR = 30%.

$F_{45\%SPR}$: Fishing mortality that will produce a static SPR = 45%.

F_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}.

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Framework: An established procedure within a fishery management plan that has been approved and implemented by NMFS, which allows specific management measures to be modified via regulatory amendment.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Headboat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Information Program (MRIP): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: % or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock,

a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advice to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (SAFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix C. History of Management

South Atlantic Snapper Grouper History of Management
Last Updated: 7/27/18

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The following table summarizes actions in each of the amendments to the original Snapper Grouper Fishery Management Plan (FMP), as well as some events not covered in amendment actions.

*Shaded rows indicate FMP Amendments

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
FMP (1983)	08/31/83	PR: 48 FR 26843 FR: 48 FR 39463	-12" total length (TL) limit – red snapper, yellowtail snapper, red grouper, Nassau grouper; -8" limit – black sea bass; -4" trawl mesh size; -Gear limitations – poisons, explosives, fish traps, trawls; -Designated modified habitats or artificial reefs as Special Management Zones (SMZs).
Regulatory Amendment #1 (1987)	03/27/87	PR: 51 FR 43937 FR: 52 FR 9864	-Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear; -Prohibited harvest of goliath grouper in SMZs.
Amendment #1 (1988a)	01/12/89	PR: 53 FR 42985 FR: 54 FR 1720	-Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, FL; -Directed fishery defined as vessel with trawl gear and ≥200 lb s-g on board; -Established rebuttable assumption that vessel with s-g on board had harvested such fish in the exclusive economic zone (EEZ).
Regulatory Amendment #2 (1988b)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	-Established 2 artificial reefs off Ft. Pierce, FL as SMZs.
Emergency Rule	8/3/90	55 FR 32257	-Added wreckfish to the fishery management unit (FMU); -Fishing year beginning 4/16/90; -Commercial quota of 2 million pounds; -Commercial trip limit of 10,000 pounds per trip.
Fishery Closure Notice	8/8/90	55 FR 32635	- Fishery closed because the commercial quota of 2 million pounds was reached.
Notice of Control Date	09/24/90	55 FR 39039	-Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	-Established artificial reef at Key Biscayne, FL as SMZ; -Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ.
Amendment #2	10/30/90	PR: 55 FR 31406	-Prohibited harvest/possession of goliath grouper in or

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
(1990a)		FR: 55 FR 46213	from the EEZ; -Defined overfishing for goliath grouper and other species.
Emergency Rule Extension	11/1/90	55 FR 40181	-Extended the measures implemented via emergency rule on 8/3/90.
Amendment #3 (1990b)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	-Added wreckfish to the FMU; -Defined optimum yield (OY) and overfishing; -Required permit to fish for, land or sell wreckfish; -Required catch and effort reports from selected, permitted vessel; -Established control date of 03/28/90; -Established a fishing year for wreckfish starting April 16; -Established a process to set annual quota, with initial quota of 2 million pounds; provisions for closure; -Established 10,000 pound trip limit; -Established a spawning season closure for wreckfish from January 15 to April 15; -Provided for annual adjustments of wreckfish management measures.
Notice of Control Date	07/30/91	56 FR 36052	-Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed.
Amendment #4 (1991)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	-Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, FL; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish; powerheads and bangsticks in designated SMZs off S. Carolina. -Defined overfishing/overfished and established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991); -Required permits (commercial & for-hire) and specified data collection regulations; -Established an assessment group and annual adjustment procedure (framework); -Permit, gear, and vessel id requirements specified for black sea bass traps; -No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit; -8" TL limit – lane snapper; -10" TL limit – vermilion snapper (recreational only); -12" TL limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers;

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			-20" TL limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers; -28" fork length (FL) limit – greater amberjack (recreational only); -36" FL or 28" core length – greater amberjack (commercial only); -Bag limits – 10 vermilion snapper, 3 greater amberjack -Aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers; -Aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed; -Spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April; -Spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June; -Charter/headboats and excursion boat possession limits extended.
Amendment #5 (1992a)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	For wreckfish: -Established limited entry system with individual transferable quotas (ITQs); -Required dealer to have permit; -Rescinded 10,000 lb. trip limit; -Required off-loading between 8 am and 5 pm; -Reduced occasions when 24-hour advance notice of offloading required for off-loading; -Established procedure for initial distribution of percentage shares of total allowable catch (TAC).
Emergency Rule	8/31/92	57 FR 39365	For Black Sea Bass (bsb): -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.
Emergency Rule Extension	11/30/92	57 FR 56522	For Black Sea Bass: -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.
Regulatory Amendment #4 (1992b)	07/06/93	FR: 58 FR 36155	-For Black Sea Bass: -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.
Regulatory Amendment #5 (1992c)	07/31/93	PR: 58 FR 13732 FR: 58 FR 35895	-Established 8 SMZs off South Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #6 (1993)	06/27/94	PR: 59 FR 9721 FR: 59 FR 27242	-Set up separate commercial TAC levels for golden tilefish and snowy grouper; -Established commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper; -Included golden tilefish in grouper recreational aggregate bag limits; -Prohibited sale of warsaw grouper and speckled hind; -100% logbook coverage upon renewal of permit; -Creation of the *Oculina* Experimental Closed Area; -Data collection needs specified for evaluation of possible future individual fishing quota system.
Amendment #7 (1994a)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	-12" FL – hogfish; -16" TL – mutton snapper; -Required dealer, charter and headboat federal permits; -Allowed sale under specified conditions; -Specified allowable gear and made allowance for experimental gear; -Allowed multi-gear trips in NC; -Added localized overfishing to list of problems and objectives; -Adjusted bag limit and crew specs. for charter and head boats; -Modified management unit for scup to apply south of Cape Hatteras, NC; -Modified framework procedure.
Regulatory Amendment #6 (1994b)	05/22/95	PR: 60 FR 8620 FR: 60 FR 19683	-Established actions which applied only to EEZ off Atlantic coast of FL: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30" TL; 12" TL – gray triggerfish.
Notice of Control Date	04/23/97	62 FR 22995	-Anyone entering federal black sea bass pot fishery off South Atlantic states after 04/23/97 was not assured of future access if limited entry program developed.
Interim Rule Request	1/16/98		-The South Atlantic Fishery Management Council (Council) requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under the Magnuson-Stevens Act.
Action Suspended	5/14/98		-NMFS informed the Council that action on the interim rule request was suspended.
Emergency Rule Request	9/24/98		-Council requested Amendment 9 be implemented via emergency rule.
Amendment #8 (1997)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	-Established program to limit initial eligibility for snapper grouper fishery: -Must have demonstrated landings of any species in the snapper grouper FMU in 1993, 1994, 1995 or 1996; and have held valid snapper grouper permit between 02/11/96 and 02/11/97; -Granted transferable permit with unlimited landings if vessel landed ≥ 1,000 pounds (lb) of snapper grouper species in any of the years; -Granted non-transferable permit with 225 lb trip limit

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			to all other vessels; -Modified problems, objectives, OY, and overfishing definitions; -Expanded the Council's habitat responsibility; -Allowed retention of snapper grouper species in excess of bag limit on permitted vessel with a single bait net or cast nets on board; -Allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions.
Request not Implemented	1/22/99		-NMFS informed the Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule.
Regulatory Amendment #7 (1998a)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Amendment #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	-Red porgy: 14" TL (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April; -Black sea bass: 10" TL (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots; -Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lb; began fishing year May 1; prohibited coring; -Specified size limits for several snapper grouper species (indicated in parentheses in inches TL): including yellowtail snapper (12), mutton snapper (16), red snapper (20); red grouper, yellowfin grouper, yellowmouth grouper, and scamp (20) ; -Vermilion snapper: 11" TL (recreational), 12" TL commercial; -Gag: 24" TL (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April; -Black grouper: 24" TL (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April; -Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination); -All snapper grouper without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runner; -Vessels with longline gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.
Emergency Action	9/3/99	64 FR 48326	-Reopened the Amendment 8 permit application process.
Emergency	09/08/99,		-Prohibited harvest or possession of red porgy.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Interim Rule	expired 08/28/00	64 FR 48324 and 65 FR 10040	
Amendment #10 Comprehensive Essential Fish Habitat Amendment (1998c)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	-Identified essential fish habitat (EFH) and established habitat areas of particular concern (HAPC) for species in the snapper grouper FMU.
Amendment #11 Comprehensive Sustainable Fisheries Act Amendment (1998d)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	-Maximum sustainable yield (MSY) proxy: goliath and Nassau grouper = 40% static spawning potential ratio (SPR); all other species = 30% static SPR; -OY: hermaphroditic groupers = 45% static SPR; goliath and Nassau grouper = 50% static SPR; all other species = 40% static SPR -Overfished/overfishing evaluations: BSB: overfished (minimum stock size threshold (MSST)=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (maximum fishing mortality threshold (MFMT)=0.72, F1991-1995=0.95) Vermilion snapper: overfished (static SPR = 21-27%) Red porgy: overfished (static SPR = 14-19%). Red snapper: overfished (static SPR = 24-32%) Gag: overfished (static SPR = 27%) Scamp: no longer overfished (static SPR = 35%) Speckled hind: overfished (static SPR = 8-13%) Warsaw grouper: overfished (static SPR = 6-14%) Snowy grouper: overfished (static SPR = 5-15%) White grunt: no longer overfished (static SPR = 29-39%) Golden tilefish: overfished (couldn't estimate static SPR) Nassau grouper: overfished (couldn't estimate static SPR) Goliath grouper: overfished (couldn't estimate static SPR) -overfishing level: goliath and Nassau grouper = F>F40% static SPR; all other species: = F>F30% static SPR Approved definitions for overfished and overfishing. MSST = [(1-M) or 0.5 whichever is greater]*B_{MSY}. MFMT = F_{MSY}.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #12 (2000a)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	For Red porgy: -MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST =7.34 mp; rebuilding timeframe=18 years (1999=year 1); -no sale of red porgy during Jan-April; -1 fish bag limit; -50 lb. bycatch commercial trip limit May-December; -Modified management options and list of possible framework actions.
Regulatory Amendment #8 (2000b)	11/15/00	PR: 65 FR 41041 FR: 65 FR 61114	-Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet CG permit specs; restricted fishing in new and revised SMZs.
Amendment #9 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack.
Amendment #13A (2003)	04/26/04	PR: 68 FR 66069 FR: 69 FR 15731	-Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper species within the *Oculina* Experimental Closed Area.
Notice of Control Date	10/14/05	70 FR 60058	-Considered management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding wreckfish).
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	-End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006; 1. Snowy Grouper Commercial: -Quota = 151,000 lb gutted weight (gw) in year 1, 118,000 lb gw in year 2, and 84,000 lb gw in year 3 onwards. -Trip limit = 275 lb gw in year 1, 175 lb gw in year 2, and 100 lb gw in year 3 onwards; Recreational: -Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit; 2. Golden Tilefish Commercial: Quota of 295,000 lb gw, 4,000 lb gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lb gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1; Recreational: Limited possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit; 3. Vermilion Snapper Commercial: Quota of 1,100,000 lb gw; Recreational: 12" TL size limit. 4. Black Sea Bass Commercial: Quota of 477,000 lb gw in year 1, 423,000

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			lb gw in year 2, and 309,000 lb gw in year 3 onwards; -Required use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule; -Required black sea bass pots be removed from the water when the quota is met; -Changed fishing year from calendar year to June 1 – May 31; Recreational: Recreational allocation of 633,000 lb gw in year 1, 560,000 lb gw in year 2, and 409,000 lb gw in year 3 onwards. Increased the minimum size limit from 10" to 11" in year 1 and to 12" in year 2; -Reduced recreational bag limit from 20 to 15 per person per day; -Changed fishing year from the calendar year to June 1 through May 31. 5. Red Porgy Commercial and recreational: -Retained 14" TL size limit and seasonal closure (retention limited to the bag limit); -Specified a commercial quota of 127,000 lb gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April; -Increased commercial trip limit from 50 lb ww to 120 red porgy (210 lb gw) during May through December;--Increased recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-Considered measures to limit participation in the snapper grouper for-hire sector.
Amendment #14 (2007)	2/12/09	PR: 73 FR 32281 FR: 74 FR 1621	-Established eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species.
Amendment #15A (2008a)	3/14/08	73 FR 14942	- Established rebuilding plans and status determination criteria for snowy grouper, black sea bass, and red porgy.
Notice of Control Date	12/4/08	74 FR 7849	-Established a control date for the golden tilefish portion of the snapper grouper fishery in the South Atlantic.
Notice of Control Date	12/4/08	74 FR 7849	-Established control date for black sea bass pot sector in the South Atlantic.
Amendment #15B (2008b)	12/16/09, except for the amendments to § 622.18(c) was effective 11/16/2009; the amendment to § 622.10(c) was effective 2/16/2010;	PR: 74 FR 30569 FR: 74 FR 58902	-Prohibited the sale of snapper-grouper harvested or possessed in the EEZ under the bag limits and prohibited the sale of snapper-grouper harvested or possessed under the bag limits by vessels with a Federal charter vessel/headboat permit for South Atlantic snapper-grouper regardless of where harvested; -Reduced the effects of incidental hooking on sea turtles and smalltooth sawfish; -Adjusted commercial permit renewal periods and transferability requirements; -Revised the management reference points for golden

