Vision Blueprint Recreational Regulatory Amendment 26

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

Addresses specific action items in the 2016-2020 Vision Blueprint for select species within the recreational sector of the snapper grouper fishery of the South Atlantic region.

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

April 17, 2019

South Atlantic Fishery Management Council
4055 Faber Place Drive; Suite 201
North Charleston, SC 29405

Award Number FNA15NMF4410010

Definitions, Abbreviations, and Acronyms Used in the Document

ABC acceptable biological catch

ACL annual catch limit

ACT annual catch target

ALS Accumulated Landings System

AM accountability measure

ASFMC Atlantic States Marine Fisheries Commission

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_{CURR} the current stock biomass

COUNCIL South Atlantic Fishery Management Council

CS consumer surplus

DPS distinct population segment

EEZ exclusive economic zone

EA environmental assessment

EFH essential fish habitat

EFH-HAPC essential fish habitat-habitat areas of particular concern

ESA Endangered Species Act

F a measure of the instantaneous rate of fishing mortality

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}

FMP fishery management plan

FMU fishery management unit

LBS GW pounds gutted weight

LBS WW pounds whole weight

M natural mortality rate

MAGNUSON-STEVENS ACT Magnuson-Stevens Fishery Conservation and Management Act

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

MSST minimum stock size threshold

MSY maximum sustainable yield

NARW North Atlantic Right Whale

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

NOR net operating revenue

OY optimum yield

PS producer surplus

SECRETARY Secretary of Commerce

SEDAR Southeast Data, Assessment, and Review

SEFSC Southeast Fisheries Science Center

SERO Southeast Regional Office

SMZ special management zone

SOUTH ATLANTIC southeastern united states

SPR spawning potential ratio

SSB stock spawning biomass

SSC Scientific and Statistical Committee

TAC total allowable catch

Vision Blueprint Recreational Regulatory Amendment 26 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Proposed actions:	Modify recreational regulations such as aggregate bag limits, seasonal closures, and minimum size limits for certain species in the snapper grouper fishery

Responsible Agencies and Contact Persons

South Atlantic Fishery Management Council
4055 Faber Place, Suite 201
North Charleston, South Carolina 29405
IPT lead: Myra Brouwer
myra.brouwer@safmc.net

843-571-4366
843-769-4520 (fax)
www.safmc.net

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
IPT lead: Mary Vara
mary.vara@noaa.gov

727-824-5305
727-824-5308 (fax)
http://sero.nmfs.noaa.gov

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Why is the South Atlantic Fishery Management Council considering action?

The Vision Blueprint Recreational Regulatory Amendment 26 (Regulatory Amendment 26) to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) would address specific action items in the 2016-2020 Vision Blueprint for the Snapper Grouper Fishery of the South Atlantic Region (Vision Blueprint; SAFMC 2015) for the recreational sector. The Vision Blueprint identifies the goals, objectives, strategies, and actions that support the vision for the snapper grouper fishery and centers around four goal areas - Science, Management, Communication, and Governance. During a series of stakeholder meetings in 2014, the South Atlantic Fishery Management Council (South Atlantic Council) gathered input from recreational fishermen from throughout the region. In 2015, the South Atlantic Council prioritized action items that would be addressed through amendments to the Snapper Grouper FMP over the next five years. The South Atlantic Council chose to focus on actions that would address "seasonality" and "retention" in the fishery and began development of two amendments to address the commercial and recreational sectors, respectively. Regulatory Amendment 26 includes modifications to recreational management measures based on stakeholder input and is intended to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency.

Action 1 proposes establishing a Deep-water Species Aggregate. The current recreational aggregates were established early in the management of the recreational snapper grouper fishery. As such, the aggregates do not accurately reflect how recreational fishermen currently target various snapper grouper species. Also, grouping species based on their habitat preferences (i.e., shallow vs. deep-water) allows for more efficient management since tools such as seasonal closures (**Action 2**) can be applied more selectively and take into account the biology of such species. Hence, a recreational aggregate containing only deep-water species would allow managers to better focus certain measures on this particular group of species. This action indirectly addresses Objective 2 under the broad Management Goal in the Vision Blueprint: *Develop innovative management measures that allow consistent access to the fishery for all sectors.* The species being considered to comprise the Deep-water Species Aggregate inhabit depths that are not equally accessible to recreational fishermen throughout the South Atlantic Council's jurisdiction due to distance from shore or seasonal weather patterns. Grouping these species together would allow the South Atlantic Council more flexibility to apply management approaches that would balance access to resource users and promote predictability.

Establishment of a recreational season for deep-water snapper grouper species (**Action 2**) is listed as a priority action under the Management Goal in the Vision Blueprint. Objective 2, under that goal is to *Develop innovative management measures that allow consistent access to the fishery for all sectors*. Strategy 2.3 under Objective 2 is to *Support development of*

management approaches that account for the seasonality of the snapper grouper fishery. Under this strategy, the top priority action is to *Consider a recreational season for harvest of deepwater species by region*. Hence, **Action 2** proposes the establishment of a recreational season to optimize access to this group of species for recreational anglers throughout the South Atlantic region.

Actions 3 and **6** propose changes to aggregate bag limits (for deep-water species and for species within the existing 20-fish aggregate, respectively). Since **Action 1** would establish a new Deep-water Species Aggregate, **Action 3** would specify the bag limit for the new aggregate. **Action 6** proposes specifying a lower retention limit for one or more species within the 20-fish aggregate to proactively address overharvesting of some species and/or promote consistent regulations for gray triggerfish between state and federal waters off the east coast of Florida. **Actions 4** and **5** change or remove minimum size limits to minimize regulatory discards. Appendix B of the Vision Blueprint contains Objective 4 under the Management Goal -- *Develop management measures that reduce and mitigate discards*. While this objective was not singled out as a priority item to address in 2016-2020, the South Atlantic Council is considering actions in this and other amendments to the Snapper Grouper FMP to reduce discards and release mortality. Removal of size limits for deepwater species is specifically addressed in the Vision Blueprint Strategy 4.2 (in Appendix B) -- *Consider management approaches that address the impact of depth on bycatch of snapper grouper species.* Three deep-water snappers – silk snapper, queen snapper, and blackfin snapper – are the only deep-water species for which there is still a minimum size limit in federal waters. These minimum size limits were put in place long ago, before estimates of discard mortality were available and long before the creation of the various Complexes. Snapper grouper species that inhabit deep-water -- blueline tilefish, golden tilefish, snowy grouper, wreckfish, and those in the in the Deep-water Complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, and blackfin snapper) -- are typically associated with high discard mortality. To curb potential discard losses, the South Atlantic Council is considering action to eliminate minimum size limit requirements for queen snapper, silk snapper, and blackfin snapper in **Action 4**. The remaining species in the Deep-water Complex do not have a minimum size limit requirement.

Action 5 proposes a reduction in the minimum size limit for gray triggerfish in federal waters off the east coast of Florida. The minimum size limit for gray triggerfish was modified in 2015 through implementation of Snapper Grouper Amendment 29. A minimum size limit of 12 inches fork length (FL) was implemented in federal waters off North Carolina, South Carolina, and Georgia, and a minimum size limit of 14 inches FL was put in place in federal waters off the east coast of Florida. This was precautionary action in response to concerns about the status of the gray triggerfish stock in the South Atlantic and to align east Florida regulations with those in the Gulf of Mexico and achieve consistency between state and federal regulations off the east coast of Florida. However, after that new minimum size limit went into effect (on July 1, 2015), stakeholders in Florida voiced concern to the Florida Fish and Wildlife Conservation Commission (FWC) regarding increasing discards of gray triggerfish in south Florida where the average size of gray triggerfish is smaller than that off northeast Florida. In response, the FWC reduced the recreational minimum size limit of gray triggerfish to 12 inches FL later in 2015 and requested that the South Atlantic Council follow suit in issuing consistent regulations. **Action 5**

directly addresses the objective to minimize and mitigate discards in the snapper grouper fishery and is intended to promote a more consistent regulatory environment to facilitate compliance.

Purpose for Actions

Address recreational stakeholder input to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency.

Need for Actions

Improve management of the recreational component of the snapper grouper fishery to achieve optimum yield, while minimizing, to the extent practicable, adverse socio-economic effects for recreational fishermen in the South Atlantic region.

What actions are being proposed in this framework amendment?

Regulatory Amendment 26 proposes the following six actions for snapper grouper species in the South Atlantic Region. **Proposed changes to the species composition of recreational aggregates would not change the recreational annual catch limits of the complexes that comprise such species.**

Action 1. Establish a Deep-water Species Aggregate

Currently: The following recreational Snapper Grouper aggregates are in place in the South Atlantic Region:
Snapper Aggregate: lane snapper, yellowtail snapper, gray snapper, mutton snapper, cubera snapper, queen snapper, blackfin snapper, and silk snapper.
Grouper and Tilefish Aggregate: gag, black grouper, red grouper, scamp, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, coney, sand tilefish, snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, and golden tilefish.
20-Fish Aggregate: whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

After reviewing analyses in this amendment and considering public input, the South Atlantic Council is proposing **no changes at this time**.

Action 2. Specify the recreational season for the deep-water species aggregate

Currently: Recreational fishing for blueline tilefish and snowy grouper is allowed from May 1 through August 31, annually. Recreational fishing for wreckfish is allowed from July 1 through August 31. Recreational fishing for other Deep-water Species (misty grouper, yellowedge grouper, and golden tilefish) is allowed year-round.

After reviewing analyses in this amendment and considering public input, the South Atlantic Council is proposing **no changes at this time**.

Action 3. Specify the aggregate bag limit for the deep-water species aggregate

Currently: The following recreational bag limits are in place for the grouper and tilefish aggregate and for wreckfish in the South Atlantic Region:
Grouper and Tilefish Aggregate Bag Limit: Three per person per day: gag[1], black grouper[1], red grouper, scamp, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, coney, sand tilefish, snowy grouper[2], misty grouper, yellowedge grouper, blueline tilefish, and golden tilefish[3].

[1]Maximum of one gag or black grouper (but not both) per person per day.
[2]Maximum of one snowy grouper per *vessel* per day.
[3]Maximum of one golden tilefish per person per day.

The recreational bag limit for wreckfish is one per *vessel* per day.

After reviewing analyses in this amendment and considering public input, the South Atlantic Council is proposing **no changes at this time**.

Action 4. Remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper

Currently: The recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper in the South Atlantic exclusive economic zone is 12 inches total length.

Preferred Alternative 2. Remove the 12-inch total length recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper in the South Atlantic exclusive economic zone.

Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

Currently: The recreational minimum size limit for gray triggerfish in the South Atlantic exclusive economic zone off east Florida is 14 inches fork length. The recreational minimum size limit for gray triggerfish in the exclusive economic zone off Georgia, South Carolina, and North Carolina is 12 inches fork length.

Preferred Alternative 2. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida to 12 inches fork length.

Action 6. Modify the aggregate bag limit for the 20-fish Aggregate

Currently: The following recreational aggregate bag limit is in place for species without individual bag limits in the South Atlantic Region:
20-Fish Aggregate: 20 fish per person per day including whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

Preferred Alternative 4. Specify no more than 10 fish can be of any one species within the 20-fish aggregate.

Chapter 1. Introduction

1.1 What actions are being proposed in this framework amendment?

Vision Blueprint Recreational Regulatory Amendment 26 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) proposes to modify recreational regulations including aggregate bag limits, seasonal closures, and minimum size limits, for certain species (see **Chapter 2** for details of the proposed actions and alternatives).

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks in the South Atlantic Region
- Consists of 13 voting members who are appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Administrator 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 nautical 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 framework amendment?

The South Atlantic Fishery Management Council (South Atlantic Council) develops the framework amendment and submits it to the National Marine Fisheries Service (NMFS). NMFS is an agency of the National Oceanic and Atmospheric Administration. NMFS implements the actions in the framework amendment through the development of regulations. The South Atlantic Council and NMFS are also responsible for making this document available for public comment. The draft environmental assessment is made available to the public during the scoping process, public hearings, and in South Atlantic Council meeting briefing books.

1.3 Where is the project located?

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

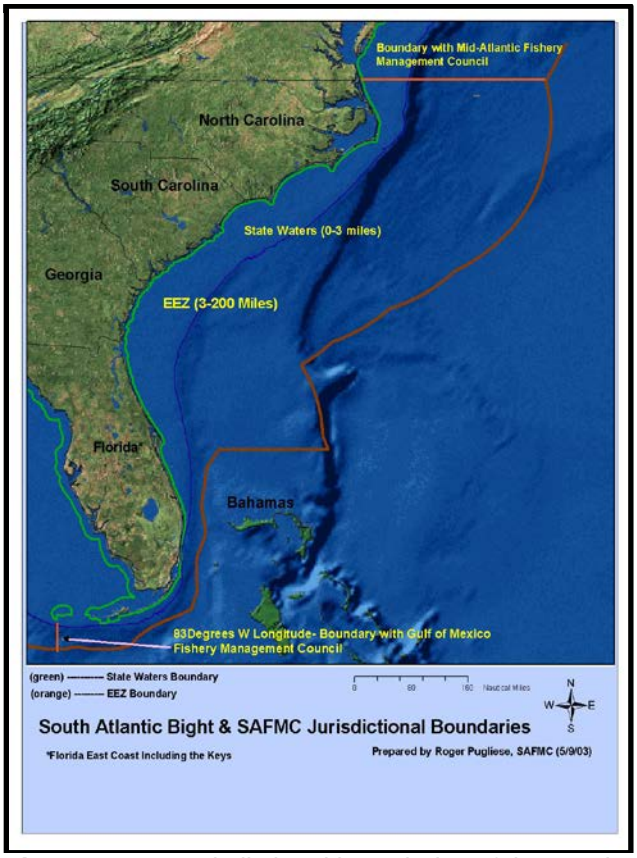

Figure 1.3.1. Jurisdictional boundaries of the South Atlantic Council.

1.4 Why is the South Atlantic Council considering action (Purpose and need statement)

Regulatory Amendment 26 would address specific action items in the 2016-2020 Vision Blueprint for the Snapper Grouper Fishery of the South Atlantic Region (Vision Blueprint; SAFMC 2015) for the recreational sector. The Vision Blueprint identifies the goals, objectives, strategies, and actions that support the vision for the snapper grouper fishery and centers around four goal areas - Science, Management, Communication, and Governance. During a series of stakeholder meetings in 2014, the South Atlantic Council gathered input from recreational fishermen from throughout the region. In 2015, the South Atlantic Council prioritized action items that would be addressed through amendments to the Snapper Grouper FMP over the next five years. The South Atlantic Council chose to focus on actions that would address "seasonality" and "retention" in the fishery and began development of two amendments to address the commercial and recreational sectors, respectively. Regulatory Amendment 26 includes modifications to recreational management measures based on stakeholder input and is intended to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency.

Action 1 proposes establishing a Deep-water Species Aggregate. The current recreational aggregates were established early in the management of the recreational snapper grouper fishery. As such, the aggregates do not accurately reflect how recreational fishermen currently target various snapper grouper species. Also, grouping species based on their habitat preferences (i.e., shallow vs. deep-water) allows for more efficient management since tools such as seasonal closures (**Action 2**) can be applied more selectively and take into account the biology of such species. Hence, a recreational aggregate containing only deep-water species would allow managers to better focus certain measures on this particular group of species. This action indirectly addresses Objective 2 under the broad Management Goal in the Vision Blueprint: *Develop innovative management measures that allow consistent access to the fishery for all sectors.* The species being considered to comprise the Deep-water Species Aggregate inhabit depths that are not equally accessible to recreational fishermen throughout the South Atlantic Council's jurisdiction due to distance from shore or seasonal weather patterns. Grouping these species together would allow the South Atlantic Council more flexibility to apply management approaches that would balance access to resource users and promote predictability.

Establishment of a recreational season for deep-water snapper grouper species (**Action 2**) is listed as a priority action under the Management Goal in the Vision Blueprint. Objective 2, under that goal is to *Develop innovative management measures that allow consistent access to the fishery for all sectors*. Strategy 2.3 under Objective 2 is to *Support development of management approaches that account for the seasonality of the snapper grouper fishery*. Under this strategy, the top priority action is to *Consider a recreational season for harvest of deepwater species by region*. Hence, Action 2 proposes the establishment of a recreational season to optimize access to this group of species for recreational anglers throughout the South Atlantic region.

Actions 3 and **6** propose changes to aggregate bag limits (for deep-water species and for species within the existing 20-fish aggregate). Since **Action 1** would establish a new Deep-water Species Aggregate, **Action 3** would specify the bag limit for the new aggregate. **Action 6** proposes specifying a lower retention limit for one or more species within the 20-fish aggregate to proactively address overharvesting of some species and/or promote consistent regulations for gray triggerfish between state and federal waters off the east coast of Florida. **Actions 4** and **5** change or remove minimum size limits to minimize regulatory discards. Appendix B of the Vision Blueprint contains Objective 4 under the Management Goal -- *Develop management measures that reduce and mitigate discards*. While this objective was not singled out as a priority item to address in 2016-2020, the South Atlantic Council is considering actions in this and other amendments to the Snapper Grouper FMP to reduce discards and release mortality. Removal of size limits for deepwater species is specifically addressed in the Vision Blueprint Strategy 4.2 (in Appendix B) -- *Consider management approaches that address the impact of depth on bycatch of snapper grouper species.* Three deep-water snappers – silk snapper, queen snapper, and blackfin snapper – are the only deep-water species for which there is a minimum size limit in federal waters. These minimum size limits were put in place long ago, before estimates of discard mortality were available and long before the creation of the various Complexes. Snapper grouper species that inhabit deep-water -- blueline tilefish, golden tilefish, snowy grouper, wreckfish, and those in the in the Deep-water Complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, and blackfin snapper) -- are typically associated with high discard mortality. To curb potential discard losses, the South Atlantic Council is considering action to eliminate minimum size limit requirements for queen snapper, silk snapper, and blackfin snapper in **Action 4**. The remaining species in the Deep-water Complex do not have a minimum size limit requirement.

Action 5 proposes a reduction in the minimum size limit for gray triggerfish in federal waters off the east coast of Florida. The minimum size limit for gray triggerfish was modified in 2015 through implementation of Snapper Grouper Amendment 29. A minimum size limit of 12 inches fork length (FL) was implemented in federal waters off North Carolina, South Carolina, and Georgia, and a minimum size limit of 14 inches FL was put in place in federal waters off the east coast of Florida. This was precautionary action in response to concerns about the status of the gray triggerfish stock in the South Atlantic and to align east Florida regulations with those in the Gulf of Mexico and achieve consistency between state and federal regulations off the east coast of Florida. However, after the new minimum size limit went into effect (on July 1, 2015), stakeholders in Florida voiced concern to the Florida Fish and Wildlife Conservation Commission (FWC) regarding increasing discards of gray triggerfish in south Florida where the average size of gray triggerfish is smaller than that off northeast Florida. In response, the FWC reduced the recreational minimum size limit of gray triggerfish to 12 inches FL later in 2015 and requested that the South Atlantic Council follow suit in issuing consistent regulations. **Action 5** directly addresses the objective to minimize and mitigate discards in the snapper grouper fishery and is intended to promote a more consistent regulatory environment to facilitate compliance.

Refer to **Chapter 5** for the South Atlantic Council's rationale pertaining to each action in this framework amendment.

1.5 What is the history of management for snapper grouper species?

Snapper grouper regulations in the South Atlantic were first implemented in 1983. Refer to **Appendix C** for the management history of the snapper grouper fishery, including species addressed in this framework amendment. Refer to **Section 6.2** (**Chapter 6, Cumulative Effects Analysis**) for past, present, and reasonably foreseeable actions impacting the affected area and species addressed in this framework amendment.

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1. Establish a deep-water species aggregate

Preferred Alternative 1 (No Action). The following recreational Snapper Grouper aggregates* are in place in the South Atlantic Region:

Snapper Aggregate: lane snapper, yellowtail snapper, gray snapper, mutton snapper, cubera snapper, queen snapper, blackfin snapper, and silk snapper.

Grouper and Tilefish Aggregate: gag, black grouper, red grouper, scamp, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, coney, sand tilefish, snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, and golden tilefish.

20-Fish Aggregate: whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

Preferred Alternative 1 (No Action): Current Aggregates			*Not included in an aggregate
Snapper	**Grouper and Tilefish**	**20-Fish**	
Lane snapper	Gag	Whitebone porgy	Wreckfish
Yellowtail snapper	Black grouper	Jolthead porgy	
Gray snapper	Red grouper	Knobbed porgy	
Mutton snapper	Scamp	Saucereye porgy	
Cubera snapper	Yellowfin grouper	Scup	
Queen snapper	Yellowmouth grouper	Almaco jack	
Blackfin snapper	Red hind	Banded rudderfish	
Silk snapper	Rock hind	Lesser amberjack	
	Graysby	White grunt	
	Coney	Margate	
	Sand tilefish	Sailor's choice	
	Snowy grouper	Atlantic spadefish	
	Misty grouper	Gray triggerfish	
	Yellowedge grouper	Bar jack	
	Blueline tilefish		
	Golden tilefish		

Alternative 2. Establish a **Deep-water Species Aggregate:** snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish. Other species would remain in their current aggregates.