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	and §§ 622.5, 622.8, and 622.18(b)(1)(ii) required OMB approval.		tilefish; -Implemented plan to monitor and assess bycatch; -Required a vessel that fished in the EEZ, if selected by NMFS, to carry an observer and install electronic logbook and/or video monitoring equipment provided by NMFS; -Established allocations for snowy grouper (95% commercial & 5% recreational); -Established allocations for red porgy (50% commercial & 50% recreational).
Amendment #16 (2009a)	7/29/09	PR: 74 FR 6297 FR: 74 FR 30964	-Specified status determination criteria for gag and vermilion snapper; For gag: -Specified interim allocations 51% commercial & 49% recreational; -Recreational and commercial shallow water grouper spawning closure January through April; -Directed commercial quota= 352,940 lb gw; -Reduced 5-fish aggregate grouper bag limit, including tilefish species, to a 3-fish aggregate; -Captain and crew on for-hire trips cannot retain the bag limit of vermilion snapper and species within the 3-fish grouper aggregate; For vermilion snapper: -Specified interim allocations 68% commercial & 32% recreational; -Directed commercial quota split Jan-June=315,523 lb gw and 302,523 lb gw July-Dec; -Reduced bag limit from 10 to 4 and a recreational closed season November through March; -Required possession of dehooking tools when catching snapper grouper species to reduce recreational and commercial bycatch mortality.
Amendment #19 Comprehensive Ecosystem-Based Amendment 1 (CE-BA1) (2009b)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	-Amended coral, coral reefs, and live/hardbottom habitat FMP to establish deepwater coral HAPCs; -Created a "shrimp fishery access area" (SFAA) within the Stetson-Miami Terrace CHAPC boundaries; -Created allowable "golden crab fishing areas" with the Stetson-Miami Terrace CHAPC and Pourtales Terrace CHAPC boundaries.
Amendment #17A (2010a)	12/3/10 red snapper closure; circle hooks 3/3/2011	PR: 75 FR 49447 FR: 75 FR 76874	-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; -Specified an annual catch limit (ACL) and an accountability measure (AM) for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL; -Specified a rebuilding plan for red snapper;

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			-Specified status determination criteria for red snapper; -Specified a fishery-independent monitoring program for red snapper. -Implemented an area closure for snapper-grouper species.
Emergency Rule	12/3/10	75 FR 76890	-Delayed the effective date of the area closure for snapper grouper species implemented through Amendment 17A.
Amendment #17B (2010b)	1/31/11	PR: 75 FR 62488 FR: 75 FR 82280	-Specify ACL of 0 and prohibit fishing for speckled hind and warsaw grouper; -Prohibited harvest of 6 deepwater species seaward of 240 feet to curb bycatch of speckled hind and warsaw grouper (snowy grouper, blueline tilefish, yellowedge grouper, misty grouper, queen snapper, silk snapper). -Specify allocations (97% commercial, 3% recreational), ACLs and AMs for golden tilefish; -Modified management measures as needed to limit harvest to the ACL or ACT; -Updated the framework procedure for specification of total allowable catch; -Specified ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing (snowy grouper, black grouper, black sea bass, red grouper, vermilion snapper, gag, speckled hind, warsaw grouper, golden tilefish);
Notice of control date	1/31/11	76 FR 5325	Anyone entering federal snapper grouper fishery off S. Atlantic states after 09/17/10 was not assured of future access if limited entry program developed.
Regulatory Amendment #9 (2010a)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	-Established trip limits for vermilion snapper and gag; -Increased trip limit for greater amberjack; - Set black sea bass recreational bag limit at 5 fish per person per day
Regulatory Amendment #10 (2010b)	5/31/11	PR: 76 FR 9530 FR: 76 FR 23728	-Eliminated closed area for snapper grouper species approved in Amendment 17A.
Regulatory Amendment #11 (2011c)	5/10/12	PR: 76 FR 78879 FR: 77 FR 27374	-Eliminated 240 ft harvest prohibition for six deepwater species (snowy grouper, blueline tilefish, yellowedge grouper, queen snapper, silk snapper, misty grouper);
Amendment # 25 Comprehensive Annual Catch Limit Amendment (2011d)	4/16/12	PR: 76 FR 74757 Amended PR: 76 FR 82264 FR: 77 FR 15916	-Reorganize FMUs to 6 complexes (deepwater, jacks, snappers, grunts, shallow-water groupers, porgies) (see final rule for species list); -Established acceptable biological catch (ABC) control rules and established ABCs, ACLs, and AMs for species not undergoing overfishing; -Established jurisdictional ABC allocations between the SAFMC and GMFMC for yellowtail snapper, mutton

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			snapper, and black grouper; -Removed some species from South Atlantic FMU (Tiger grouper, black margate, blue-striped grunt, French grunt, porkfish, smallmouth grunt, queen triggerfish, crevalle, yellow jack, grass porgy, sheepshead, puddingwife); -Designated species as ecosystem component species (schoolmaster, ocean triggerfish, bank triggerfish, rock triggerfish, longspine porgy); -Specified allocations between the commercial and, recreational sectors for species not undergoing overfishing; -Limited the total mortality for federally managed species in the South Atlantic to the ACLs.
Amendment #24 (2011e)	7/11/12	PR: 77 FR 19169 FR: 77 FR 34254	-Rebuilding plan (including MSY, ACLs, AMs, and OY, and allocations) for red grouper.
Amendment #23 Comprehensive Ecosystem-based Amendment 2 (CE-BA2) (2011f)	1/30/12	PR: 76 FR 69230 FR: 76 FR 82183	-Designated the Deepwater MPAs as EFH-HAPCs; -Modify management measures for Octocoral; -Limit harvest of snapper grouper species in SC SMZs to the bag limit; -Modify sea turtle release gear; -Designated new EFP for pelagic Sargassum habitat.
Amendment #18A (2012a)	7/1/12	PR: 77 FR 16991 FR: 77FR3 2408	-Modified the rebuilding strategy, ABC , ACL, ACT for black sea bass; -Limited participation and effort in the black sea bass sector; -Modifications to management of the black sea bass pot sector; -Improved data reporting (accuracy, timing, and quantity of fisheries statistics).
Amendment #20A (2012b)	10/26/12	PR: 77 FR 19165 FR: 77 FR 59129	- Individual transfer quota (ITQ) program for wreckfish: -Defined and reverted inactive shares; -Redistributed reverted shares; -Established a share cap; -Established an appeals process.
Regulatory Amendment #12 (2012c)	10/9/12	PR: 77 FR 42688 FR: 77 FR 61295	-Revised the ACL and OY for golden tilefish; -Revised recreational AMs for golden tilefish;
Yellowtail snapper Emergency Rule	11/7/2012, through 5/6/2013	77 FR 66744	-Increased the commercial ACL for yellowtail snapper from 1,142,589 lb to 1,596,510 lb.

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Amendment #18B (2013a)	5/23/13	PR: 77 FR 75093 FR: 77 FR 23858	For Golden Tilefish: -Limited participation and effort in the commercial sector through establishment of a longline endorsement; -Established eligibility requirements and allowed transferability of longline endorsement; -Established an appeals process; -Modified trip limits; -Specified allocations and ACLs for gear groups (longline:85% and hook-and-line:15%);
Amendment #28 (2013b)	8/23/13	PR: 78 FR 25047 FR: 78 FR 44461	-Established regulations to allow harvest of red snapper in the South Atlantic (formula used to compute ACLs, AMs, fishing seasons).
Regulatory Amendment #13 (2013c)	7/17/13	PR: 78 FR 17336 FR: 78 FR 36113	-Revised the ABCs, ACLs (including sector ACLs), and ACTs for 37 species implemented by the Comprehensive ACL Amendment (see final rule for list of species). The revisions may prevent a disjunction between the established ACLs and the landings used to determine if AMs are triggered.
Regulatory Amendment #15 (2013d)	9/12/13	PR: 78 FR 31511 FR: 78 FR 49183	-Modified ACLs and OY for yellowtail snapper; -Modified the gag commercial ACL and AM to remove the requirement that all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) are prohibited from harvest in the South Atlantic when the gag commercial ACL is met or projected to be met.
Regulatory Amendment #18 (2013e)	9/5/13	PR: 78 FR 26740 FR: 78 FR 47574	-Revised ACLs and OY for vermilion snapper; -Modified commercial trip limit for vermilion snapper; -Modified commercial fishing season and recreational closed season for vermilion snapper; -Revised ACLs and OY for red porgy.
Regulatory Amendment #19 (2013f)	ACL: 9/23/13 Pot closure: 10/23/13	PR: 78 FR 39700 FR: 78 FR 58249	-Specified ABC, and adjusted the ACL, recreational ACT and OY for black sea bass; -Implemented an annual closure on the use of black sea bass pots from November 1 to April 30.
Amendment #27 (2013g)	1/27/2014	PR:78 FR 78770 FR: 78 FR 57337	-Established the South Atlantic Council as the responsible entity for managing Nassau grouper throughout its range including federal waters of the Gulf of Mexico; -Modified the crew member limit on dual-permitted snapper grouper vessels; -Modified the restriction on retention of bag limit quantities of some snapper grouper species by captain and crew of for-hire vessels; -Minimized regulatory delay when adjustments to snapper grouper species' ABC, ACLs, and ACTs are needed as a result of new stock assessments;

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			-Removed blue runner from snapper grouper FMP; -Addressed harvest of blue runner by commercial fishermen who do not possess a South Atlantic Snapper Grouper Permit.
Amendment #31 Joint South Atlantic and Gulf of Mexico Generic Headboat Reporting Amendment (2013h)	1/27/2014	PR: 78 FR 59641 FR: 78 FR 78779	-Required electornic reporting for headboat vessels at weekly intervals.
Blueline Tilefish Emergency Rule	4/17/2014 through 10/10/2014 or 4/18/2015	PR: 79 FR 21636 FR:79 FR 61262	-Removed the blueline tilefish portion from the deep-water complex ACL; -Established separate commercial and recreational ACLs and AMs for blueline tilefish.
Generic Dealer Amendment (2013i)	8/7/2014	PR: 79 FR 81 FR: 79 FR 19490	- Modified permitting and reporting requirements for seafood dealers who first receive fish managed by the SA and Gulf through eight FMPs.
Regulatory Amendment #14 (2014a)	12/8/2014	PR: 79 FR 22936 FR: 79 FR 66316	-Modified the commercial and recreational fishing year for greater amberjack; -Modified the commercial and recreational sector fishing years for black sea bass; -Modified the recreational AM for black sea bass; -Modified the recreational AM for vermilion snapper; -Modify the commercial trip limit for gag.
Regulatory Amendment # 21 (2014b)	11/6/2014	PR: 79 FR 44735 FR: 79 FR 60379	-Modified the definition of the overfished threshold (MSST) for red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack.
Amendment #29 (2014c)	7/1/2015	NOA: 79 FR 69819 PR: 79 FR 72567 FR: 80 FR 30947	-Updated the ABC control rule to incorporate methodology for determining the ABC of unassessed species; -Adjusted the ABCs for fourteen unassessed snapper-grouper species (see final rule); -Adjusted the ACLs and ACTs for three species complexes and four snapper-grouper species based on revised ABCs; -Established ACLs for unassessed species; -Modified gray triggerfish minimum size limits; -Established a commercial split season and commercial trip limits for gray triggerfish.

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Regulatory Amendment #20 (2014d)	8/20/2015	PR: 80 FR 18797 FR: 80 FR 43033	-Adjusted the recreational and commercial ACLs for snowy grouper; -Adjusted the rebuilding strategy; -Modified the commercial trip limit; -Modified recreational bag limit; -Modified the recreational fishing season.
Amendment #32 (2014e)	3/30/2015	PR: 80 FR 3207 FR: 80 FR 16583	-End overfishing of blueline tilefish; -Removed blueline tilefish from the deepwater complex; -Specified AMs, ACLs, recreational ACLs, commercial trip limit, adjust recreational bag limit for blueline tilefish; -Specified ACLs and revised the AMs for the recreational section of the deepwater complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, black snapper, and blackfin snapper);
Regulatory Amendment #22 (2015a)	9/11/2015, except for the amendments to §§ 622.190(b) and 622.193(r)(1) which were effective 8/12/2015	PR: 80 FR 31880 FR: 80 FR 48277	-Adjusted ACLs and OY for gag and wreckfish
Amendment # 33 Dolphin Wahoo Amendment 7 and Snapper Grouper Amendment 33 (2015b)	12/28/2015	NOA:80 FR 55819 PR:80 FR 60601 FR:80 FR 80686	-Allowed dolphin and wahoo fillets to enter the U.S. EEZ after lawful harvest in The Bahamas; -Specified the condition of any dolphin, wahoo, and snapper-grouper fillets; -Described how the recreational bag limit is determined for any fillets; -Prohibited the sale or purchase of any dolphin, wahoo, or snapper-grouper recreationally harvested in The Bahamas; -Specified the required documentation to be onboard any vessels that have these fillets; -Specified transit and stowage provisions for any vessels with fillets.
Amendment #34 Generic Accountability Measures and Dolphin Allocation Amendment (2015c)	2/22/2016	NOA:80 FR 41472 PR:80 FR 58448 FR:81 FR 3731	-Modified AMs for snapper-grouper species (golden tilefish, snowy grouper, gag, red grouper, black grouper, scamp, the shallow-water grouper complex (SASWG: red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby), greater amberjack, the jacks complex (lesser amberjack, almaco jack, and banded rudderfish), bar jack, yellowtail snapper, mutton snapper, the snappers complex (cubera snapper, gray snapper, lane snapper, dog snapper, and mahogany snapper), gray triggerfish, wreckfish (recreational sector), Atlantic spadefish, hogfish, red porgy, the porgies complex (jolthead porgy, knobbed porgy,

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			whitebone porgy, scup, and saucereye porgy); -Modified the AM for commercial golden crab fishery; -Adjusted sector allocations for dolphin.
Notice of Control Date	6/15/16	76 FR 66244	-Fishermen entering the federal for-hire recreational sector for the Snapper Grouper fishery after June 15, 2016, will not be assured of future access should a management regime that limits participation in the sector be prepared and implemented.
Amendment #35 (2015d)	6/22/2016	NOA:81 FR 6222 PR:81 FR 11502 FR:81 FR 32249	-Removed black snapper, dog snapper, mahogany snapper, and schoolmaster from the Snapper-Grouper FMP; -Clarified regulations governing the use of Golden Tilefish Longline Endorsements.
Regulatory Amendment #16 (2016a)	12/29/2016 (closure) 1/30/2017 (gear markings)	NOI: 78 FR 72868 PR: 81 FR 53109 FR: 81 FR 95893	-Revise the area where fishing with black sea bass pots is prohibited from Nov.1-April 30. -Add additional gear marking requirements for black sea bass pot gear.
Regulatory Amendment #25 (2016b)	8/12/2016 except changes to blueline tilefish, effective 7/13/2016.	PR: 81 FR 34944 FR: 81 FR 45245	-Revised commercial and recreational ACL for blueline tilefish; -Revised the recreational bag limit for black sea bass; -Revised the commercial and recreational fishing year for yellowtail snapper.
Amendment #36 (2016d)	7/31/17	NOI: 82 FR 810 PR: 82 FR 5512 FR:82 FR 29772	-Established SMZs to enhance protection for snapper-grouper species in spawning condition including speckled hind and warsaw grouper.
Amendment #37 (2016c)	8/24/17	NOI: 80 FR 45641 NOA: 81 FR 69774 PR: 81 FR 91104 FR:82 FR 34584	-Modified the hogfish fishery management unit; -Specified fishing levels for the two South Atlantic hogfish stocks; -Established a rebuilding plan for the Florida Keys/East Florida stock; -Established/revised management measures for both hogfish stocks in the South Atlantic Region, such as size limits, recreational bag limits, and commercial trip limits.
Red Snapper Emergency Rule (2017a)	Effective 11/2/2017, through 11/31/2017. The recreational red snapper season opened on 11/3/2017, and closed on	FR: 82 FR 50839	-Allowed for the limited harvest and possession of red snapper in 2017 by changing the process used to set the ACL, as requested by the Council; -These rules also announced the opening and closing dates of the 2017 recreational fishing season and the opening date for the 2017 commercial fishing season for red snapper

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	11/6/2017; then reopened on 11/10/2017, and closed on 11/13/2017. The commercial red snapper season opened on 11/2/2017.		
Golden Tilefish Interim Rule (2017b)	1/2/2018 through 7/1/2018 and 7/2/2018 through 1/3/2019	PR: 82 FR 50101 FR: 83 FR 65 FR EXT: 83 FR 28387	-Reduced the golden tilefish total ACL, the commercial and recreational sector ACLs, and the quotas for the hook-and-line and longline components of the commercial sector.
Amendment #41 (2017c)	2/10/2018	NOA:82 FR 44756 PR:82 FR 49167 FR:83 FR 1305	-Updated the MSY, ABC, ACL, OY, MSST; -Designated spawning months of April through June for regulatory purposes; -Revised management measures for mutton snapper including the minimum size limit (18 inches total length), recreational bag limit (five mutton snapper per person per day within the ten-snapper aggregate), and commercial trip limit (500 pounds whole weight during January through March and July through December; and during the April through June spawning season, of five mutton snapper per person per day, or five mutton snapper per person per trip, whichever is more restrictive).
Amendment #43 (2017d)	7/26/2018	NOI:82 FR 1720 NOA: 83 FR 16282 PR:83 FR 22939 FR:83 FR35428	-Actions would address overfishing of red snapper and recreational reporting.
Amendment #39 (Generic For-Hire Reporting Amendment) (2017e)	TBD	NOA:83 FR 11164 PR:83 FR 14400	-Weekly electronic reporting for charter vessel operators with a federal for-hire permit; -Reduce the time allowed for headboat operators to complete electronic reports; -Requires location reporting by charter vessels with the same detail currently required for headboat vessels.
Abbreviated Framework 1: Red Grouper (2017f)	8/27/2018	PR:83 FR 14234 FR:83 FR35435	-Adjust the ACLs for South Atlantic red grouper in response to the results of the latest stock assessment.

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Amendment #26 (Bycatch Reporting Amendment)	TBD	TBD	-Modify bycatch and discard reporting for commercial and for-hire vessels.
Regulatory Amendment 26 (Vision Blueprint Recreational)	TBD	TBD	-Establish deep-water species aggregate, establish recreational season for dee-water species, modify aggregate bag limit for deep-water species aggregate and 20-fish aggregate, reduce the minimum size limit for gray triggerfish off east FL (recreational) & remove the minimum size limit (recreational) for deep-water snappers (silk, queen, blackfin)
Regulatory Amendment 27 (Vision Blueprint Commercial)	TBD	TBD	-Commercial split seasons (snowy grouper, greater amberjack, red porgy), trip limit modifications (blueline tilefish, vermilion snapper), trip limit for Other Jacks Complex, minimum size limit (commercial only) for almaco jack; reduce minimum size limit for gray triggerfish off east FL & remove the minimum size (commercial) limit for deep-water snappers (silk, queen, blackfin)
Regulatory Amendment 29	TBD	TBD	-Best fishing practices & powerheads
Regulatory Amendment 30	TBD	TBD	-Revise the rebuilding schedule for red grouper -Establish a commercial trip limit for red grouper
Regulatory Amendment 32	TBD	TBD	-Revise accountability measures for yellowtail snapper to reduce the possibility of in-season closures.
Amendment 42	TBD	TBD	-Modification to sea turtle release gear and SG framework
Amendment 47	TBD	TBD	-Modifications to snapper grouper for-hire permits

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Appendix D. Bycatch Practicability Analysis

From VB Reg 27 as placeholder

Background

The Magnuson-Stevens Act at §3(2) defines bycatch as "fish which are not harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch-and-release fishery management program." Economic discards are fish that are discarded because they are undesirable to the harvester. Economic discards generally includes certain species, sizes, and/or sexes with low or no market value.

Regulatory discards are fish that are required by regulation to be discarded, but also include fish that may be retained but not sold. 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.

The Fishery Management Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

The South Atlantic Fishery Management Council (Council) manages Snapper Grouper stocks in federal waters from the Florida Keys to the Virginia/North Carolina border. In Vision Blueprint Commercial Regulatory Amendment 27 (Regulatory Amendment 27) to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper

Grouper FMP), the Council has proposed modifications of commercial regulations such as fishing seasons, trip limits, and size limits for species in the Snapper Grouper FMP. These proposed management measures are intended to address commercial stakeholder input to enable equitable access for fishermen participating in the Snapper Grouper FMP, and to minimize discards. In the South Atlantic, most snapper grouper species are harvested with hook-and-line gear. Many of the species under consideration in Regulatory Amendment 27 are indirectly harvested during trips targeting other stocks; for this reason, uncertainty in the historical data is often high.

1.1 Population Effects for the Bycatch Species

A total of 12 species could be directly impacted by actions included in Regulatory Amendment 27. **Table D-1** lists the species most often landed on the same trip in the South Atlantic using Southeast Fisheries Science Center (SEFSC) commercial logbook data. The analysis was done by isolating all commercial logbook trips that reported at least one pound landed for the species of interest using data from 2014 through 2016 in the South Atlantic. Next, on the same trips, the numbers of trips in which other species were also landed were used to provide a percentage of trip co-occurrence. Some species had other species landed on greater than 60% of the trips; most notably vermilion snapper on trips landing gray triggerfish and snowy grouper on trips landing blueline tilefish. Additionally, due to the high release mortality associated with the capture depths of blueline tilefish and snowy grouper (95 and 100%, respectively), efforts should be made to align any seasonal or quota closures to avoid regulatory discarding. The most common species being landed with greater amberjack was gag on 29.5% of the trips. Species of interest with no dominant co-occurring species may be due to the ability of fishers to selectively target the species of interest using specific gear, locations, seasonal patterns, or a combination of these thus avoiding unnecessary bycatch. It is not possible to do a meaningful analysis of any long-term population effects due to changes in effort based on the high connectivity between many of the species being landed in the fishery together; however, efforts to align any seasonal or quota closures between species with high co-occurrence should be beneficial. These analyses are limited to co-occurrence of landings and do not contain any information on species that were discarded at-sea. Other studies have incorporated data from the Reef Fish Observer Program in the Gulf of Mexico and an independent sampling program that may provide more comprehensive analyses, but these are focused on the Gulf of Mexico and not the South Atlantic (Farmer et al. 2016; Pulver et al. 2016).

Table D-1. The species of interest, the number of trips where at least one pound was landed for the species of interest, and the top three species caught on the same trips in the South Atlantic for all gear types from 2014 through 2016, including the percentage of trip co-occurrence for species one through three.

Species of Interest	Number of Trips	Species One	Species Two	Species Three
Almaco Jack	3,397	Vermilion Snapper (54.1%)	Gray Triggerfish (47.8%)	Greater Amberjack (42.1%)
Banded Rudderfish	1,201	Almaco Jack (49.5%)	Greater Amberjack (38.4%)	Vermilion Snapper (31.6%)
Blackfin Snapper	151	Dolphin (34.4%)	Scamp (34.4%)	Red Porgy (33.8%)
Blueline Tilefish	1,778	Snowy Grouper (62.5%)	Golden Tilefish (23.5%)	Vermilion Snapper (23.5%)
Gray Triggerfish	4,168	Vermilion Snapper (72.5%)	Black Sea Bass (42.9%)	Almaco Jack (38.9%)
Greater Amberjack	6,778	Gag (29.5%)	Red Porgy (26.5%)	Vermilion Snapper (25.9%)
Lesser Amberjack	308	Vermilion Snapper (32.1%)	Gray Triggerfish (29.2%)	Black Sea Bass (26.9%)
Queen Snapper	60	Snowy Grouper (43.3%)	Greater Amberjack (38.3%)	Blueline Tilefish (26.7%)
Red Porgy	4,109	Scamp (57.2%)	Black Sea Bass (56.5%)	Gag (51%)
Silk Snapper	729	Vermilion Snapper (54.9%)	Red Porgy (49.1%)	Gray Triggerfish (46.8%)
Snowy Grouper	3,582	Blueline Tilefish (31.0%)	Golden Tilefish (28.2%)	Almaco Jack (24.7%)
Vermilion Snapper	5,252	Gray Triggerfish (57.5%)	Black Sea Bass (43.3%)	Red Porgy (39.3%)

Source: Southeast Fisheries Science Center Commercial Logbook (November 2017).

Current Discards

Currently, commercial discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Commercial discards were estimated by month using the SEFSC Commercial Logbook and Supplemental Discard Logbook (accessed May 2017) to develop a discard rate in numbers of fish per unit of effort, by species, gear, and region, and expand that rate to the total effort in the fishery by gear and region. Note that a randomly selected comprehensive observer program is not available in the South Atlantic, thus estimation of commercial discards is reliant upon self-reported data.

From 2014 through 2016, the commercial sector of the South Atlantic snapper grouper fishery had a wide range of mean annual discards (0 – 27,222 individuals) reported for the species potentially affected in Regulatory Amendment 27 (**Table D-2**). It is difficult to compare the

ratio of commercial landings to discards because commercial landings are reported in pounds whole weight (lbs ww) and discards are reported in numbers of fish (N). However based on the information available, red porgy had high numbers of discards (24,754) relative to landings, compared to other species. On the contrary, greater amberjack had on average only 3,630 fish being reported discarded annually with the second highest average annual landings (857,415 lbs ww). Greater amberjack discard data in conjunction with the trip co-occurrence analyses indicates fishers are likely able to selectively harvest greater amberjack. Vermilion snapper, red porgy, and gray triggerfish had the highest number of discards reported on average annually. Vermilion snapper, red porgy, and gray triggerfish also co-occurred on a high percentage of trips, and the high number of discards for these species may be due to inability of fishers to selectively target one of the species during a seasonal or quota closure for a co-occurring species, e.g., targeting vermilion snapper when red porgy is closed.

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.

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).

Fishers can specify multiple reasons for a species discarded on the same trip and gear. More information on the discard logbook is available here https://www.sefsc.noaa.gov/fisheries/logbook.htm.

The discard logbook only contains self-reported discards from a 20% sub-sample by region and gear fished; thus, it may not be representative of the entire fishery. Of the four codes described above, regulations (i.e., not legal size or out of season) were the most common reason selected, depending on the species, based on the number of self-reported discards (**Table D-3**). For the three species that had the highest number of discards reported on average annually (vermilion snapper, red porgy, and gray triggerfish), 'out of season' was the most common reason selected. Efforts to align any seasonal or quota closures among these three species would likely be beneficial in reducing discards. The regulation 'not legal size' was the most common reason selected for greater amberjack. For species with a low estimated release mortality rate, such as greater amberjack and almaco jack, a high percentage of released fish likely survive resulting in minimal long-term population effects from a minimum size limit. Even for other species with higher release mortality rates, a minimum size limit could potentially benefit the stock by increasing spawning potential (larger fish are more fecund) and therefore remains an effective management measure to achieve reductions in harvest to keep landings below the annual catch limit (ACL).

Table D-2. Mean annual South Atlantic commercial landings and estimates of discards for species from 2014 through 2016. Mean commercial landings are in pounds (lbs) whole weight (ww). Discards represent numbers of fish (N).