Alternative 2: Establish a Deep-Water Species Aggregate			
Snapper	**Grouper and Tilefish**	**20-Fish**	**Deep-Water Species**
Lane snapper	Gag	Whitebone porgy	Snowy grouper
Yellowtail snapper	Black grouper	Jolthead porgy	Misty grouper
Gray snapper	Red grouper	Knobbed porgy	Yellowedge grouper
Mutton snapper	Scamp	Saucereye porgy	Blueline tilefish
Cubera snapper	Yellowfin grouper	Scup	Golden tilefish
Queen snapper	Yellowmouth grouper	Almaco jack	Wreckfish
Blackfin snapper	Red hind	Banded rudderfish	
Silk snapper	Rock hind	Lesser amberjack	
	Graysby	White grunt	
	Coney	Margate	
	Sand tilefish	Sailor's choice	
		Atlantic spadefish	
		Gray triggerfish	
		Bar jack	

Alternative 3. Establish a **Deep-water Species Aggregate:** snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, silk snapper, queen snapper, and blackfin snapper. Other species would remain in their current aggregates.

Alternative 3: Establish a Deep-Water Species Aggregate			
Snapper	**Grouper and Tilefish**	**20-Fish**	**Deep-Water Species**
Lane snapper	Gag	Whitebone porgy	Snowy grouper
Yellowtail snapper	Black grouper	Jolthead porgy	Misty grouper
Gray snapper	Red grouper	Knobbed porgy	Yellowedge grouper
Mutton snapper	Scamp	Saucereye porgy	Blueline tilefish
Cubera snapper	Yellowfin grouper	Scup	Golden tilefish
	Yellowmouth grouper	Almaco jack	Wreckfish
	Red hind	Banded rudderfish	Queen snapper
	Rock hind	Lesser amberjack	Blackfin snapper
	Graysby	White grunt	Silk snapper
	Coney	Margate	
	Sand tilefish	Sailor's choice	
		Atlantic spadefish	
		Gray triggerfish	
		Bar jack	

Discussion:

With this action, the South Atlantic Fishery Management Council (South Atlantic Council) initially intended to tailor management measures to the group of deep-water species that are most frequently targeted by recreational fishermen in the region. The South Atlantic Council reasoned that creating an aggregate comprised of only these species would facilitate implementing regulations for species that have similar habitat requirements and life histories. However, fishermen's access to these species from different areas of the South Atlantic region is heavily influenced by factors such as distance to fishing grounds and weather. Consequently, management measures such as a recreational season (considered in **Action 2**) are difficult to

implement with the same level of success region-wide. Hence, the South Atlantic Council chose chose **Alternative 1 (No Action)** as their preferred alternative for **Action 1.**

Proposed changes to the species composition of recreational aggregates under **Alternatives 2** and **3** would not change the recreational annual catch limits (ACL) of the complexes that comprise such species or the accountability measures (AM) intended to maintain harvest at or below the ACLs and to correct for overages when they occur. Of the species proposed for inclusion in the Deep-water Species Aggregate under **Alternative 2**, snowy grouper, golden tilefish, blueline tilefish, and wreckfish are managed under their respective ACLs; whereas, harvest of yellowedge grouper and misty grouper is managed under the Deep-water Complex ACL. **Alternative 3** would add queen snapper, blackfish snapper, and silk snapper to the species considered in **Alternative 2**. The Deep-water Complex includes queen snapper, blackfish snapper, and silk snapper along with yellowedge grouper, misty grouper, and sand tilefish. Snowy grouper, blueline tilefish, and golden tilefish are currently included in the Grouper and Tilefish aggregate; wreckfish is not included in any of the existing recreational aggregates. The proposed action would not modify the composition of any other recreational aggregates under the Snapper Grouper FMP.

2.1.1 Comparison of Alternatives:

Alternative 2 and **Alternative 3** propose to establish a separate, additional aggregate comprised of snapper grouper species that inhabit deep water. They differ from each other in that **Alternative 3** would include three additional species besides those included under **Alternative 2** in the aggregate: queen snapper, silk snapper, and blackfin snapper.

The proposed alternatives would not result in any direct biological effects, positive or negative, relative to **Preferred Alternative 1 (No Action)** as only the species composition of two aggregates is being modified and this would not alter the manner in which the recreational portion of the snapper grouper fishery is prosecuted. Similarly, there would be no anticipated direct economic effects on private recreational and for-hire participants, associated industries, or communities from **Action 1**. **Alternative 2**, and **Alternative 3** would be expected to have indirect positive social benefits when compared to **Preferred Alternative 1 (No Action).** The addition of a Deep-water Species Aggregate considered in **Alternative 2** and **Alternative 3** would allow management measures to be tailored based on species characteristics. Additionally, **Alternative 2** and **Alternative 3** would allow future management measures to better address concerns related to stability of fishing seasons and complexity of regulations as identified by recreational snapper grouper fishermen during the visioning process.

Alternative 2 and **Alternative 3** would be expected to impose an increased administrative burden on the National Marine Fisheries Service (NMFS) relative to **Preferred Alternative 1** (**No Action**) that would be incurred by rulemaking, outreach, and education.

2.2 Action 2. Specify the recreational season for the deep-water species aggregate

Preferred Alternative 1 (No Action). Recreational fishing for blueline tilefish and snowy grouper is allowed from May 1 through August 31, annually. Recreational fishing for wreckfish is allowed from July 1 through August 31, annually. Recreational fishing for other deep-water species (misty grouper, yellowedge grouper, and golden tilefish) is allowed year-round.

Alternative 2. Establish a recreational season in the Deep-water Species Aggregate (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish):

Sub-alternative 2a. May 1 through June 30
Sub-alternative 2b. May 1 through August 31
Sub-alternative 2c. January 1 through the end of February
Sub-alternative 2d. December 1 through January 31

*Note: The species listed in Alternative 2 reflect the South Atlantic Council's preferred alternative under Action 1 prior to approval in December 2018.

Discussion:

Action 2 considers the specification of a recreational season for a Deep-water Species Aggregate considered in **Action 1**. However, the South Atlantic Council did not select a preferred alternative to specify a Deep-water Species Aggregate under **Action 1**. As a result, the South Atlantic Council chose **Alternative 1 (No Action)** as their preferred alternative for **Action 2**. Furthermore, regional differences in access to some of the deep-water species created concern among North Carolina fishermen due to the potential for Florida fishermen to harvest a large portion of the ACL during January and February, thus shortening, or possibly eliminating, a possible season later in the year.

Among the deep-water snapper grouper species proposed for inclusion in Alternatives 2 and 3 of **Action 1** for the Deep-water Species Aggregate (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, queen snapper, silk snapper, and blackfin snapper), only three are managed under a specified season for the recreational sector: snowy grouper, blueline tilefish, and wreckfish. The recreational seasons for snowy grouper and blueline tilefish occur annually from May 1 through August 31, and the recreational season for wreckfish is from July 1 through August 31 annually, unless closed to harvest due to in-season AMs.

Under **Action 2**, the South Atlantic Council considered a range of recreational season alternatives for species considered in Alternative 2 of **Action 1** that would be expected to meet the needs of recreational fishermen throughout the South Atlantic Council's area of jurisdiction. As explained earlier, access to deep-water species differs from one area to another due to seasonal factors and distance to productive fishing grounds. For instance, fishermen in south Florida target deep-water species during winter months, when tourism along the coast is high and weather and current patterns allow for fishing in deep water. On the other hand, recreational

fishermen in the Carolinas target deep-water species during summer, when weather is mild and tourists frequent that portion of the South Atlantic coast.

2.2.1 Comparison of Alternatives:

Alternative 2 and its sub-alternatives under **Action 2** would specify a consistent recreational season for all species included in the Deep-water Species Aggregate considered under Alternative 2 of **Action 1**. **Sub-alternative 2b** would impose a four-month season, mirroring the existing season for blueline tilefish and snowy grouper (May 1 through August 31). **Sub-alternative 2a** would impose a two-month season beginning on May 1, **Sub-alternative 2c** would also allow for a two-month season but begin on January 1, and **Sub-alternative 2d** would impose a two-month season beginning on December 1. Combining **Sub-alternatives 2b** and **2c** would impose a split season totaling six months, with open months during January, May through August, and December.

Sub-alternatives that shorten the duration of allowable fishing activity or shift it away from periods of peak spawning would be expected to impart some biological benefit. Since all of the proposed alternatives would allow fishing during times when blueline tilefish, golden tilefish, and snowy grouper are spawning, potential biological benefits may not be realized. In addition, commercial harvest of wreckfish is prohibited annually from January 15 through April 15 to protect the spawning population (See 50 CFR 622.183(b)(2)). In general, biological effects would be greatest under alternatives that predict the highest reduction in recreational harvest compared to **Preferred Alternative 1 (No Action)**; hence, individually, **Sub-alternative 2d** would be the most biologically beneficial, followed by **Sub-alternative 2c**, **Sub-alternative 2a**, and **Sub-alternative 2b**. (**Table 4.2.1.1**) . However, **Sub-alternatives 2c** and **2d** may have direct negative biological impacts on wreckfish since they would allow recreational harvest during a portion of the time the species is spawning and a closure for the commercial sector is in place. Combining **Sub-alternatives 2b** and **2c** would result in the least biological benefit among all the alternatives considered (and their combinations) since it is predicted to result in the lowest reduction in landings. ACLs are in place that would require AMs to be triggered if the ACL was expected to be met. Thus, a longer fishing season might not result in an increased harvest. However, landings estimates of species considered for inclusion in the Deep-water Species Aggregate considered in **Action 1** can be uncertain (refer to **Appendix I**).

The difficulty in projecting changes in fishing behavior combined with the relative uncertainty in landings estimates for deep-water species, makes quantifying the realized projected change in recreational landings challenging. Nevertheless, ranking of alternatives provides qualitative information on how the economic effects of the different alternatives compare to one another. **Preferred Alternative 1 (No Action)** is anticipated to have the lowest negative economic effects, followed by **Sub-alternative 2b**, **Sub-alternative 2a, Sub-alternative 2c** , and **Sub-alternative 2d**.

The longer season under **Sub-alternative 2b** would be expected to result in the smallest decrease in deep-water species landings and is expected to be more beneficial to fishermen and communities than those proposed under **Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d** as deep-water species would be available to recreational fishermen for a longer period of time. However, ACLs would be expected to constrain harvest and a longer fishing

season would not necessarily be expected to result in increased landings. Longer seasons could result in increased fishing opportunities for the recreational sector and increased revenue opportunities for the for-hire sector, so long as in-season closures do not occur due to reaching the ACL, or overharvest during peak spawning does not occur to negatively affect the long-term health of the stock. **Alternative 2** (and its sub-alternatives) would have the added benefit of reducing regulatory complexity relative to **Preferred Alternative 1 (No Action)**, as the same season would apply to several species creating consistency in management for species with similar habitat preferences that are often caught together. This would directly benefit both the private and for-hire components of the recreational sector that rely on a species being open during set times of the year to schedule trips.

Alternative 2 (and its sub-alternatives) would impose increased administrative impacts on NMFS in the form of outreach to notify and educate the public, and more law enforcement efforts to enforce the regulations. **Preferred Alternative 1 (No Action)** would impose the least administrative burden since this alternative would not change the status quo. **Sub-alternative 2b**, which would not change the season for two of the deep-water species, followed by **Sub-alternatives 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d,** would be the largest change from the status quo for each of the deep-water species, so these alternatives would impose the greatest administrative burden to inform and educate the public. However, alternatives that specify a consistent seasonal prohibition for deep-water species throughout the South Atlantic Council's jurisdiction may be easier for the public to understand, resulting in less time and lower costs to inform and educate the public. Overall, administrative effects expected from **Preferred Alternative 1 (No Action)** would be the least burdensome on NMFS, followed by **Sub-alternatives 2b, 2a**, **2c**, and **2d**.

2.3 Action 3. Specify the aggregate bag limit for the deep-water species aggregate

Preferred Alternative 1 (No Action). The following recreational bag limits are in place for the grouper and tilefish aggregate and for wreckfish in the South Atlantic Region:

Grouper and Tilefish Aggregate Bag Limit: Three per person per day: gag[1], black grouper[1], red grouper, scamp, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, coney, sand tilefish, snowy grouper[2], misty grouper, yellowedge grouper, blueline tilefish, and golden tilefish[3].

[1]Maximum of one gag or black grouper (but not both) per person per day.

[2]Maximum of one snowy grouper per vessel per day.

[3]Maximum of one golden tilefish per person per day.

The recreational bag limit for wreckfish is one per vessel per day.

Alternative 2. Specify the aggregate bag limit for the **Deep-Water Species Aggregate** (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish):

Sub-alternative 2a. One fish per person per day.

Sub-alternative 2b. One fish per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.

Sub-alternative 2c. Two fish per person per day.

Sub-alternative 2d. Two fish per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.

Sub-alternative 2e. Three fish per person per day.

Sub-alternative 2f. Three fish per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.

Discussion:

Action 3 considers an aggregate bag limit for the Deep-water Species Aggregate considered in Alternative 2 of **Action 1**. However, the South Atlantic Council did not select a preferred alternative to establish a Deep-water Species Aggregate in Action 1. In addition, seasonal differences in access to deep-water species at either end of the South Atlantic Council's jurisdiction (northern North Carolina and southern Florida) as well as incompatible regulations between Florida state and federal waters, led the South Atlantic Council to select **Alternative 1 (No Action)** as their preferred alternative for **Action 3**.

Five of the species proposed for inclusion in the Deep-water Species Aggregate under Alternative 2 of **Action 1** – snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, and golden tilefish – are managed under the Grouper and Tilefish aggregate bag limit of three fish per person per day with additional restrictions for snowy grouper (one fish per vessel per day), and golden tilefish (one fish per person per day). Wreckfish is currently not part of a recreational aggregate and the recreational limit is one per vessel per day during July and August. Three species proposed for inclusion in the Deep-water Species Aggregate under **Action 1** – silk snapper, queen snapper, and blackfin snapper – are included in the Snappers Aggregate and their harvest is limited to 10 fish per person per day.

2.3.1 Comparison of Alternatives:

Sub-alternatives 2a, **2c**, and **2e** propose daily limits of one fish, two fish, and three fish per person per day, respectively, for species considered for inclusion in the Deep-water Species Aggregate in **Alternative 2**, **Action 1**. **Sub-alternatives 2b**, **2d** and **Sub-alternative 2f** would maintain the current restrictions on snowy grouper, golden tilefish, and wreckfish for each of the one- two- and three-fish per person alternatives, respectively.

The expected biological effects of proposed aggregate bag limits (**Alternative 2** and its sub-alternatives) for deep-water species would be neutral relative to **Preferred Alternative 1 (No Action)** in terms of the risk to overfishing since ACLs are in place to maintain harvest at levels that prevent overfishing. **Sub-alternatives 2b** and **2d**, and **Sub-alternative 2f** maintain more conservative regulations on the harvest of golden tilefish, snowy grouper, and wreckfish and would thus be expected to be more biologically beneficial to those species than **Sub-alternatives 2a**, **2c**, and **2e**.

The economic effects of **Action 3** are highly dependent on the species chosen to be included in the Deep-water Species Aggregate in **Action 1**, as well as the season length that is chosen for the Deep-water Species Aggregate in **Action 2**. Sub-alternatives that lead to higher harvest reductions can be assumed to have larger negative economic effects, however, the economic effects would also be dependent on the species that are impacted. Based on anticipated reductions in harvest (**Table 4.3.1.2**), **Sub-alternative 2e** would be expected to have the greatest short-term positive economic effects, followed by **Sub-alternative 2c** and **Preferred Alternative 1 (No Action)**, with the lowest negative short-term economic effects anticipated for **Sub-alternative 2f,** followed by **Sub-alternative 2d**, **Sub-alternative 2a**, and **Sub-alternative 2b**.

In terms of anticipated social effects, **Sub-alternative 2e** would result in the smallest reduction to recreational landings; thus, providing higher recreational fishing opportunities. However, **Sub-alternative 2e**, as well as **Sub-alternatives 2a** and **2c**, are anticipated to have a negative biological effect, which may prevent the realization of long-term social benefits to communities reliant on deep-water species. **Sub-alternatives 2b, 2d**, and **2f** would maintain conservative regulations on snowy grouper, golden tilefish, and wreckfish, providing fewer recreational fishing opportunities and would negatively affect recreational anglers and for-hire businesses targeting deep-water species in the short-term. However, more conservative harvest limits may be more beneficial to fishing communities in the long-term by preventing overharvest and providing for consistent fishing opportunities and profit for for-hire businesses. Additionally, **Alternative 2** would decrease regulatory complexity. Under **Preferred Alternative 1 (No Action)**, deep-water species are managed under different bag limits. **Sub-alternatives 2a**, **2c**, and **2e** would reduce regulatory complexity the most by creating one consistent bag limit for all deep-water species.

Alternative 2 (and its sub-alternatives) would impose increased administrative impacts on NMFS in the form of outreach to notify and educate the public, and more law enforcement efforts to enforce the regulations. **Sub-alternatives 2c** and **2a**, would be the most burdensome since these alternatives would impose the greatest change to bag limits for these species from the status quo, followed by **Sub-alternatives 2b**, **2d**, and **2e**. The bag limits for the deep-water

species under **Sub-alternative 2f** would ultimately specify the same bag limits as **Preferred Alternative 1 (No Action)** which would not change the administrative environment from its current condition, so these two alternatives would impose the least administrative burden on NMFS. Ovverall, administrative effects on NMFS expected from **Preferred Alternative 1 (No Action**) and **Sub-alternative 2f** would be the least burdensome, when compared with **Sub-alternatives 2a-2e**.

2.4 Action 4. Remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper

Alternative 1 (No Action). The recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper in the South Atlantic exclusive economic zone is 12 inches total length.

Preferred Alternative 2. Remove the 12-inch total length recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper in the South Atlantic exclusive economic zone.

Discussion:

Under **Alternative 1 (No Action)**, there would continue to be a 12-inch total length (TL) minimum size limit for queen snapper, blackfin snapper, and silk snapper in the South Atlantic. These are the only deep-water species for which a minimum size limit is in effect. **Preferred Alternative 2** would remove the minimum size limit for these three species. These minimum size limits were put in place early in the management of the snapper grouper fishery, before estimates of discard mortality were available, and long before the creation of the various species complexes. Species in the Deep-water Complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, and blackfin snapper) typically exhibit very high discard mortality. **Preferred Alternative 2** is the only reasonable alternative to taking no action (**Alternative 1**) since most of the fish that are discarded will die.

2.4.1 Comparison of Alternatives:

Alternative 1 (No Action) would retain the 12-inch TL minimum size limit for queen snapper, silk snapper, and blackfin snapper. **Preferred Alternative 2** would remove the 12-inch TL minimum size limit for these species. Queen snapper, silk snapper, and blackfin snapper are the only deep-water snapper grouper species that currently have a minimum size limit.

It is expected that removing the minimum size limit, as proposed under **Preferred Alternative 2**, would potentially impart biological benefits relative to **Alternative 1 (No Action)** if there is a decrease in the number of fish that die. However, available data suggest minimal changes in discard or harvest rates would be expected under **Preferred Alternative 2** as queen snapper, silk snapper, and blackfin snapper are not caught in high numbers recreationally. Thus, biological effects of **Preferred Alternative 2** would be neutral compared to **Alternative 1 (No Action)** in terms of risk of overfishing as removing the size limit would have no effect on overall harvest, which is limited by the ACL.

Removing minimum size limits for queen snapper, silk snapper, and blackfin snapper may increase harvest, which would provide positive economic effects for the recreational sector provided there are no long-term negative effects for these deep-water snapper stocks. Similarly, removing the minimum size limit (**Preferred Alternative 2**) would likely have minimal effect on current recreational trips and expected social effects to fishing communities are similar to those of **Alternative 1 (No Action)**, because these species are not commonly caught.

Most queen snapper, silk snapper, and blackfin snapper die after being caught by fishermen because they occur in very deep water. Social benefits would be realized by recreational fishermen with the removal of minimum size limits because they would not have to release dead fish. Removing the minimum size limit (**Preferred Alternative 2**) would likely have minimal effect on current recreational trips and expected social effects to fishing communities are similar to those of **Alternative 1 (No Action)**, because these species are not commonly caught.

Alternative 2 would create consistent regulations with other managed deep-water species by removing the minimum size limit for deep-water species, which would help the public avoid confusion with regulations and aid law enforcement. Therefore, although there would be increased administrative burden through rulemaking, outreach, education, and enforcement, the administrative effects on NMFS from **Preferred Alternative 2**, when compared with **Alternative 1 (No Action)** are expected to be beneficial.

2.5 Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

Alternative 1 (No Action). The recreational minimum size limit for gray triggerfish in the South Atlantic exclusive economic zone off east Florida is 14 inches fork length. The recreational minimum size limit for gray triggerfish in the exclusive economic zone off Georgia, South Carolina, and North Carolina is 12 inches fork length.