Species	Mean Landings (lbs ww)	Mean Discards (N)
Almaco Jack	147,370	3,091
Banded Rudderfish	55,502	400
Blackfin Snapper	456	0
Blueline Tilefish	110,824	5,106
Gray Triggerfish	285,310	17,516
Greater Amberjack	857,415	3,630
Lesser Amberjack	6,026	86
Queen Snapper	1,639	0
Red Porgy	140,569	24,754
Silk Snapper	11,444	4
Snowy Grouper	148,504	351
Vermilion Snapper	865,546	27,222

Sources: Commercial landings data from SEFSC Commercial ACL Dataset (October 2017) with discard estimates expanded from the SEFSC Supplemental Commercial Discard Logbook (May 2017). The number of trips from 2014 through 2016 is available in Table D-1.

Table D-3. The number of trips with discards reported to the Supplemental Discard Logbook in the South Atlantic from 2014 through 2016 and percentage of unexpanded discards for each discard reason out of the total number of self-reported discards.

Species	Number of Trips	Not Legal Size	Out of Season	Other Regulations	Market Conditions
Almaco Jack	378	3.0%	80.4%	3.7%	13.0%
Blueline Tilefish	116	0.4%	84.9%	14.7%	0.0%
Gray Triggerfish	445	28.6%	64.7%	6.3%	0.3%
Greater Amberjack	469	84.5%	10.4%	3.7%	1.4%
Red Porgy	1,197	19.7%	77.1%	3.2%	0.1%
Vermilion Snapper	1,292	32.2%	60.7%	6.7%	0.4%

Sources: SEFSC Supplemental Commercial Discard Logbook (November 2017). Note the logbook only contains self-reported discards from a 20% sub-sample by region and gear fished thus may not be representative of the entire fishery. The analysis was limited to species with greater than 1,000 expanded discards reported on average annually from table D-2.

Release Mortality Rates

A wide range of release mortality rates are expected to occur based on the diversity of species potentially affected in Regulatory Amendment 27. 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). Many species can be captured over a broad depth range or transition to different depth zones throughout their life history, so release mortality rates can be highly variable. Recent Southeast Data, Assessment, and Review (SEDAR) assessments include estimates of release mortality rates based on published study and industry input. Stock assessment reports can be found at http://sedarweb.org/.

SEDAR 50 (2017) estimated a point release mortality rate of 95% (sensitivity range: 90-100%) for blueline tilefish captured in the South Atlantic hook-and-line commercial fishery. Snowy grouper also had a high release mortality rate of 100% estimated in SEDAR 36 (2014). A lower release mortality rate of 20% (sensitivity range: 10-30%) was estimated for greater amberjack in the South Atlantic (SEDAR 15 2008). SEDAR 59 is currently underway for South Atlantic greater amberjack and could potentially update the greater amberjack release mortality estimate. SEDAR 01 Update (2012) recommended a base release mortality rate for red porgy of 35% based on the previous SEDAR, but also discussed a higher rate of 82% s reported by Stephen and Harris (2010) may be more appropriate. The SEDAR 01 Update assessment (2012) determined if the higher release mortality rate of 82% is correct, overfishing may have occurred during multiple years in the previous decade. SEDAR 17 Update (2012) estimated a release mortality rate of 41% (sensitivity range: 24-53%) for vermilion snapper captured by the commercial sector in the South Atlantic. SEDAR 55 is currently underway for vermilion snapper and could potentially update the vermilion snapper mortality rate estimate.

A very low discard mortality rate (sensitivity range: 0-10%) was recommended in SEDAR 49 (2016) for almaco jack. Fishers cited the shallower depth of capture and the general hardiness of almaco jacks compare to greater amberjack as support for the very low release mortality rate. In

the same assessment, a low release mortality estimate between 20 and 40% was recommended for lesser amberjack. No SEDAR estimate of banded rudderfish release mortality is currently available, but based on similar physiology to other species within the same genus (almaco jack, greater amberjack, and banded rudderfish) a release mortality estimate between 0 and 40% could be expected. No SEDAR estimate of release mortality were available for queen snapper, silk snapper, or blackfin snapper, but due to the relatively deep depth of capture for these species release mortality is likely very high (near 100%). SEDAR 41 (2016) estimated a low release mortality rate of 12.5% (sensitivity range: 5-20%) for gray triggerfish in the South Atlantic.

Expected Impacts on Bycatch for the Proposed Actions

Action 1 would establish a commercial split season and modify the commercial trip limit for blueline tilefish. On average, 5,106 blueline tilefish were discarded annually according to the SEFSC discard logbook from 2014 through 2016, with 'out of season' selected as the primary reason for discarding. Reducing the trip limit could extend the fishing season longer and reduce regulatory discarding when fishers are targeting other species, but still catching blueline tilefish after the commercial blueline tilefish fishery has closed. However, the commercial trip limit could also increase discarding if the amount is overly restrictive and fishers catch more blueline tilefish than the trip limit. Bycatch and discards could increase, decrease, or remain the same by establishing a commercial split season. If the commercial split season is better aligned with the fishing seasons of other deep-water species, primarily snowy grouper, discards would remain similar or decrease, but if the fishing seasons are not aligned regulatory discarding could increase.

Action 2 would establish a commercial split season for snowy grouper. Currently, very few discards relative to the landings are being reported. Similar to blueline tilefish, if the commercial split season coincides with other deep-water species, discards would remain similar or decrease, but if the fishing seasons are not aligned regulatory discarding could potentially increase.

Action 3 would establish a commercial split season and modify the commercial trip limit for greater amberjack. The commercial split season and trip limit should lengthen the fishing season which has closed early when the ACL has been met the past few years. Currently, relatively few discards are reported for greater amberjack and any changes in discards would likely have minimal population effects because greater amberjack have a low discard mortality rate.

Action 4 would establish a commercial split season and modify the commercial trip limit for red porgy. The commercial split season and trip limit should lengthen the fishing season, reducing discards when other species are targeted, primarily gray triggerfish and vermilion snapper. Reducing the trip limit could also increase discards if the amount is overly restrictive and fishers catch more red porgy than the trip limit. Red porgy have a moderate estimated release mortality rate so some negative population effects would be expected from an increase in discards.

Action 5 would modify the commercial trip limit for vermilion snapper and could lengthen the fishing season, reducing discards when other species are targeted, primarily gray triggerfish and red porgy. Reducing the trip limit could also increase discards if the amount is overly

restrictive and fishers catch more vermilion snapper than the trip limit. Vermilion snapper have a moderate estimated release mortality rate so some negative population effects would be expected from an increase in discards.

Action 6 would implement a minimum size limit for almaco jack for the commercial sector. Almaco jack have a very low estimated release mortality rate (0-10%). A high percentage of released fish likely survive resulting in minimal long-term population effects. The minimum size limit may benefit the stock by increasing spawning potential and remains an effective management measure to achieve reductions in harvest to extend the length of the fishing season.

Action 7 would implement a commercial trip limit for the Other Jacks Complex. Similar to other actions, reducing the trip limit could extend the fishing season longer and reduce any regulatory discarding when targeting other species during periods when the fishery has typically been closed. However, the commercial trip limit could also increase discards if the amount is overly restrictive and fishers catch more jacks than the trip limit. The species in the Other Jacks Complex (almaco jack, lesser amberjack, and banded rudderfish) have low estimated release mortality rates, so any increases in discards are expected to have minimal population effects.

Action 8 would remove the commercial minimum size limit for queen snapper, silk snapper, and blackfin snapper. Eliminating the minimum size limit should reduce discards, but very few self-reported commercial discards have been reported recently. No change in population effects is expected because any fish that were previously released were likely discarded dead due to the depth of capture typically associated with these three species.

Action 9 would reduce the commercial minimum size limit for gray triggerfish in the Exclusive Economic Zone off east Florida. Reducing the minimum size limit should reduce discards when the fishery is open, but the increase in harvest could shorten the fishing season and increase discards due to an earlier closure. Any benefit from reduced discarding when the fishery is open may be minimal because of the low (12.5%) estimated release mortality rate, e.g., the most of the undersized gray triggerfish likely survived. Further the stock may be negatively affected by harvesting gray triggerfish at an earlier age, potentially reducing spawning potential.

Past, Current, and Future Actions to Prevent Bycatch and Improve Monitoring of Harvest, Discards, and Discard Mortality

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; SAFMC 2011b) included actions that removed harvest of octocorals off Florida from the Coral, Coral Reefs, and Live/Hard Bottom Habitat Fishery Management Plan (Coral FMP); set the octocoral ACL for Georgia, South Carolina, and North Carolina equal to 0; modified management of special management zones (SMZs) off South Carolina; revised sea turtle release gear requirements for the snapper grouper fishery that were established in Amendment 15B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP; SAFMC 2008); and designated new essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern in the South Atlantic. There is no bycatch associated with octocoral harvest within the management area of the Coral FMP since harvest is prohibited. CE-BA 2 also included an action that limited harvest and possession of snapper grouper and coastal migratory

pelagics (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.

Other actions have been taken in recently implemented amendments that have reduced bycatch of and bycatch mortality of federally managed species in the South Atlantic. Amendment 13C to Snapper Grouper FMP (SAFMC 2006) required the use of 2 inch mesh in the back panel of black sea bass pots, which has likely reduced the magnitude of regulatory discards. Amendment 16 to the Snapper Grouper FMP (SAFMC 2009) required the use of dehooking devices, which could help reduce bycatch mortality of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers reduce handling time thus increasing survival (Cooke et al. 2001). Furthermore, Amendment 17A to the Snapper Grouper FMP (SAFMC 2010a) required circle hooks for snapper grouper species north of 28 degrees latitude, which has likely reduced bycatch mortality of some snapper grouper species. Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) established ACLs and AMs and address overfishing for eight species in the snapper grouper management complex: golden tilefish, snowy grouper, speckled hind, warsaw grouper, black sea bass, gag, red grouper, black grouper, and vermilion snapper. Overfishing is no longer occurring for black sea bass, snowy grouper, red grouper, black grouper, and vermilion snapper.

The Comprehensive ACL Amendment (SAFMC 2011a) implemented ACLs and AMs for species not undergoing overfishing in the Fishery Management Plans 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. The Comprehensive ACL Amendment (SAFMC 2011a) also established additional measures to reduce bycatch in the snapper grouper fishery with the establishment of species complexes based on biological, geographic, economic, taxonomic, technical, social, and ecological factors. ACLs were assigned to these species complexes, and when the ACL for the complex is met or projected to be met, fishing for species included in the entire species complex is prohibited for the fishing year. ACLs and AMs will likely reduce bycatch of target species and species complexes as well as incidentally caught species.

Amendment 18A to the Snapper Grouper FMP (SAFMC 2011c), included actions that could reduce bycatch of black sea bass and the potential for interactions with protected species. Actions in Amendment 18A limited the number of participants in the black sea bass pot sector, required fishermen bring pots back to port at the completion of a trip, and limited the number of pots a fishermen can deploy. Amendment 24 to the Snapper Grouper FMP (SAFMC 2011d) established a rebuilding plan for red grouper, which was overfished and undergoing overfishing. Amendment 24 (SAFMC 2011d) also established ACLs and AMs for red grouper, to help to reduce bycatch of red grouper and co-occurring species.

The final rule (78 FR 23858; April 23, 2013) for Amendment 18B to the Snapper Grouper FMP (SAFMC 2012), established an endorsement program for the commercial golden tilefish longline sector, which could have positive effects for habitat and protected species. Regulatory

Amendment 14 to the Snapper Grouper FMP (SAFMC, 2014) adjusted management measures for a number of snapper grouper species, some of which likely reduced the magnitude of discards. Regulatory Amendment 15 to the Snapper Grouper FMP included actions for yellowtail snapper and gag that are expected to reduce bycatch of snapper grouper species (SAFMC, 2013a). Amendment 36 to the Snapper Grouper FMP established Spawning Special Management Zones (SMZs), and is expected to reduce bycatch of many snapper grouper species, especially speckled hind and warsaw grouper.

The Joint Dealer Reporting Amendment (SAFMC 2013b), which went into effect on January 27, 2014, has changed the reporting frequency for landings by headboats from monthly to weekly, and requires that reports be submitted electronically. The action is expected to provide more timely information on landings and discards. Improved information on landings would help ensure ACLs are not exceeded. Furthermore, more timely and accurate information would be expected to provide 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. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

The Council is developing Amendment 39 to the Snapper Grouper FMP, Amendment 9 to the Dolphin Wahoo FMP and Amendment 27 to the Coastal Migratory Pelagics FMP of the Gulf of Mexico and Atlantic Regions that proposes mandatory weekly electronic reporting for charter vessel operators with a federal for-hire permit in the snapper grouper, dolphin wahoo, or coastal migratory pelagic fisheries; reduces the time allowed for headboat operators to complete their electronic reports; and proposes requiring location reporting by charter vessels with the same detail now required for headboat vessels. The notice of availability published on March 14, 2018 (83 FR 11164), and the comment period ends on May 13, 2018. The proposed rule published on April 4, 2018 (83 FR 14400), and the comment period ends on May 4, 2018.

Other amendments under development to the Snapper Grouper FMP include Amendment 42, which will include actions to include sea turtle release gear in the regulations for the commercial snapper grouper fishery and consider modifications to 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. The Council approved the amendment for scoping at their March 2018 meeting

Amendment 46 to the Snapper Grouper FMP is being developed to focus on private recreational permit and reporting (e.g., MyFishCount App).

Amendment 47 to the Snapper Grouper FMP may be developed to explore a moratorium on the for-hire component of the snapper grouper fishery. In March 2018, the Council provided detailed input and directed staff to develop a draft scoping document based on their direction to consider at the June 2018 meeting.

Vison Blueprint Recreational Regulatory Amendment 26 to the Snapper Grouper FMP proposes to modify recreational regulations for species in the snapper grouper complex, including aggregate bag limits, seasonal closures, minimum size limits, and gear requirements for certain species. The purpose of this amendment is to address recreational stakeholder input to increase access and predictability for the recreational component of the snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency.