Preferred Alternative 2. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida to 12 inches fork length.

Discussion:

The recreational minimum size limit for gray triggerfish in the exclusive economic zone (EEZ) off Georgia, South Carolina, and North Carolina is 12 inches fork length (FL). **Alternative 1 (No Action)** would retain the current commercial minimum size limit of 14 inches FL for gray triggerfish off the east coast of Florida. This regulation is inconsistent with the Florida state regulation which established a 12-inch FL minimum size limit for gray triggerfish off the east coast of Florida. As such, the only reasonable alternative is **Preferred Alternative 2**, which would reduce the recreational minimum size limit for gray triggerfish from 14 inches FL to 12 inches FL in the EEZ off the east coast of Florida. Furthermore, **Preferred Alternative 2** would also align regulations with those currently in place in federal waters off the rest of the South Atlantic states, thus promoting a more consistent regulatory environment for stakeholders and enforcement agencies.

2.5.1 Comparison of Alternatives

The biological effects of reducing the recreational minimum size limit for gray triggerfish to 12 inches FL (**Preferred Alternative 2**) could be negative relative to **Alternative 1 (No Action)**, even with overall harvest limited to the ACL and with AMs in place. The reduction in discarded fish gray triggerfish with a smaller minimum size limit during the open fishing months may have minimal impact due to the low estimate of discard mortality (6.9%; SEDAR 41 2016) and the loss in egg production. However, a decrease in the minimum size limit could have negative biological effects since larger fish produce more eggs. Based on current length-age relationship for gray triggerfish and egg production at-age, a 12-inch FL female gray triggerfish produces about half the number of eggs as a 14-inch FL fish.

In terms of anticipated economic effects, harvest of gray triggerfish would be expected to increase under **Preferred Alternative 2**, which would result in more thorough utilization of the recreational ACL and incur direct positive economic benefits through increased consumer surplus in the gray triggerfish portion of the snapper grouper fishery derived from such harvest. This potential benefit should be weighed with the increased likelihood of an in-season harvest closure due to the ACL being met. An in-season closure is likely (see **Figure 4.5.1.1**), as recreational landings are projected to greatly increase under **Preferred Alternative 2** and have reached, or come close to reaching, the ACL in recent years. In-season closures may negatively affect demand for for-hire (charter and headboat) trips, resulting in decreased booking rates and for-hire business net operating revenue. It is expected that a lengthier in-season closure would

have a greater potential for negative effects on for-hire businesses; however, the realized effects would be dependent on how for-hire operators can market and sell their services for trips landing other species.

Reducing the minimum size limit (**Preferred Alternative 2**) may benefit Florida recreational fishermen by increasing the number of fish that can be retained, which may increase trip satisfaction. **Preferred Alternative 2** would also make the minimum size limit consistent in EEZ off South Atlantic states (North Carolina to Florida), thus reducing regulatory complexity, and the number of regulatory discards, which can improve perceptions of management success. However, the benefits and costs to recreational fishermen would depend on the balance of increasing the number of fish that can be kept while ensuring that an increased harvest rate would not result in a shortened recreational season.

Administrative impacts on NMFS associated with **Preferred Alternative 2** would be incurred by rulemaking, outreach, education and enforcement. However, alternatives that specify a consistent minimum size limit in federal waters throughout the South Atlantic Council's jurisdiction would help the public avoid confusion with regulations and aid law enforcement. Therefore, administrative effects on NMFS incurred through outreach, education, and enforcement from **Preferred Alternative 2**, would be expected to be beneficial when compared with **Alternative 1** (**No Action**).

2.6 Action 6. Modify the aggregate bag limit for the 20-fish aggregate

Alternative 1 (No Action). The following recreational aggregate bag limit is in place for species without individual bag limits in the South Atlantic Region:
20-Fish Aggregate: 20 fish per person per day including whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

Alternative 2. Specify no more than 10 fish can be gray triggerfish within the 20-fish aggregate.

Alternative 3. Specify no more than 10 fish can be Atlantic spadefish within the 20-fish aggregate.

Preferred Alternative 4. Specify no more than 10 fish can be of any one species within the 20-fish aggregate.

2.6.1 Comparison of Alternatives

Snapper grouper species that are not included in either the Grouper and Tilefish Aggregate or the Snappers Aggregate are managed under the 20-fish Aggregate with a 20-fish per person per day bag limit (excluding snapper grouper species not included in an aggregate). **Alternatives 2-4** propose a 10-fish limit for gray triggerfish, Atlantic spadefish or any one species, respectively. As such, **Preferred Alternative 4** is inclusive of **Alternatives 2** and **3**.

The biological effects of proposed modifications to the 20-fish aggregate are expected to be neutral relative to **Alternative 1 (No Action)** in terms of risk of overfishing as ACLs are in place and AMs help ensure landings remain at the ACL to prevent overfishing. In terms of expected landings reduction, biological benefits would be greater under **Alternative 3**, followed by **Alternative 2**, and **Preferred Alternative 4** (**Table 4.6.1.1**). However, the expected differences are minor.

The direct economic effects on overall harvest, and thus consumer surplus, are expected to be minimal, with an overall reduction of 1% to 3% for the species affected. Based on anticipated constraints in harvest, **Alternative 1 (No Action)** is expected to have the lowest negative short-term economic effects, followed by **Alternative 3**, **Alternative 2**, and **Preferred Alternative 4**.

None of the proposed alternatives are expected to negatively affect recreational access to species included in the aggregate. However, in conjunction with the reduced recreational minimum size limit for gray triggerfish (**Action 5**, **Preferred Alternative 2**), landings of gray triggerfish may increase, which would be beneficial to communities highly engaged in recreational fishing for gray triggerfish by providing increased access to the resource and increased profits for the for-hire sector. Direct and indirect social benefits are only realized if the increased access does not have any long-term negative impacts on the stock. The potential increase in landings of gray triggerfish would be greatest under **Alternative 3**. There could be negative social effects if the increase in landings results in a shortened recreational season, as predicted (see **Figure 4.5.1.1**). This would cause negative social effects for recreational

fishermen throughout the South Atlantic from decreased access to the resource. **Alternatives 2** and **3** would increase regulatory complexity compared by **Alternative 1 (No Action)** and **Preferred Alternative 4**. Modifying the 20-fish aggregate to include separate restrictions on the number of gray triggerfish and/or Atlantic spadefish would increase complexity and may result in confusion and a decrease in compliance.

Alternatives 2 through **Preferred Alternative 4** would modify the 20-fish Aggregate bag limit, which would require rule-making, outreach, education, and enforcement efforts. **Alternatives 2** and **3** would cause the most administrative burden since there would be a different bag limit within the 20-fish aggregate due to the restrictions on gray triggerfish, and Atlantic spadefish, respectively. **Preferred Alternative 4** would specify a consistent, individual bag limit for all species within the 20-fish aggregate which may be easier for the public to understand, resulting in less time and lower costs to inform and educate the public. Therefore, **Alternatives 2, 3**, and **4** would impose the most administrative burden on NMFS, followed by **Alternative 1 (No Action)** imposing the least administrative burden.

Chapter 3. Affected Environment

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

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://safmc.net/ecosystem-management/fishery-ecosystem-plan/.

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 55 meters (54 to 180 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 in South Atlantic continental shelf habitats 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 but is most abundant offshore from northeastern Florida. South of Cape Canaveral 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[1]

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.

[1] http://ocean.floridamarine.org/safmc_atlas/.
An introduction to the system is found at: http://www.safmc.net/ecosystem-management/mapping-and-gis-data.

Additional information on the habitat utilized by snapper grouper species is included in Volume II of the Fishery Ecosystem Plan (FEP; SAFMC 2009b). The FEP can be found at: http://safmc.net/ecosystem-management/fishery-ecosystem-plan/.

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 Marine Protected Areas (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 and estuarine invasive species.

The potential impacts the actions in this amendment may have on EFH, and EFH-HAPCs are discussed in **Chapter 4** of this document. Additional information on EFH and EFH-HAPCs is in **Appendix I**.

3.2 Biological and Ecological Environment

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

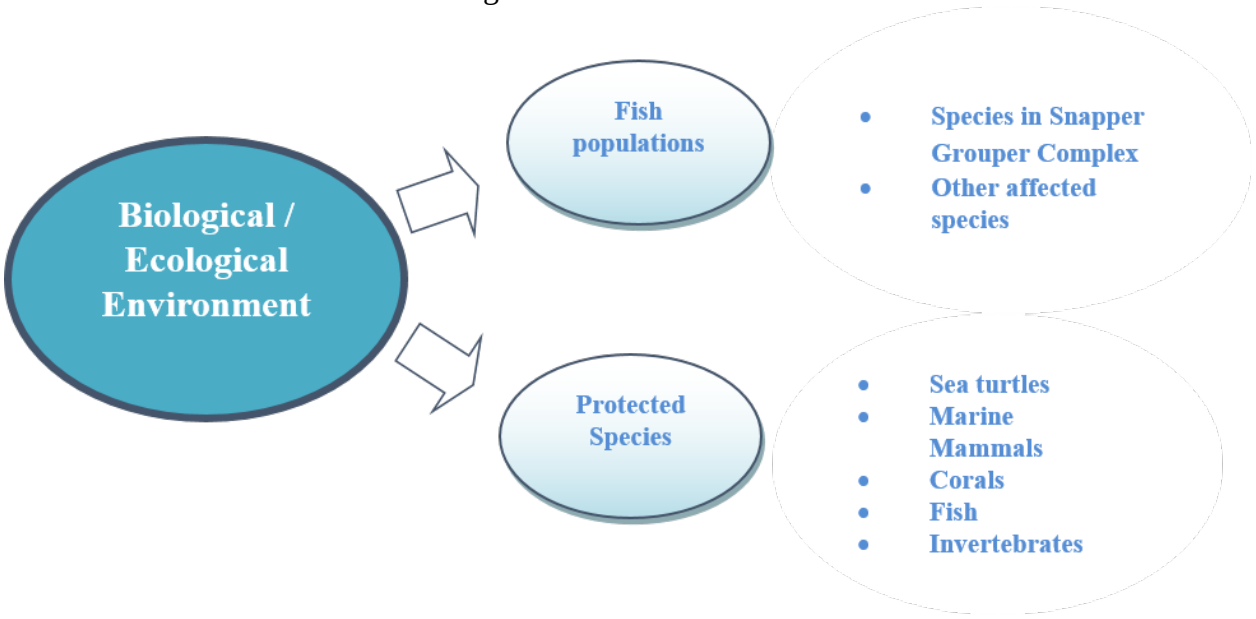

Figure 3.2.1. Two components of the biological environment described in this document.