The Council reviewed options at their June 2018 for Regulatory Amendment 29 to the Snapper Grouper FMP, which contains actions pertaining to best fishing practices (e.g., descending devices) and powerhead regulations.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational Accountability Measures Amendment) could include actions to revise recreational accountability measures to allow more flexibility in managing recreational fisheries.

The Bycatch Reporting Amendment considers improvements in bycatch/discard data collection methods to better quantify all sources of fishing mortality in South Atlantic fisheries. Alternatives consider expanding aspects of the Atlantic Coastal Cooperative Statistics Program's Release, Discard and Protected Species Module to coastal migratory pelagic (SA Council area only) and dolphin and wahoo fisheries; and also implementing a commercial observer program at 2-5% coverage levels for snapper grouper, coastal migratory pelagic (SA Council area only), dolphin and wahoo, and golden crab vessels. Based on discussions at the September 2014 Council meeting, the SEFSC/SERO agreed to draft a comprehensive bycatch reporting system for the southeast. The SEFSC and SERO provide an update on their efforts at each Council meeting. The Council's intent is that the bycatch reporting system would be specified and implemented though this amendment. The Council has postponed development until after NMFS publishes the rule for the Standard Bycatch Reporting Methodology.

These future actions will help to improve estimates on the composition and magnitude of catch and bycatch of snapper grouper species, as well as all other federally managed species in the southeast region. Additional information on fishery related actions from the past, present, and future considerations can be found in **Chapter 6** (Cumulative effects) of the environmental assessment.

1.2 Ecological Effects Due to Changes in Bycatch of that Species (effects on other species in the ecosystem).

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict. As mentioned in the above section, actions have been taken, and are underway to reduce bycatch and enhance data reporting for snapper grouper species. Better bycatch and discard data would provide 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.

As summarized in **Section 1.1** of this BPA, most actions in Regulatory Amendment 27 are not expected to result in significant changes in bycatch for most of the actions. Additionally, as stated in **Chapter 3,** and analyzed in detail in **Chapter 4**, the biological (and consequently ecological) effects due to changes in the bycatch would likely be negligible for the species with low release mortality rates, but potentially much greater for species with higher mortality rates.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Regulatory Amendment 27 is not expected to affect major changes in bycatch of other fish species. Bycatch of other species is incidental in the hook-and-line fishery for most of the species. Furthermore, improved data monitoring and reporting measures have been implemented, and will continue to improve in the near future if management measures are put into place utilizing the improved data, which could be expected to reduce bycatch and discards. If an observer program in the South Atlantic snapper grouper fishery was developed, the program would be expected to improve estimates of discards and provide insight to management on measures for reducing bycatch. Additionally, data collection improvements using electronic reporting and monitoring should allow more accurate and timely tracking of catch as well as other capture information. Improved information should benefit stocks by improving accuracy and reducing uncertainty in catch estimates leading to better decisions.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), 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. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2016, 2017, and 2018 LOF classifies as a Category II (81 FR 20550, April 8, 2016, 81 FR 54019, August 15, 2016; and February 7, 2018, 83 FR 5349, respectively). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2000. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper grouper in the South Atlantic are classified in the 2016, 2017, and 2018 LOF as Category III fisheries.

Commercial and recreational fishers in the South Atlantic snapper grouper fishery use hook-and-line gear, spear/powerheads, and pot/traps to target black sea bass, but only pots may adversely affect North Atlantic Right whales (NARWs) (NMFS 2016). Although the black sea

bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot sector operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3- 36.6 meters). NMFS estimated that the number of annual lethal takes for NARWs from black sea bass trap/pot gear ranged from an estimated minimum of 0.005 to a maximum of 0.08. This equates to 1 estimated lethal entanglement approximately every 25 to 42 years.

On December 1, 2016, NMFS completed its most recent biological opinion (2016 Opinion) on the snapper grouper FMP (NMFS 2016). In the 2016 Opinion, NMFS concluded that the snapper grouper fishery's continued authorization is likely to adversely affect but is not likely to jeopardize the continued existence of the NARW, loggerhead sea turtle Northwest Atlantic distinct population segments (DPS), leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper. Summary information on the species that may be adversely affected by the snapper grouper fishery and how they are affected is presented **Section 3.2.5**.

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. Fishing effort reductions have the potential to reduce the amount of interactions between the fishery and marine mammals and birds. 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, it is believed that the snapper grouper fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

Research and monitoring is ongoing to understand the effectiveness of proposed management measures and their effect on bycatch. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. 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, the Joint Commercial Logbook Reporting Amendment is being developed by the South Atlantic Council and the Gulf of Mexico 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.

Recreational discards are obtained from MRIP and logbooks from the NMFS headboat program. Additional data collection activities for the recreational sector are being considered by the South Atlantic Council that could allow for a better monitoring of snapper grouper bycatch in the future. Some observer information has been provided by Marine Fisheries Initiative and Cooperative Research Programs (CRP), but more is desired for the snapper grouper fishery. In December 2012, the Southeast Region Headboat Survey underwent a transition from paper logbooks to electronic logbooks, which is expected to improve the quality of data in that sector. As of January 1, 2013, a new electronic logbook replaced the paper logbook form. The form is available through a password protected Web site on the Internet, which can be accessed by personal computer, computer tablet, or "smart phone". The South Atlantic Council approved the For-Hire Amendment at their March 2013 meeting, which was approved and implemented in January 2014. This amendment requires weekly electronic reporting by the headboat sector.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Harris and Stephen (2005) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. conducted a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

In the spring 2010, Archipelago Marine Research Ltd. worked with North Carolina Sea Grant and several South Atlantic Unlimited Snapper Grouper Permit holders to test the effectiveness of electronic video monitoring to measure catch and bycatch. A total of 93 trips were monitored with video monitoring, 34 by self-reported fishing logbooks, and 5 by observers. Comparisons between electronic video monitoring data and observer data showed that video monitoring was a reliable source of catch and bycatch data.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Marine Fisheries Initiative, Saltonstall-Kennedy program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.6 Changes in Fishing Practices and Behavior of Fishermen

Changes in trip limits and split commercial seasons through Regulatory Amendment 27 could result in a modification of fishing practices by commercial fishers, thereby affecting the magnitude of discards during the designated timeframe. Whereas it is likely bycatch of species in the snapper grouper FMU will be reduced for many of the actions, there is a potential for the discards to increase in other fisheries if fishing seasons are not aligned between species with high co-occurrence or trip limits are overly restrictive. However, as discussed in **Section 1.1** of this BPA, the magnitude of discards is not expected to be significantly affected for most of the proposed actions. It is difficult to quantify any of the measures in terms of reducing discards until bycatch has been monitored over several years. Commercial bycatch information is collected by NMFS, and that information will continue to be analyzed to determine what changes, if any, have taken place in terms of fishing practices and fishing behavior as a result of the actions implemented through Regulatory Amendment 27.

Social effects of actions proposed in Regulatory Amendment 27 are addressed in **Chapter 4** of this document. **Section 3.4** includes information on environmental justice.

Fishermen can be educated about methods to reduce bycatch and enhance survival of regulatory discards. Whereas improving survival may be advantageous for mid-shelf species, it is more of a challenge for deep-water species that can experience nearly 100% mortality from depth related trauma. Furthermore, it is not clear that changes in behavior could substantially affect the amount of bycatch incurred. Gear changes such as hook type or hook size could have some effect on reducing bycatch mortality. Furthermore, spawning seasons with stricter regulations, new or reduced quotas, reduced bag and trip limits, and increased size limits could cause some commercial fishers to reduce or shift effort.

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

The proposed actions are not expected to significantly impact administrative costs. Trip limits, size limits, and catch monitoring are currently used to regulate the commercial fishery. All these measures will require additional research to determine the magnitude and extent of changes in bycatch and bycatch mortality. Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Any changes in economic, social, or cultural values from the proposed actions are discussed in **Chapter 4** of the environmental assessment.

1.9 Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from proposed actions in the environmental assessment are discussed in **Chapter 3**. Economic and social effects of the proposed actions are addressed in **Chapter 4** of this document.

1.10 Social Effects

The social effects of all the measures are described in **Chapter 4** of the environmental assessment.

Conclusion

The bycatch practicability analysis evaluates 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, measures proposed in Regulatory Amendment 27 are intended to modify commercial regulations such as fishing seasons, trip limits, and size limits for species in the snapper grouper commercial fishery. These actions are necessary to enable equitable access for fishers participating in the fishery and minimize discards while minimizing, to the extent practicable, adverse social and economic effects. As summarized in **Section 1.1** of this BPA, the actions in Regulatory Amendment 27 are not expected to result in significant changes in bycatch for most of the actions. In addition, 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. Therefore, no additional action is needed to minimize bycatch or bycatch mortality within the snapper grouper fishery.

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Appendix E. Regulatory Impact Review

Appendix F. Regulatory Flexibility Analysis

Appendix G. Other Applicable Laws

Need to update

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. Vision Blueprint Commercial Regulatory Amendment 27 (Regulatory Amendment 27) to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) 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 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. Regulatory Amendment 27has used 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 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 Endangered Species Act (ESA)

The ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies must ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NMFS to consult with the appropriate administrative agency (itself for most marine species, and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat.

On December 1, 2016, NMFS completed its most recent formal consultation on the snapper grouper fishery of the South Atlantic Region. In the resulting biological opinion, NMFS concluded that the snapper grouper fishery's continued authorization is not likely to jeopardize the continued existence of the NARW, loggerhead sea turtle Northwest Atlantic DPSs, leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper. NMFS concluded that the proposed action is not likely to adversely affect designated critical habitat or other ESA-listed species in the South Atlantic Region. Refer to **Section 3.2.5 (Protected Species)** for summary information on species, or DPSs of species, protected by federal law that may occur in the EEZ of the South Atlantic Region, or the analyses ("Section 7 consultations") conducted by NMFS to evaluate the potential adverse effects from the South Atlantic snapper grouper fishery on species and critical habitat protected under the ESA.

1.5 Executive Order 12612: Federalism

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.

1.6 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new fishery management plan

(FMP) or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects.

In accordance with E.O. 12866, the following is set forth by the Council: (1) this rule is not likely to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) this rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency; (3) this rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) this rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order; and (5) this rule is not controversial.

This amendment includes the RIR as **Appendix E**.

1.7 Executive Order 12898: Environmental Justice

E.O. 12898 requires that "to the greatest extent practicable and permitted by law…each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, 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 and possessions."

The alternatives being considered in this document are not expected to result in any disproportionate adverse human health or environmental effects to minority populations or low-income populations of Florida, North Carolina, South Carolina, or Georgia, rather the impacts would be spread across all participants in the snapper grouper fishery regardless of race or income. A detailed description of the communities impacted by the actions contained in this document and potential socioeconomic impacts of those actions are contained in **Chapters 3** and **4** of this document.

1.8 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.

1.9 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.

1.10 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 Marine Protected Areas. 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.

1.11 Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs. Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted." A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans. The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline), which targets snapper grouper species are listed as part of a Category III fishery in the final List of Fisheries (LOF) for 2017 and 2018 (82 FR 3655, January 12, 2017; and 83 FR 5349, February 7, 2018, respectively) because there have been no documented interactions between these gear and marine mammals. The black sea bass pot component of the South Atlantic snapper grouper fishery is part of the Atlantic mixed species trap/pot fishery, a Category II fishery, in the final List of Fisheries (LOF) for 2017 and 2018 (82 FR 3655, January 12, 2017; and 83 FR 5349, February 7, 2018, respectively). The Atlantic mixed species trap/pot fishery designation was created in 2003 (68 FR 41725, July 15, 2003), by combining several separately listed trap/pot fisheries into a single group. This group was designated Category II as a precaution because of known interactions between marine mammals and gear similar to those included in this group. Prior to this consolidation, the black sea bass pot fishery in the South Atlantic was a part of the "U.S. Mid-Atlantic and Southeast U.S. Atlantic Black Sea Bass Trap/Pot" fishery (Category III). There has never been a documented interaction between marine mammals and black sea bass trap/pot gear in the South Atlantic. The actions in this EA are not expected to negatively impact the provisions of the MMPA.

1.12 National Environmental Policy Act (NEPA)

This document has been written and organized in a manner that meets NEPA requirements, and thus is a consolidated NEPA document, including an EA, as described in NOAA Administrative Order (NAO) 216- 6A.

Purpose and Need for Action

The purpose and need for this action are described in **Chapter 1**.

Alternatives

The alternatives for this action are described in **Chapter 2**.

Affected Environment

The affected environment is described in **Chapter 3**.

Impacts of the Alternatives

The impacts of the alternatives on the environment are described in **Chapter 4**.

1.13 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.

1.14 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.

1.15 Regulatory Flexibility Act (RFA)

The RFA of 1980 (5 U.S.C. 601 et seq.) requires federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NMFS must determine whether a proposed fishery regulation would have a

significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the RFA requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses, affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the RFA's provisions.

As NMFS has determined whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities, a certification to this effect will be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration.

This amendment includes the RFA as **Appendix F**.

1.16 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.

1.17 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that a 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 H. Essential Fish Habitat and Ecosystem-based Management

South Atlantic Fishery Management Council Habitat Conservation, Ecosystem Coordination and Collaboration

The South Atlantic Fishery Management Council (Council), using the Essential Fish Habitat Plan as the cornerstone, adopted a strategy to facilitate the move to an ecosystem-based approach to fisheries management in the region. This approach required a greater understanding of the South Atlantic ecosystem and the complex relationships among humans, marine life, and the environment including essential fish habitat. To accomplish this, a process was undertaken to facilitate the evolution of the Habitat Plan into a Fishery Ecosystem Plan (FEP), thereby providing a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to ecosystem-based management in the region.