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.

3.2.1 Fish Populations Affected by this Amendment

The snapper grouper species directly affected by actions proposed in this amendment are: queen snapper, blackfin snapper, silk snapper, snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

Life History

Life history information for snapper grouper species affected by this amendment may be found in the South Atlantic EcoSpecies Database[2] and Vision Blueprint Regulatory Amendment 27 (SAFMC, under review) and is hereby incorporated by reference. In addition, timing of spawning for several snapper grouper species in the South Atlantic region is summarized in **Table 3.2.1.1**.

Table 3.2.1.1. Timing of spawning (gray shading) and peak spawning (black shading) for exploited Atlantic Ocean reef fish stocks off the southeastern United States. Months in bold denote core SERFS core fishery-independent sampling months.

Stock	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Citation
Gray triggerfish													[10]
Greater amberjack													[7]
White grunt													[14, 17]
Cubera Snapper													WDH, pers. comm.
Red snapper													[17, 18]
Vermilion snapper													[2, 17]
Blueline tilefish													[6]
Tilefish													[4, 17]
Black sea bass													[15, 17]
Gag													[13, 17]
Red grouper													[1]
Scamp (NC)													[12]
Scamp (FL)													[5]
Scamp (29.95–32.95 °N)													[8, 17]
Snowy grouper													[16, 19]
Speckled hind													[20]
Warsaw Grouper													[11, 17]
Red porgy													[3, 17]

doi:10.1371/journal.pone.0172968.t006

Source: Farmer et al. 2017 and references therein.

Landings

Landings information is presented in **Section 3.3.2.**

Stock Status

Twenty-three out of 55 snapper grouper species would be directly affected by the proposed action (**Table 3.2.2**), including many co-occurring species (see **Section 3.2.3**). For assessed snapper grouper species, additional life history and stock status information may be found in their respective Southeast Data, Assessment, and Review (SEDAR) reports listed below, which are available on the SEDAR Web site http://www.sefsc.noaa.gov/sedar/.

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

Table 3.2.1.2. Stock status for snapper grouper species addressed in this amendment. Source: 3rd Quarter 2018 Update, Report to Congress https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates.

Species	Overfishing?	Overfished?	Last Assessment	Notes
Snowy grouper	No	Yes	SEDAR 36 (2014)	Status determinations from peer reviewed SEDAR assessments, with estimates of all relevant biological reference points. Therefore, stock status is considered "known."
Blueline Tilefish	No	No	SEDAR 50 (2017)	Only able to get status for part of stock South of Hatteras.
Golden Tilefish	Yes	No	SEDAR 25 Update (2016)	
Wreckfish	No	No	Rademeyer and Butterworth (2014)	This assessment was conducted outside of the SEDAR process and was reviewed through the SAFMC peer review process.
Gray Triggerfish	No	UNK	Potts and Brennan (2001)	Gray triggerfish has not undergone a SEDAR assessment but is listed in the Report to Congress as not undergoing overfishing based on assessment information provided in Potts and Brennan (2001).
Queen snapper, blackfin snapper, silk snapper, misty grouper, yellowedge grouper, whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, Atlantic spadefish	UNK	UNK	N/A	These species have not been assessed and the overfishing limit (OFL) is unknown.

3.2.2 Bycatch and Discards

According to analyses presented in **Appendix D** (Bycatch Practicability Analysis) using data from 2014 through 2016, the ratios of discarded fish to landed fish were higher in the private angling sector compared to either the headboat or charter boat categories for many species (**Table D-1**). Highest annual average landings in numbers of fish from 2014 through 2016 among private recreational anglers, were for gray snapper, white grunt, and black sea bass. Almaco Jack, Atlantic spadefish, black grouper, gag, gray triggerfish, gray snapper, hogfish, lane snapper, mutton snapper, red hind , snowy grouper, whitebone porgy, and yellowtail snapper had much higher landings and discards in the private angling sector compared to both the headboat and charter sectors. Black sea bass accounted for the highest number of discards for all sectors.

For the headboat sector, average annual landings in numbers of fish were highest for white grunt, yellowtail snapper, and vermilion snapper. Besides black sea bass, higher numbers of discards were reported in the headboat sector for vermilion snapper, yellowtail snapper, tomtate, white grunt, and gray triggerfish compared to other species.

The highest annual average charter sector landings were for vermilion snapper, black sea bass, and gray triggerfish. Black sea bass and vermilion snapper also had some of the highest numbers of discards reported by the charter sector. Further analyses are needed to determine if the discards for black sea bass and vermilion snapper are due to the current minimum size limit, bag limit, or other reasons.

For all sectors reported from 2014 through 2016, many of the deep-water snapper grouper species directly affected through the actions in this framework amendment, such as blackfin snapper, golden tilefish, misty grouper, queen snapper, silk snapper, yellowedge grouper, had zero or very low discards.

3.2.3 Other Species Affected

Actions proposed in Vision Blueprint Regulatory Amendment 26 would directly or indirectly affect 23 species in the Snapper Grouper Complex (**Section 3.2.1**). For life history information of the remainder of species in the Fishery Management Unit that are not directly affected by actions in this amendment, refer to the South Atlantic Ecospecies Database (see link provided above). **Tables D-2** through **D-4** in **Appendix D** list the species most often captured (landed or discarded) on the same intercept or headboat trip in the South Atlantic using Marine Recreational Information Program (MRIP) or Southeast Headboat Survey data from 2014 through 2016. For the private angling sector, high trip co-occurrence was present among red snapper, black sea bass, gray triggerfish, and vermilion snapper. There was also high co-occurrence in the private angling sector among gray snapper, lane snapper, mutton snapper, hogfish, and yellowtail snapper. Similar groupings were present in the charter sector with high co-occurrence among red snapper, black sea bass, gray triggerfish, and vermilion snapper. There were many more headboat sector trips available for analyses than either charter or private angling trips. A large grouping with high co-occurrence was present among black sea bass, gray triggerfish, tomtate, vermilion snapper, scamp, red snapper, whitebone porgy, almaco jack, gag, and Atlantic spadefish. Similar to the charter and private angling sectors, another grouping of high co-occurrence was among gray snapper, yellowtail snapper, mutton snapper, white grunt, hogfish, graysby, and black grouper. Gray triggerfish had overlap in trip co-occurrence in the headboat component between both the groupings identified.

3.2.4 The Stock Assessment Process

The Southeast Data, Assessment, and Review (SEDAR) process is a cooperative Fishery Management Council initiative to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. The Caribbean, Gulf of Mexico, and South Atlantic Fishery Management Councils manage SEDAR in coordination with 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 South Atlantic Council are drawn from state and federal agencies, non-government organizations, South Atlantic Council members, South Atlantic 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 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: http://www.nmfs.noaa.gov/pr/interactions/fisheries/2016_list_of_fisheries_lof.html.

Five of the marine mammal species (sperm, sei, fin, blue, and NARW) protected by the MMPA, are also listed as endangered under the ESA. In addition to those five marine mammals, six species or DPSs of sea turtles (green (the North Atlantic DPS and the South Atlantic DPS), hawksbill, Kemp's ridley, leatherback, and the Northwest Atlantic DPS of loggerhead); nine species or DPSs of 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 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 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 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.

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, memorandum NMFS analyzed and 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.

For summary information on the species that may be adversely affected by the snapper grouper fishery and how they are affected refer to **Section 3.2.5** in Vision Blueprint Regulatory Amendment 27 (https://www.fisheries.noaa.gov/action/regulatory-amendment-27-vision-blueprint-commercial-measures). 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.

3.3 Economic Environment

3.3.1 Economic Description of the Commercial Sector

This framework amendment deals with the recreational sector of the snapper grouper fishery of the South Atlantic Region. Information on the commercial sector may be found in Vision Blueprint Regulatory Amendment 27 (https://www.fisheries.noaa.gov/action/regulatory-amendment-27-vision-blueprint-commercial-measures), and is incorporated herein by reference.

3.3.2 Economic Description of the Recreational Sector

The following focuses on recreational landings and effort (angler trips) for selected snapper grouper species examined in this framework amendment. Unless otherwise noted, the major sources of data summarized in this description are the Recreational ACL Dataset (SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2) for landings and the NOAA fisheries website[3] for accessing/downloading recreational effort data. Additional information on the recreational sector of the snapper grouper fishery is contained in previous amendments, and is incorporated herein by reference [see Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Regulatory Amendment 9 (SAFMC 2011a), Comprehensive ACL Amendment (SAFMC 2011c), Amendment 37 (SAFMC 2016), and Amendment 41 (SAFMC 2017)].

The recreational sector is comprised of a private component and a for-hire component. The private component includes anglers fishing from shore (including all land-based structures) and private/rental boats. The for-hire component is composed of charter boats and headboats (also called party boats). Although charter boats tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is typically determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

Permits

A federal for-hire vessel permit (South Atlantic Charter/Headboat Snapper/Grouper Permit) is required for harvesting snapper grouper species when fishing on for-hire vessels. The South Atlantic for-hire permit is an open access system. As of May 10, 2017, there were 1,586 valid (non-expired) or renewable Atlantic charter/headboat snapper/grouper permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Some vessel owners may have obtained open access permits as insurance for uncertainties in the fisheries in which they currently operate. In the period 2012 through 2016, the lowest number of for-hire vessel permits occurred in 2014 and the highest in 2016 (**Table 3.3.2.1**). The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. Many vessels with South Atlantic for-hire snapper grouper permits were home-ported in states outside of the SAFMC's area of jurisdiction. On average (2012-2016), these vessels accounted for approximately 10% of the total number of for-hire snapper grouper permits issued.

[3] http://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads

Table 3.3.2.1. For-hire permits, by homeport state, 2012-2016.

Home Port	2012	2013	2014	2015	2016	Average
North Carolina	312	307	294	308	331	310
South Carolina	138	150	160	188	212	170
Georgia	26	30	34	45	53	38
Florida	1,122	1,121	1,062	1,071	1,100	1,095
Gulf (AL-TX)	93	91	81	73	69	81
Others	106	100	96	94	102	100
Total	1,797	1,799	1,727	1,779	1,867	1,794

Source: NMFS, SERO Permits Dataset, 2017.

Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter boat, operation as either a headboat or charter boat is not restricted by the permitting regulations, and vessels may operate in both capacities. However, only selected headboats are required to submit harvest and effort information to the NMFS Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the SEFSC that the vessel primarily operates as a headboat. There were 63 South Atlantic vessels registered in the SRHS as of February 22, 2017 (K. Fitzpatrick, NMFS SEFSC, pers. comm.).