Moving to Ecosystem-Based Management

The Council adopted broad goals for Ecosystem-Based Management to include maintaining or improving ecosystem structure and function; maintaining or improving economic, social, and cultural benefits from resources; and maintaining or improving biological, economic, and cultural diversity. Development of a regional FEP (SAFMC 2009a) provided an opportunity to expand the scope of the original Council Habitat Plan and compile and review available habitat, biological, social, and economic fishery and resource information for fisheries in the South Atlantic ecosystem. The South Atlantic Council views habitat conservation as the core of the move to EBM in the region. Therefore, development of the FEP was a natural next step in the evolution and expands and significantly updates the SAFMC Habitat Plan (SAFMC 1998a) incorporating comprehensive details of all managed species (SAFMC, South Atlantic States, ASMFC, and NOAA Fisheries Highly Migratory Species and Protected Species) including their biology, food web dynamics, and economic and social characteristics of the fisheries and habitats essential to their survival. The FEP therefore serves as a source document and presents more complete and detailed information describing the South Atlantic ecosystem and the impact of fisheries on the environment. This FEP updated information on designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern; expanded descriptions of biology and status of managed species; presented information that will support ecosystem considerations for managed species; and described the social and economic characteristics of the fisheries in the region. In addition, it expanded the discussion and description of existing research programs and needs to identify biological, social, and economic research needed to fully address ecosystem-based management in the region. It is anticipated that the FEP will provide a greater degree of guidance by fishery, habitat, or major ecosystem consideration of bycatch reduction, prey-predator interactions, maintaining biodiversity, and spatial management needs. This FEP serves as a living source document of biological, economic, and social information for all Fishery Management Plans (FMP). Future Environmental Assessments and Environmental Impact

Statements associated with subsequent amendments to Council FMPs will draw from or cite by reference the FEP.

The Fishery Ecosystem Plan for the South Atlantic Region encompasses the following volume structure:
FEP Volume I - Introduction and Overview of FEP for the South Atlantic Region
FEP Volume II - South Atlantic Habitats and Species
FEP Volume III - South Atlantic Human and Institutional Environment
FEP Volume IV - Threats to South Atlantic Ecosystem and Recommendations
FEP Volume V - South Atlantic Research Programs and Data Needs
FEP Volume VI - References and Appendices

Comprehensive Ecosystem-Based Amendment (CE-BA) 1 (SAFMC 2009b) is supported by this FEP and updated EFH and EFH-HAPC information and addressed the Final EFH Rule (e.g., GIS presented for all EFH and EFH-HAPCs). Management actions implemented in CE-BA 1 established deepwater Coral HAPCs to protect what is thought to be the largest continuous distribution (>23,000 square miles) of pristine, deepwater coral ecosystems in the world.

The Fishery Ecosystem Plan, slated to be revised every 5 years, will again be the vehicle to update and refine information supporting designation and future review of EFH and EFH-HAPCs for managed species. Planning for the update is being conducted in cooperation with the Habitat Advisory Panel during the fall and winter of 2013 with initiation during 2014.

Ecosystem Approach to Deepwater Ecosystem Management

The South Atlantic Council manages coral, coral reefs and live/hard bottom habitat, including deepwater corals, through the Fishery Management Plan for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region (Coral FMP). Mechanisms exist in the FMP, as amended, to further protect deepwater coral and live/hard bottom habitats. The SAFMC's Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel have supported proactive efforts to identify and protect deepwater coral ecosystems in the South Atlantic region. Management actions in Comprehensive Ecosystem-Based Amendment (CE-BA 1) (SAFMC 2009b) established deepwater coral HAPCs (C- HAPCs) to protect what is thought to be the largest continuous distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. In addition, CE-BA 1 established areas within the CHAPC, which provide for traditional fishing in limited areas, which do not impact deepwater coral habitat. CE-BA 1, supported by the FEP, also addressed non-regulatory updates for existing EFH and EFH- HAPC information and addressed the spatial requirements of the Final EFH Rule (i.e., GIS presented for all EFH and EFH-HAPCs). Actions in this amendment included modifications in the management of the following: octocorals; special management zones (SMZs) off the coast of South Carolina; and sea turtle release gear requirements for snapper grouper fishermen. The amendment also designated essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPCs).

CE-BA 2 established annual catch limits (ACL) for octocorals in the South Atlantic as well as modifying the Fishery Management Unit (FMU) for octocorals to remove octocorals off the coast of Florida from the FMU (SAFMC 2011). The amendment also limited the possession of

managed species in the SMZs off South Carolina to the recreational bag limit for snapper grouper and coastal migratory pelagic species; modified sea turtle release gear requirements for the snapper grouper fishery based upon freeboard height of vessels; amends Council fishery management plans (FMPs) to designate or modify EFH and EFH-HAPCs, including the FMP for Pelagic Sargassum Habitat; amended the Coral FMP to designate EFH for deepwater Coral HAPCs designated under CE-BA 1; and amended the Snapper Grouper FMP to designate EFH-HAPCs for golden and blueline tilefish and the deepwater Marine Protected Areas. The final rule was published in the federal register on December 30, 2011, and regulations became effective on January 30, 2012.

Building from a Habitat to an Ecosystem Network to Support the Evolution

Starting with our Habitat and Environmental Protection Advisory Panel, the Council expanded and fostered a comprehensive Habitat network in our region to develop the Habitat Plan of the South Atlantic Region completed in 1998 to support the EFH rule. Building on the core regional collaborations, the Council facilitated an expansion to a Habitat and Ecosystem network to support development of the FEP and CE-BA as well as coordinate with partners on other regional efforts.

Integrated Ocean Observing System (IOOS) and Southeast Coastal and Ocean Observing Regional Association (SECOORA)

The Integrated Ocean Observing System (IOOS®) is a partnership among federal, regional, academic, and private sector parties that works to provide new tools and forecasts to improve safety, enhance the economy, and protect our environment. IOOS supplies critical information about our Nation's oceans, coasts, and Great Lakes. Scientists working to understand climate change, governments adapting to changes in the Arctic, municipalities monitoring local water quality, and industries affected by coastal and marine spatial planning all have the same need: reliable, timely, and sustained access to data and information that inform decision making. Improving access to key marine data and information supports several purposes. IOOS data sustain national defense, marine commerce, and navigation safety. Scientists use these data to issue weather, climate, and marine forecasts. IOOS data are also used to make decisions for energy siting and production, economic development, and ecosystem-based resource management. Emergency managers and health officials need IOOS information to make decisions about public safety. Teachers and government officials rely on IOOS data for public outreach, training, and education.

SECOORA is one of 11 Regional Associations established nationwide through the US IOOS whose primary source of funding is through a 5-year cooperative agreement titled "Coordinated Monitoring, Prediction, and Assessment to Support Decision-Makers Needs for Coastal and Ocean Data and Tools". However, SECOORA was recently awarded funding via a NOAA Regional Ocean Partnership grant through the Governors' South Atlantic Alliance. SECOORA is the regional solution to integrating coastal and ocean observing data in the Southeast United States to inform decision makers and the general public. The SECOORA region encompasses 4 states, over 42 million people, and spans the coastal ocean from North Carolina to the west Coast of Florida and is creating customized products to address these thematic areas: Marine Operations; Coastal Hazards; Ecosystems, Water Quality, Living Marine Resources; and Climate Change. The Council is a voting member and Council staff was recently re-elected to serve on the

Board of Directors for the Southeast Coastal Regional Ocean Observing Association (SECOORA) to guide and direct priority needs for observation and modeling to support fisheries oceanography and integration into stock assessments through SEDAR. Cooperation through SECOORA is envisioned to facilitate the following:

- Refining current or water column designations of EFH and EFH-HAPCs (e.g., Gulf Stream and Florida Current).
- Providing oceanographic models linking benthic, pelagic habitats, and food webs.
- Providing oceanographic input parameters for ecosystem models.
- Integration of OOS information into Fish Stock Assessment process in the SA region.
- Facilitating OOS system collection of fish and fishery data and other research necessary to support the Council's use of area-based management tools in the SA Region including but not limited to EFH, EFH-HAPCs, Marine Protected Areas, Deepwater Coral Habitat Areas of Particular Concern, Special Management Zones, and Allowable Gear Areas.
- Integration of OOS program capabilities and research Needs into the South Atlantic Fishery Ecosystem Plan.
- Collaboration with SECOORA to integrate OOS products with information included in the Council's Habitat and Ecosystem Web Services and Atlas to facilitate model and tool development.
- Expanding Map Services and the Regional Habitat and Ecosystem Atlas in cooperation with SECOORAs Web Services that will provide researchers access to data or products including those collected/developed by SA OOS partners.

SECOORA researchers are developing a comprehensive data portal to provide discovery of, access to, and metadata about coastal ocean observations in the southeast US. Below are various ways to access the currently available data.

One project recently funded by SECOORA initiated development of species specific habitat models that integrate remotely sensed and in situ data to enhance stock assessments for species managed by the Council. The project during 2013/2014 was initiated to address red porgy, gray triggerfish, black seabass, and vermilion snapper. Gray triggerfish and red porgy are slated for assessment through SEDAR in 2014/15 and 2015/16 respectively.

National Fish Habitat Plan and Southeast Aquatic Resource Partnership (SARP)

In addition, the Council serves on the National Habitat Board and, as a member of the Southeast Aquatic Resource Partnership (SARP), has highlighted this collaboration by including the Southeast Aquatic Habitat Plan (SAHP) and associated watershed conservation restoration targets into the FEP. Many of the habitat, water quality, and water quantity conservation needs identified in the threats and recommendations Volume of the FEP are directly addressed by on-the-ground projects supported by SARP. This cooperation results in funding fish habitat restoration and conservation intended to increase the viability of fish populations and fishing opportunity, which also meets the needs to conserve and manage
Essential Fish Habitat for Council managed species or habitat important to their prey. To date, SARP has funded 53 projects in the region through this program. This work supports conservation objectives identified in the SAHP to improve, establish, or maintain riparian zones, water quality, watershed connectivity, sediment flows, bottoms and shorelines, and fish passage, and addresses other key factors associated with the loss and degradation of fish habitats. SARP

also developed the Southern Instream Flow Network (SIFN) to address the impacts of flow alterations in the Southeastern US aquatic ecosystems which leverages policy, technical experience, and scientific resources among partners based in 15 states. Maintaining appropriate flow into South Atlantic estuarine systems to support healthy inshore habitats essential to Council managed species is a major regional concern and efforts of SARP through SIFN are envisioned to enhance state and local partners ability to maintain appropriate flow rates.

Governor's South Atlantic Alliance (GSAA)

Initially discussed as a South Atlantic Eco-regional Compact, the Council has also cooperated with South Atlantic States in the formation of a Governor's South Atlantic Alliance (GSAA). This will also provide regional guidance and resources that will address State and Council broader habitat and ecosystem conservation goals. The GSAA was initiated in 2006. An Executive Planning Team (EPT), by the end of 2007, had created a framework for the Governors South Atlantic Alliance. The formal agreement between the four states (NC, SC, GA, and FL) was executed in May 2009. The Agreement specifies that the Alliance will prepare a "Governors South Atlantic Alliance Action Plan" which will be reviewed annually for progress and updated every five years for relevance of content. The Alliance's mission and purpose is to promote collaboration among the four states, and with the support and interaction of federal agencies, academe, regional organizations, non-governmental organizations, and the private sector, to sustain and enhance the region's coastal and marine resources. The Alliance proposes to regionally implement science-based actions and policies that balance coastal and marine ecosystems capacities to support both human and natural systems. The GSAA Action Plan was released in December 2010 and describes the four Priority Issue Areas that were identified by the Governors to be of mutual importance to the sustainability of the region's resources: Healthy Ecosystems; Working Waterfronts; Clean Coastal and Ocean Waters; and Disaster-Resilient Communities. The goals, objectives, actions, and implementation steps for each of these priorities were further described in the GSAA Implementation Plan released in July 2011. The final Action Plan was released on December 1, 2010 and marked the beginning of intensive work by the Alliance Issue Area Technical Teams (IATTs) to develop implementation steps for the actions and objectives. The GSAA Implementation Plan was published July 6, 2011, and the Alliance has been working to implement the Plan through the IATTs and two NOAA-funded Projects. The Alliance also partners with other federal agencies, academia, non-profits, private industry, regional organizations, and others. The Alliance supports both national and state-level ocean and coastal policy by coordinating federal, state, and local entities to ensure the sustainability of the region's economic, cultural, and natural resources. The Alliance has organized itself around the founding principles outlined in the GSAA Terms of Reference and detailed in the GSAA Business Plan. A team of natural resource managers, scientists, and information management system experts have partnered to develop a Regional Information Management System (RIMS) and recommend decision support tools that will support regional collaboration and decision-making. In addition to regional-level stakeholders, state and local coastal managers and decision makers will also be served by this project, which will enable ready access to new and existing data and information. The collection and synthesis of spatial data into a suite of visualization tools is a critical step for long-term collaborative planning in the South Atlantic region for a wide range of coastal uses. The Council's Atlas presents the spatial representations of Essential Fish Habitat, managed areas, regional fish and fish habitat

distribution, and fishery operation information and it can be linked to or drawn on as a critical part of the collaboration with the RIMS.

South Atlantic Landscape Conservation Cooperative

One of the more recent collaborations is the Council's participation as Steering Committee member for the newly establish South Atlantic Landscape Conservation Cooperative (SALCC). Landscape Conservation Cooperatives (LCCs) are applied conservation science partnerships focused on a defined geographic area that informs on-the-ground strategic conservation efforts at landscape scales. LCC partners include DOI agencies, other federal agencies, states, tribes, non-governmental organizations, universities, and others. The newly formed Department of Interior Southeast Climate Services Center (CSC) has the LCCs in the region as their primary clients. One of the initial charges of the CSCs is to downscale climate models for use at finer scales.

The SALCC developed a Strategic Plan through an iterative process that began in December 2011. The plan provides a simple strategy for moving forward over the next few years. An operations plan was developed under direction from the SALCC Steering Committee to redouble efforts to develop version 1.0 of a shared conservation blueprint by spring-summer of 2014. The SALCC is developing the regional blueprint to address the rapid changes in the South Atlantic including but not limited to climate change, urban growth, and increasing human demands on resources which are reshaping the landscape. While these forces cut across political and jurisdictional boundaries, the conservation community does not have a consistent cross-boundary, cross-organization plan for how to respond. The South Atlantic Conservation Blueprint will be that plan. The blueprint is envisioned to be a spatially-explicit map depicting the places and actions need to sustain South Atlantic LCC objectives in the face of future change. The steps to creating the blueprint include development of: indicators and targets (shared metrics of success); the State of the South Atlantic (past, present, and future condition of indicators); and a Conservation Blueprint. Potential ways the blueprint could be used include: finding the best places for people and organizations to work together; raising new money to implement conservation actions; guiding infrastructure development (highways, wind, urban growth, etc.); creating incentives as an alternative to regulation; bringing a landscape perspective to local adaptation efforts; and locating places and actions to build resilience after major disasters (hurricanes, oil spills, etc.). Integration of connectivity, function, and threats to river, estuarine and marine systems supporting Council managed species is supported by the SALCC and enhanced by the Council being a voting member of its Steering Committee. In addition, the Council's Regional Atlas presents spatial representations of Essential Fish Habitat, managed areas, regional fish and fish habitat distribution, and fishery operation information and it be linked to or drawn on as a critical part of the collaboration with the recently developed SALCC Conservation Planning Atlas.

Building Tools to support EBM in the South Atlantic Region

The Council has developed a Habitat and Ecosystem Section of the website http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx and, in cooperation with the Florida Wildlife Research Institute (FWRI), developed a Habitat and Ecosystem Internet Map Server (IMS). The IMS was developed to support Council and regional partners' efforts in the transition to EBM. Other regional partners include NMFS Habitat Conservation, South Atlantic States, local management authorities, other Federal partners,

universities, conservation organizations, and recreational and commercial fishermen. As technology and spatial information needs evolved, the distribution and use of GIS demands greater capabilities. The Council has continued its collaboration with FWRI in the now evolution to Web Services provided through the regional SAFMC Habitat and Ecosystem Atlas (http://ocean.floridamarine.org/safmc_atlas/) and the SAFMC Digital Dashboard (http://ocean.floridamarine.org/safmc_dashboard/). The Atlas integrates services for the following:

Species distribution and spatial presentation of regional fishery independent data from the SEAMAP-SA, MARMAP, and NOAA SEFIS systems; SAFMC Fisheries: (http://ocean.floridamarine.org/SA_Fisheries/)

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern; SAFMC EFH: (http://ocean.floridamarine.org/sa_efh/)

Spatial presentation of managed areas in the region; SAFMC Managed Areas: (http://ocean.floridamarine.org/safmc_managedareas/)

An online life history and habitat information system supporting Council managed, State managed, and other regional species was developed in cooperation with FWRI. The Ecospecies system is considered dynamic and presents, as developed, detailed individual species life history reports and provides an interactive online query capability for all species included in the system: http://atoll.floridamarine.org/EcoSpecies

Web Services System Updates:
Essential Fish Habitat (EFH) – displays EFH and EFH-HAPCS for SAFMC managed species and NOAA Fisheries Highly Migratory Species.
Fisheries - displays Marine Resources Monitoring, Assessment, and Prediction (MARMAP) and Southeast Area Monitoring and Assessment Program South Atlantic (SEAMAP-SA) data.
Managed Areas - displays a variety of regulatory boundaries (SAFMC and Federal) or management boundaries within the SAFMC's jurisdiction.
Habitat – displays habitat data collected by SEADESC, Harbor Branch Oceanographic Institute (HBOI), and Ocean Exploration dives, as well as the SEAMAP shallow and ESDIM deepwater bottom mapping projects, multibeam imagery, and scientific cruise data.
Multibeam Bathymetry - displays a variety of multibeam data sources and scanned bathymetry charts.
Nautical Charts – displays coastal, general, and overview nautical charts for the SAFMC's jurisdictional area.

Ecosystem Based Action, Future Challenges and Needs

The Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deepwater Marine Protected Areas for the Snapper Grouper fishery, proactive harvest control rules on species (e.g., dolphin and wahoo) which are not overfished, implementing extensive gear area closures which in most cases eliminate the impact of fishing gear on Essential Fish Habitat, and use of other spatial management tools including Special Management Zones. Pursuant to development of the

Comprehensive Ecosystem-Based Amendment, the Council has taken an ecosystem approach to protect deepwater ecosystems while providing for traditional fisheries for the Golden Crab and Royal Red shrimp in areas where they do not impact deepwater coral habitat. The stakeholder based process taps in on an extensive regional Habitat and Ecosystem network. Support tools facilitate Council deliberations and with the help of regional partners, are being refined to address long-term ecosystem management needs.

One of the greatest challenges to the long-term move to EBM in the region is funding high priority research, including but not limited to, 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 Council use in place based management measures. Additional resources need to be dedicated to expand 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. Development of ecosystem information systems to support 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 Council needs.

The FEP and CE-BA 1 complement, but do not replace, existing FMPs. In addition, the FEP serves as a source document to the CE-BAs. NOAA should support and build on the regional coordination efforts of the Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update and refine our FEP and support future fishery actions including but not limited to completing one of the highest priority needs to support EBM, the completion of mapping of near-shore, mid-shelf, shelf edge, and deepwater habitats in the South Atlantic region. In developing future FEPs, the Council will draw on SAFEs (Stock Assessment and Fishery Evaluation reports) which NMFS is required to provide the Council for all FMPs implemented under the Magnuson-Stevens Act. The FEP, which has served as the source document for CE-BAs, could also meet some of the NMFS SAFE requirements if information is provided to the Council to update necessary sections.

EFH and EFH-HAPC Designations Translated to Cooperative Habitat Policy Development and Protection

The Council actively comments on non-fishing projects or policies that may impact fish habitat. Appendix A of the Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (SAFMC 1998b) outlines the Council's comment and policy development process and the establishment of a four-state Habitat Advisory Panel. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. AP members bring projects to the Council's attention, draft comment letters, and attend public meetings. With guidance from the Advisory Panel, the Council has developed and approved policies on:

1. Energy exploration, development, transportation, and hydropower re-licensing;
2. Beach dredging and filling and large-scale coastal engineering;
3. Protection and enhancement of submerged aquatic vegetation;

4. Alterations to riverine, estuarine, and nearshore flows;
5. Marine aquaculture;
6. Marine Ecosystems and Non-Native and Invasive Species: and
7. Estuarine Ecosystems and Non-Native and Invasive Species.

NOAA Fisheries, State and other Federal agencies apply EFH and EFH-HAPC designations and protection policies in the day-to-day permit review process. The revision and updating of existing habitat policies and the development of new policies is being coordinated with core agency representatives on the Habitat and Coral Advisory Panels. Existing policies are included at the end of this Appendix.

The Habitat and Environmental Protection Advisory Panel, as part of their role in providing continued policy guidance to the Council, is during 2013/14, reviewing and proposing revisions and updates to the existing policy statements and developing new ones for Council consideration. The effort is intended to enhance the value of the statements and support cooperation and collaboration with NOAA Fisheries Habitat Conservation Division and State and Federal partners in better addressing the Congressional mandates to the Council associated with designation and conservation of EFH in the region.

South Atlantic Bight Ecopath Model

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

The latest collaboration builds on the previous Ecopath model developed through the Sea Around Us project for the South Atlantic Bight with a focus on beginning a dialogue on the implications of potential changes in forage fish populations in the region that could be associated with environmental or climate change or changes in direct exploitation of those populations.

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern

Following is a summary of the current South Atlantic Council's EFH and EFH-HAPCs. Information supporting their designation was updated (pursuant to the EFH Final Rule) in the Council's Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment:

Snapper Grouper FMP

Essential fish habitat for snapper grouper species 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 feet (but to at least 2,000 feet 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 essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper grouper species, essential fish habitat 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.

Areas which meet the criteria for 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). In addition, the Council through CEBA 2 (SAFMC 2011) designated the deepwater snapper grouper MPAs and golden tilefish and blueline tilefish habitat as EFH-HAPCs under the Snapper Grouper FMP as follows:

EFH-HAPCs for golden tilefish to include 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 to include 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 to include the following deepwater 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.

Deepwater Coral HAPCs designated in Comprehensive Ecosystem-Based Amendment 1 are designated as Snapper Grouper EFH-HAPCs: Cape Lookout Coral HAPC, Cape Fear Coral HAPC, Blake Ridge Diapir Coral HAPC, Stetson-Miami Terrace Coral HAPC, and Pourtalés Terrace Coral HAPC.

Shrimp FMP

For penaeid shrimp, Essential Fish Habitat includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies as described in the Habitat Plan. Inshore nursery areas include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non- vegetated flats. This applies from North Carolina through the Florida Keys.

For rock shrimp, essential fish habitat consists of offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters in depth with highest concentrations occurring between 34 and 55 meters. This applies for all areas from North Carolina through the Florida Keys. Essential fish habitat includes the shelf current systems near Cape Canaveral, Florida, which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida Shelf and may transport them inshore in spring. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse rock shrimp larvae.

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy sand, or white calcareous mud. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

Areas which meet the criteria for EFH-HAPCs for penaeid shrimp include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas), and state-identified overwintering areas.

Coastal Migratory Pelagics FMP

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom, and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum*. In addition, all coastal inlets and all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas).

For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae.

For king and Spanish mackerel and cobia essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

Areas which meet the criteria for EFH-HAPCs include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR Program. Estuaries meeting these criteria for Spanish mackerel include Bogue Sound and New River, North Carolina; Bogue Sound, North Carolina (Adults May-September salinity >30 ppt); and New River, North Carolina (Adults May-October salinity >30 ppt). For Cobia they include Broad River, South Carolina; and Broad River, South Carolina (Adults & juveniles May-July salinity >25ppt).

Golden Crab FMP

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework.

Spiny Lobster FMP

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Areas which meet the criteria for EFH-HAPCs for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida.

Coral, Coral Reefs, and Live/Hard Bottom Habitats FMP

Essential fish habitat for corals (stony corals, octocorals, and black corals) incorporate habitat for over 200 species. EFH for corals include the following:

A. Essential fish habitat for hermatypic stony corals includes rough, hard, exposed, stable substrate from Palm Beach County south through the Florida reef tract in subtidal waters to 30 m depth; subtropical (15°-35° C), oligotrophic waters with high (30-35$^{o}/_{oo}$) salinity and turbidity levels sufficiently low enough to provide algal symbionts adequate sunlight penetration for photosynthesis. Ahermatypic stony corals are not light restricted and their essential fish habitat includes defined hard substrate in subtidal to outer shelf depths throughout the management area.

B. Essential fish habitat for *Antipatharia* (black corals) includes rough, hard, exposed, stable substrate, offshore in high (30-35$^{o}/_{oo}$) salinity waters in depths exceeding 18 meters (54 feet), not restricted by light penetration on the outer shelf throughout the management area.

C. Essential fish habitat for octocorals excepting the order Pennatulacea (sea pens and sea pansies) includes rough, hard, exposed, stable substrate in subtidal to outer shelf depths within a wide range of salinity and light penetration throughout the management area.

D. Essential fish habitat for Pennatulacea (sea pens and sea pansies) includes muddy, silty bottoms in subtidal to outer shelf depths within a wide range of salinity and light penetration.

Areas which meet the criteria for EFH-HAPCs for coral, coral reefs, and live/hard bottom include: The 10-Fathom Ledge, Big Rock, and The Point (North Carolina); Hurl Rocks and The Charleston Bump (South Carolina); Gray's Reef National Marine Sanctuary (Georgia); The *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; Oculina Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral; nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral to Broward County); offshore (5-30 meter; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary. In addition, the Council through CEBA 2 (SAFMC 2011) designated the Deepwater Coral HAPCs as EFH-HAPCs under the Coral FMP as follows:

Deepwater Coral HAPCs designated in Comprehensive Ecosystem-Based Amendment 1 as Snapper Grouper EFH-HAPCs: Cape Lookout Coral HAPC, Cape Fear Coral HAPC, Blake Ridge Diapir Coral HAPC, Stetson-Miami Terrace Coral HAPC, and Pourtalés Terrace Coral HAPC.

Dolphin and Wahoo FMP

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*. This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC 1998b) (dolphin was included within the Coastal Migratory Pelagics FMP at that time).

Areas which meet the criteria for EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*. This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP at that time).

Pelagic *Sargassum* Habitat FMP

The Council through CEBA 2 (SAFMC 2011) designated the top 10 meters of the water column in the South Atlantic EEZ bounded by the Gulfstream, as EFH for pelagic Sargassum.

Actions Implemented That Protect EFH and EFH-HAPCs

Snapper Grouper FMP

- Prohibited the use of the following gears to protect habitat: bottom longlines in the EEZ inside of 50 fathoms or anywhere south of St. Lucie Inlet, Florida; bottom longlines in the wreckfish fishery; fish traps; bottom tending (roller- rig) trawls on live bottom habitat; and entanglement gear.
- Established the *Oculina* Experimental Closed Area where the harvest or possession of all species in the snapper grouper complex is prohibited.