Information on South Atlantic charter boat and headboat operating characteristics, including average fees and net operating revenues, as reported in Holland et al. (2012), is incorporated herein by reference.

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

Catch

For purposes of presenting catches for all species examined in this amendment, the following species aggregates are considered: 1) snapper aggregate, 2) grouper and tilefish aggregate, 3) 20-fish aggregate, and 4) Deep-water Species Aggregate. The Deep-water Species Aggregate does not currently exist. To the extent that some form of this aggregate is considered in this amendment, it is instructive to provide some information on this potential aggregate. There are two forms of Deep-water Species Aggregate considered in this amendment differing only in the included species. Only the one that is currently preferred is presented in this section.

Total catches (in numbers of fish) are presented by state/area and by fishing mode. The states/areas are the east coast of Florida (FLE), northeast Florida, together with Georgia (NFLE/GA), North Carolina (NC), and South Carolina (SC). The fishing modes are charterboat (CBT), headboat (HBT), private/rental (PRIV/Rental), and shore (SHORE). Total catch, in number of fish, is the sum of the three types of catches A, B1, and B2. A refers to observed harvest, B1 is unobserved harvest, and B2 is released fish. Headboat catches reflect only harvest information and not total catch. Total catches from 2012 through 2016 are presented for each group annually and as averages (2012-2016) for each of the species within an aggregate. Averaging of catches assumes that zero or no landings entries are zero. This would tend to possibly underestimate the true catches. Because the annual catches are for a species aggregate, and for each individual species within an aggregate, only an average is presented, issues related to confidentiality of harvest appear to be limited. Nevertheless, catches from Georgia are combined with those from northeast Florida. Catches in Monroe County, Florida are assigned to the South Atlantic for the following species: mutton snapper, yellowtail snapper, black grouper, gag, red grouper, snowy grouper, greater amberjack, and hogfish.

For all species aggregates, Florida is the dominant state in terms of catch. The private mode is the dominant fishing mode for all species aggregates.

Species in the snapper aggregate are primarily caught in Florida, and relatively minimal in other areas (**Table 3.3.2.2**). Catches of gray snapper are by far the highest but catches of yellowtail snapper, lane snapper, and mutton snapper are also relatively high. While the private/rental mode is the dominant fishing mode, the shore mode registered relatively high catches of snapper aggregate species, particularly gray snapper (**Table 3.3.2.3**). The seasonal distribution of snapper aggregate species is presented in **Figure 3.3.2.1**. This is a stacked chart, so catches per year are added to those of previous year, starting from 2012 and ending with the average. The main intent in using this chart type is to show the pattern of seasonal distribution over the years 2012 through 2016 with less clutter. The pattern of seasonal distribution of snapper aggregate species remained relatively the same throughout the 2012-2016 period, with peaks around the July/August and September/October waves (**Figure 3.3.2.1**).

Table 3.3.2.2. Recreational catches (number of fish) of species in the Snappers Aggregate (as a group and individually), by state, 2012-2016.

	FLE	NFLE/GA	NC	SC	TOTAL
Group of Species					
2012	3,034,649	249,535	6	580	3,284,770
2013	5,959,472	225,857	15	61	6,185,405
2014	5,958,158	291,299	3,759	52	6,253,269
2015	4,323,495	288,342	421	781	4,613,039
2016	5,375,149	311,232	12	5	5,686,398
Average	4,930,185	273,253	843	296	5,204,576
Individual Species in the Snapper Aggregate, 2012-2016 Average					
Blackfin Snapper	351	526	0	0	877
Cubera Snapper	1,137	228	1	88	1,454
Gray Snapper	2,500,388	81,821	695	188	2,583,093
Lane Snapper	271,199	27,702	2	0	298,903
Mutton Snapper	392,353	16,321	2	7	408,682
Queen Snapper	0	277	0	0	277
Silk Snapper	628	1,252	88	3	1,970
Yellowtail Snapper	1,764,129	145,127	55	9	1,909,320

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of mutton snapper and yellowtail snapper in Monroe County, Florida area assigned to the South Atlantic.

Table 3.3.2.3. Recreational catches (number of fish) of species in the Snappers Aggregate (as a group and individually), by fishing mode, 2012-2016.

	CBT	HBT	PRIV/RENTAL	SHORE	TOTAL
Group of Species					
2012	372,177	201,897	1,810,239	900,457	3,284,770
2013	578,143	188,748	4,332,977	1,085,537	6,185,405
2014	450,675	286,002	4,582,225	934,366	6,253,269
2015	594,943	284,410	3,112,000	621,686	4,613,039
2016	461,711	305,527	3,378,011	1,541,149	5,686,398
Average	491,530	253,317	3,443,090	1,016,639	5,204,576
Individual Species in the Snapper Aggregate, 2012-2016 Average					
Blackfin Snapper	43	526	309	0	877
Cubera Snapper	87	229	1,000	137	1,454
Gray Snapper	40,414	61,867	1,746,210	734,602	2,583,093
Lane Snapper	17,501	27,704	225,323	28,375	298,903
Mutton Snapper	40,164	16,319	250,048	102,152	408,682
Queen Snapper	0	347	0	0	347
Silk Snapper	93	1,258	620	0	1,970
Yellowtail Snapper	393,228	145,136	1,219,581	151,374	1,909,320

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of mutton snapper and yellowtail snapper in Monroe County, Florida area assigned to the South Atlantic.

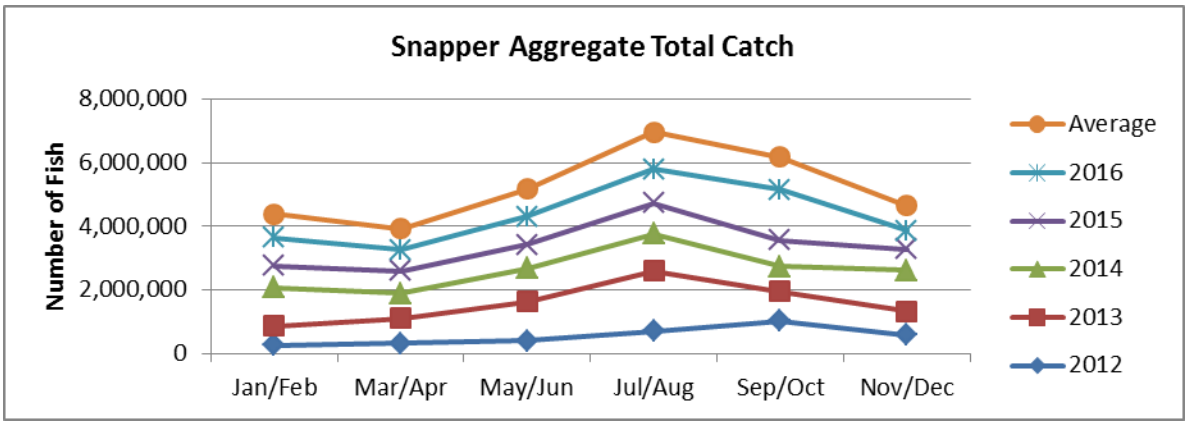

Figure 3.3.2.1. Seasonal distribution of Snappers Aggregate catches, by two-month wave, 2012-2016. Note: Line charts are stacked, including the average.

While catches of species in the grouper and tilefish aggregate are highest in Florida, North Carolina also registered relatively large catches during the time period examined (**Table 3.3.2.4**). Among the species in the grouper aggregate, gag and red grouper are the two dominant species, although catches of black grouper and graysby are relatively high. The private/rental mode is by far the dominant fishing mode for grouper and tilefish aggregate catches, with gag, red grouper, graysby, and black grouper being the top species (**Table 3.3.2.5)**. The shore mode comes second, particularly for catches of gag, red grouper, and black grouper. As shown in **Figure 3.3.2.2**, the pattern of seasonal catch distribution remained fairly the same for the first three years (2012-2014) showing peak catches in the May/June wave. The last two years (2015-2016) recorded peaks in the November/December wave, resulting in the average catches peaking in the November/December wave.

Table 3.3.2.4. Recreational catches (number of fish) of species in the Grouper and Tilefish Aggregate (as a group and individually), by state, 2012-2016.

	FLE	NFLE/GA	NC	SC	TOTAL
Group of Species					
2012	395,844	9,499	47,411	13,276	466,029
2013	460,297	8,061	23,099	5,579	497,037
2014	375,042	13,418	23,960	12,663	425,082
2015	303,210	16,980	28,326	5,429	353,946
2016	197,690	13,109	41,426	5,720	257,946
Average	346,417	12,214	32,844	8,534	400,008
Individual Species in the Grouper and Tilefish Aggregate, 2012-2016 Average					
Black Grouper	56,908	405	3	3	57,319
Coney	703	124	0	0	827
Gag	68,691	1,004	16,134	5,431	91,259
Graysby	25,435	1,505	449	236	27,625
Red Grouper	122,444	1,533	887	11	124,874
Red Hind	1,352	157	4	72	1,585
Rock Hind	2,538	1,592	205	455	4,790
Scamp	2,462	741	972	2,321	6,496
Yellowfin Gr	97	15	1	0	113
Yellowmouth Gr	0	13	0	0	13
Sand Tilefish	31,343	1,144	192	3	32,683
Snowy Grouper	8,382	584	896	2	9,865
Misty Grouper	0	10	0	0	10
Yellowedge Gr.	11	190	43	0	244
Blueline Tilefish	22,056	3,097	12,933	0	38,086
Golden Tilefish	3,993	104	126	0	4,222

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of black grouper, gag, red grouper and snowy grouper in Monroe County, Florida are assigned to the South Atlantic.

Table 3.3.2.5. Recreational catches (number of fish) of species in the Grouper and Tilefish Aggregate (as a group and individually), by fishing mode, 2012-2016.

	CBT	HBT	PRIV/RENTAL	SHORE	TOTAL
Group of Species					
2012	105,439	15,943	320,644	24,003	466,029
2013	57,003	14,028	417,333	8,672	497,036
2014	41,688	19,954	319,407	44,030	425,080
2015	61,309	17,536	239,297	35,801	353,943
2016	62,334	16,707	165,166	13,735	257,942
Average	65,555	16,834	292,369	25,248	400,006
Individual Species in the Grouper and Tilefish Aggregate, 2012-2016 Average					
Black Grouper	8,630	411	34,777	13,502	57,319
Coney	110	124	593	0	827
Gag	15,886	1,207	66,881	7,285	91,259
Graysby	1,720	1,937	23,968	0	27,625
Red Grouper	18,258	1,672	101,673	3,271	124,874
Red Hind	195	172	1,218	0	1,585
Rock Hind	1,312	1,928	3,178	78	6,496
Scamp	1,312	1,928	3,178	78	6,496
Yellowfin Gr.	0	16	97	0	113
Yellowmouth Gr.	0	13	0	0	13
Sand Tilefish	4,235	1,180	26,361	907	32,683
Snowy Grouper	2,693	591	6,455	125	9,863
Misty Grouper	0	10	0	0	10
Yellowedge Gr.	53	191	0	0	244
Blueline Tilefish	9,915	5,147	22,945	80	38,086
Golden Tilefish	2,443	104	1,676	0	4,222

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of black grouper, gag, red grouper and snowy grouper in Monroe County, Florida are assigned to the South Atlantic.