Established deepwater 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.

Shrimp FMP

- Prohibition of rock shrimp trawling in a designated area around the *Oculina* Bank,
- Mandatory use of bycatch reduction devices in the penaeid shrimp fishery,
- Mandatory Vessel Monitoring System (VMS) in the Rock Shrimp Fishery.
- A mechanism that provides for the concurrent closure of the EEZ to penaeid shrimping if environmental conditions in state waters are such that the overwintering spawning stock is severely depleted.

***Pelagic Sargassum* Habitat FMP**

- Prohibited all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the latitude line representing the North Carolina/South Carolina border (34° North Latitude).
- Prohibited all harvest of *Sargassum* from the South Atlantic EEZ within 100 miles of shore between the 34° North Latitude line and the Latitude line representing the North Carolina/Virginia border.
- Harvest of *Sargassum* from the South Atlantic EEZ is limited to the months of November through June.
- Established an annual Total Allowable Catch (TAC) of 5,000 pounds landed wet weight.
- Required that an official observer be present on each *Sargassum* harvesting trip. Require that nets used to harvest *Sargassum* be constructed of four-inch stretch mesh or larger fitted to a frame no larger than 4 feet by 6 feet.

Coastal Migratory Pelagics FMP

- Prohibited of the use of drift gillnets in the coastal migratory pelagic fishery.

Golden Crab FMP

- In the northern zone, golden crab traps can only be deployed in waters deeper than 900 feet; in the middle and southern zones traps can only be deployed in waters deeper than 700 feet.

Northern zone - north of the 28°N. latitude to the North Carolina/Virginia border;
Middle zone - 28°N. latitude to 25° N. latitude; and

Southern zone - south of 25°N. latitude to the border between the South Atlantic and Gulf of Mexico Fishery Management Councils.

Coral, Coral Reefs and Live/Hard Bottom FMP

- Established an optimum yield of zero and prohibiting all harvest or possession of these resources which serve as essential fish habitat to many managed species.
- Designated the *Oculina* Bank Habitat Area of Particular Concern.
- Expanded the *Oculina* Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.
- Established the following two Satellite *Oculina* HAPCs: (1) Satellite *Oculina* HAPC #1 is bounded on the north by 28°30'N. latitude, on the south by 28°29'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude; and (2) Satellite *Oculina* HAPC #2 is bounded on the north by 28°17'N. latitude, on the south by 28°16'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude.
- Prohibited the use of all bottom tending fishing gear and fishing vessels from anchoring or using grapples in the *Oculina* Bank HAPC.
- Established a framework procedure to modify or establish Coral HAPCs.
- Established the following five deepwater CHAPCs:

Cape Lookout Lophelia Banks CHAPC;
Cape Fear Lophelia Banks CHAPC;
Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson- Miami Terrace) CHAPC;
Pourtales Terrace CHAPC; and
Blake Ridge Diapir Methane Seep CHAPC.

- Within the deepwater CHAPCs, the possession of coral species and the use of all bottom damaging gear are prohibited including bottom longline, trawl (bottom and mid-water), dredge, pot or trap, or the use of an anchor, anchor and chain, or grapple and chain by all fishing vessels.

South Atlantic Council Policies for Protection and Restoration of Essential Fish Habitat
SAFMC 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 SAFMC 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 SAFMC 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 SAFMC will pursue these goals at state, Federal, and local levels. The 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 Council.

SAFMC EFH Policy Statements

In addition to implementing regulations to protect habitat from fishing related degradation, the Council in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact fish habitat. The Council adopted a habitat policy and procedure document that established a four-state Habitat Advisory Panel and adopted a comment and policy development process. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. With guidance from the Advisory Panel, the Council has developed and approved a number of habitat policy statements which are available on the Habitat and Ecosystem section of the Council website (http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx).

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Appendix I. Data Analyses

Expected Closure Dates of the Commercial and Recreational Yellowtail Snapper Fisheries Under Proposed In-season Accountability Measures

LAPP/DM Branch
Southeast Regional Office

The South Atlantic Fishery Management Council manages yellowtail snapper from federal waters at the Virginia/North Carolina border through the Atlantic side of the Florida Keys under the Snapper-Grouper Fishery Management Plan (FMP). In 2016, Regulatory Amendment 25 to the Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region changed the commercial season to August 1 through July 31 for both the recreational and commercial sectors. This analysis investigates when the commercial and recreational sectors will be expected to close under the proposed in-season accountability measures (**Table I-1**).

Table I-1. South Atlantic yellowtail snapper recreational and commercial in-season accountability measures alternatives stated in Regulatory Amendment 32.

Action 2 Alternatives:	In-season accountability measure:
No Action	Recreational and commercial sectors close if their respective sector's ACL is met or projected to be met.
Alternative 2	An in-season closure will not occur for either sector until the total ACL is met or projected to be met. Both sectors will close at that time.
Alternative 3	An in-season closure will occur for only the commercial sector if the commercial ACL has been met and the 80% of the total ACL is met or is projected to be met.
Alternative 4	An in-season closure will occur for only the commercial sector if the commercial ACL has been met and the 70% of the total ACL is met or is projected to be met.

Final commercial landings for 2014 through 2016 were provided from the Southeast Fisheries Science Center (SEFSC) on October 5, 2017, and final 2017 commercial landings were provided on July 12, 2018. Monthly South Atlantic commercial yellowtail snapper landings were averaged from 2015 through 2017 to project future landings (**Figure I-1**). Landings from 2014 were used to estimate projected landings in June and July since there was a closure during these months in 2017, and for November and December since there was a closure during these months in 2015. Further, landings in October 2017 were also expanded by one day to account for the closure that occurred October 31st by assuming an equal daily catch. Otherwise, regulatory Amendment 25 changes to the commercial fishing year are assumed to have minimal impact on monthly fishing behavior. Based on the projected future commercial landings of yellowtail snapper, the commercial sector will close as described in **Table I-2**. Alternative 2 was the only alternative that a commercial sector closure was not expected.

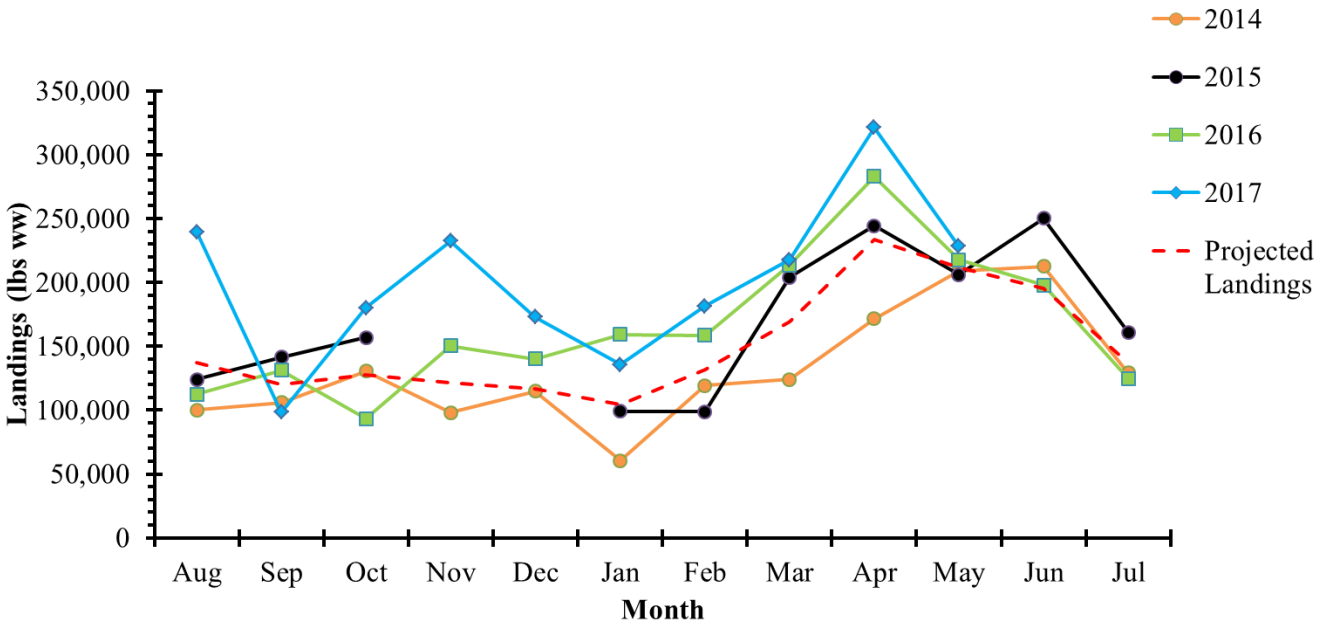

Figure I-1. South Atlantic yellowtail snapper monthly commercial landings (lb ww) for 2014-2017, and projected future landings. Source: SEFSC Commercial ACL Dataset (October 5, 2017).

A recreational landings dataset was provided from the SEFSC on June 11, 2018. This dataset includes landings from the Southeast Region Headboat Survey (SRHS) and Marine Recreational Information Program (MRIP). SRHS data provides monthly landings estimates whereas MRIP data is provided in two month waves (e.g., January and February = wave 1, March and April = wave 2, etc.). To estimate monthly landings, MRIP waves were used to estimate to monthly landings by assuming equal daily catch rates between months, and then SRHS landings were added back in. Average monthly landings from 2015-2017 were used as a proxy for future landings. Regulatory Amendment 25 changes to the recreational fishing year are assumed to not have impacted monthly fishing behavior since the recreational sector has never reached their ACL. Recreational landings from 2015, 2016, 2017 and projected future landings are summarized in **Figure I-2**. Based on the projected recreational landings of yellowtail snapper, the recreational sector will not be expected to close under the proposed in-season accountability measures (**Table I-2**).

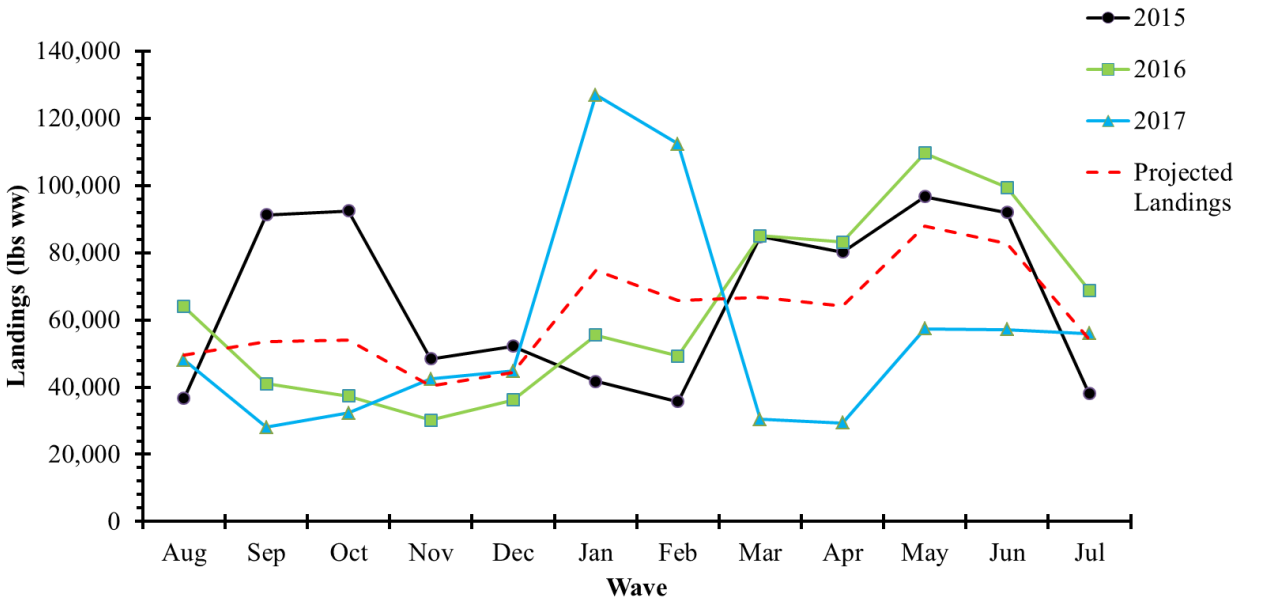

Figure I-2. South Atlantic yellowtail snapper monthly recreational landings (lb ww) for 2015-2017, and projected future landings. Source: SEFSC Recreational ACL Dataset (June 11, 2018).

Table I-2. The projected South Atlantic yellowtail snapper commercial and recreational closure dates expected with each proposed in-season accountability measure alternative. The total landings are included if no closure was projected.

	Yellowtail Snapper Projected Closure Dates					
	Combined ACL	**Recreational ACL**	**Recreational Closure Date**	**Commercial ACL**	**Commercial Closure**	**% Combined ACL Landed**
No Action	3,037,500	1,440,990	No closure (738,194)	1,596,510	14-May	77%
Alt 2	3,037,500	Combined ACL (3,037,500)	No closure (738,194)	Combined ACL (3,037,500)	No closure (2,078,627)	93%
Alt 3	3,037,500	Combined ACL (3,037,500)	No closure (738,194)	80% Combined ACL (2,430,000)	11-Jun	84%
Alt 4	3,037,500	Combined ACL (3,037,500)	No closure (738,194)	70% Combined ACL (2,126,250)	12-May	76%

The reliability of these results is dependent upon the accuracy of the underlying data and input assumptions. We have attempted to create a realistic baseline as a foundation for comparisons, under the assumption that projected future landings will accurately reflect actual future landings. These closure dates are our best estimate, but uncertainty still exists as economic conditions, weather events, changes in catch-per-unit effort, fisher response to management regulations, and a variety of other factors may cause departures from any assumption.