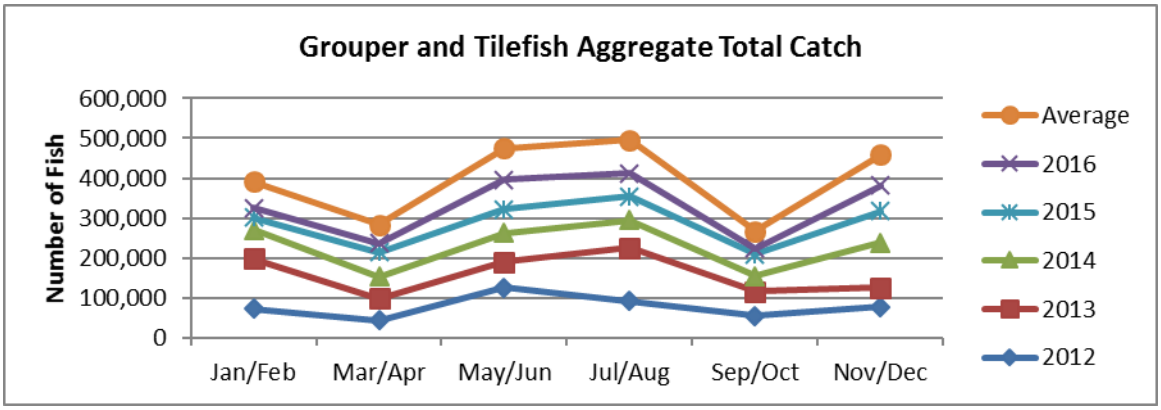

Figure 3.3.2.2. Seasonal distribution of Grouper and Tilefish Aggregate catches, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

There are 15 species currently subject to the aggregate 20-fish bag limit, but individually they are not subject to bag limits. Florida is the dominant state for catches of this species aggregate, but the other states also registered relatively high landings of the various species (**Table 3.3.2.6**). Gray triggerfish and white grunt are the top species in this group. Although well behind the private/rental mode, headboats registered relatively high catches of this species aggregate, particularly white grunt (**Table 3.3.2.7**). The pattern of seasonal catch distribution of this species group remained about the same from 2012 through 2016 (**Figure 3.3.2.3**). One exception is the catch increase in the last wave of 2016, whereas catch decreased for this wave in earlier years.

Table 3.3.2.6. Recreational catches (number of fish) of species in the 20-Fish Aggregate, by state, 2012-2016.

	FLE	NFLE/GA	NC	SC	TOTAL
Group of Species					
2012	924,424	200,307	265,172	42,016	1,431,919
2013	843,547	159,746	169,491	45,265	1,218,049
2014	889,595	231,109	138,964	100,750	1,360,418
2015	813,245	192,174	138,935	70,990	1,215,345
2016	1,185,971	164,051	200,874	42,455	1,593,351
Average	931,357	189,477	182,687	60,295	1,363,817
Individual Species in the 20-Fish Aggregate, 2012-2016 Average					
Almaco Jack	45,876	3,417	2,279	1,271	52,843
Atl. Spadefish	107,470	19,475	38,664	34,247	199,856
Banded Rudderfish	11,168	3,925	4,703	8,789	28,585
Bar Jack	6,788	553	438	92	7,871
Gray Triggerfish	284,106	19,881	64,505	16,668	385,159
Jolthead Porgy	29,176	4,546	502	999	35,223
Knobbed Porgy	7,098	5,341	1,497	157	14,092
Lesser Amberjack	0	245	387	37	669
Margate	4,244	772	211	14	5,241
Sailor's Choice	44,633	1,183	49	410	46,274
Saucereye Porgy	1,315	100	0	0	1,415
Scup	0	30	8,673	3,942	12,645
White Grunt	368,018	125,790	59,373	26,497	579,679
Whitebone Porgy	21,465	4,220	1,406	1,420	28,512

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.

Table 3.3.2.7. Recreational catches (number of fish) of species in the 20-Fish Aggregate, by fishing mode, 2012-2016.

	CBT	HBT	PRIV/RENTAL	SHORE	TOTAL
Group of Species					
2012	116,401	265,118	785,535	335,859	1,502,913
2013	103,726	237,776	789,312	98,937	1,229,752
2014	122,121	280,054	694,170	289,854	1,386,199
2015	133,754	270,591	566,220	295,760	1,266,325
2016	78,188	235,884	1,054,498	236,558	1,605,127
Average	110,838	257,885	777,947	251,394	1,398,063
Individual Species in the 20-Fish Aggregate 2012-2016 Average					
Almaco Jack	7,507	5,511	39,764	60	52,843
Atl. Spadefish	387	210	33,523	165,735	199,856
Banded Rudderfish	5,704	11,062	9,272	2,548	28,585
Bar Jack	608	506	4,208	2,550	7,871
Gray Triggerfish	53,352	48,501	260,862	22,444	385,159
Jolthead Porgy	3,862	5,961	25,400	0	35,223
Knobbed Porgy	546	5,939	7,436	171	14,092
Lesser Amberjack	13	507	149	0	669
Margate	245	997	2,443	1,556	5,241
Sailor's Choice	926	1,133	30,726	13,489	46,274
Saucereye Porgy	22	100	1,293	0	1,415
Scup	415	9,905	1,770	555	12,645
White Grunt	33,975	162,369	341,334	42,000	579,679
Whitebone Porgy	3,274	5,186	19,767	285	28,512

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.

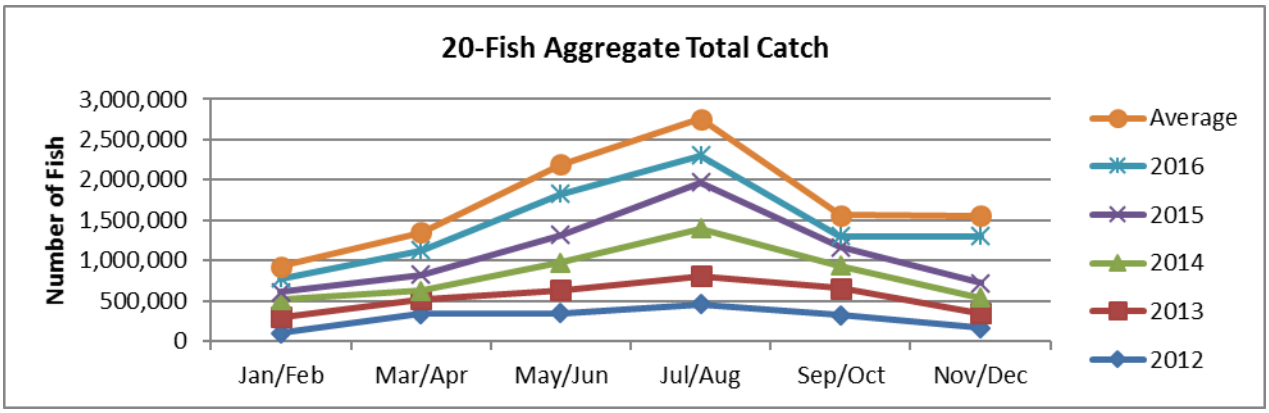

Figure 3.3.2.3. Seasonal distribution of catches for species in the 20-Fish Aggregate, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

Catches of the proposed Deep-water Species Aggregate are fairly low relative to the other species aggregates. As in most other species aggregates, Florida is the dominant state (**Table 3.3.2.8**) and the private mode is the dominant fishing mode (**Table 3.3.2.9**) for catching deep-water species. Blueline tilefish and snowy grouper are the top two species. While the private/rental mode is the dominant fishing mode, the charterboat mode is also an important

fishing mode, particularly in 2016 when it caught more deep-water species than the private fishing mode. With the possible exception of 2012, the pattern of seasonal distribution of deep-water species catches remained the same through the years (**Figure 3.3.2.4)**.

Table 3.3.2.8. Recreational catches (number of fish) of the proposed Deep-water Species Aggregate, by state, 2012-2016.

	FLE	NFLE/GA	NC	SC	TOTAL
Group of Species					
2012	40,272	3,643	14,660	0	58,576
2013	77,624	3,462	10,020	1	91,107
2014	19,370	5,505	14,158	2	39,035
2015	14,258	5,119	2,682	3	22,062
2016	20,688	2,175	28,470	4	51,336
Average	34,442	3,981	13,998	2	52,423
Individual Species of the Proposed Deep-water Species, 2012-2016 Average					
Blueline Tilefish	22,056	3,097	12,933	0	38,086
Misty Grouper	0	6	0	0	6
Snowy Grouper	8,382	584	896	2	9,865
Golden Tilefish	3,993	104	126	0	4,222
Yellowedge Gr	11	190	43	0	244
Wreckfish	nr	nr	nr	nr	nr

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of blueline tilefish and snowy grouper in Monroe County, Florida are assigned to the South Atlantic; nr means no reported catches.

Table 3.3.2.9. Recreational catches (number of fish) of the proposed Deep-water Species Aggregate, by fishing mode, 2012-2016.

	CBT	HBT	PRIV/RENTAL	SHORE	TOTAL
Group of Species					
2012	21,068	6,680	30,827	0	58,576
2013	9,254	6,295	75,158	399	91,106
2014	10,422	9,139	19,214	258	39,033
2015	5,651	5,125	10,918	365	22,059
2016	29,123	2,951	19,258	0	51,332
Average	15,104	6,038	31,075	205	52,421
Individual Species of the Proposed Deep-water Species Aggregate, 2012-2016 Average					
Blueline Tilefish	9,915	5,147	22,945	80	38,086
Misty Grouper	0	6	0	0	6
Snowy Grouper	2,693	591	6,455	125	9,863
Golden Tilefish	2,443	104	1,676	0	4,222
Yellowedge Gr	53	191	0	0	244
Wreckfish	nr	nr	nr	nr	nr

Source: SEFSC MRIPACLspec_rec81_16wv6_20Mar17_wLACreel14to16v2.
Note: Recreational catches of blueline tilefish and snowy grouper in Monroe County, Florida are assigned to the South Atlantic; nr means no reported catches.

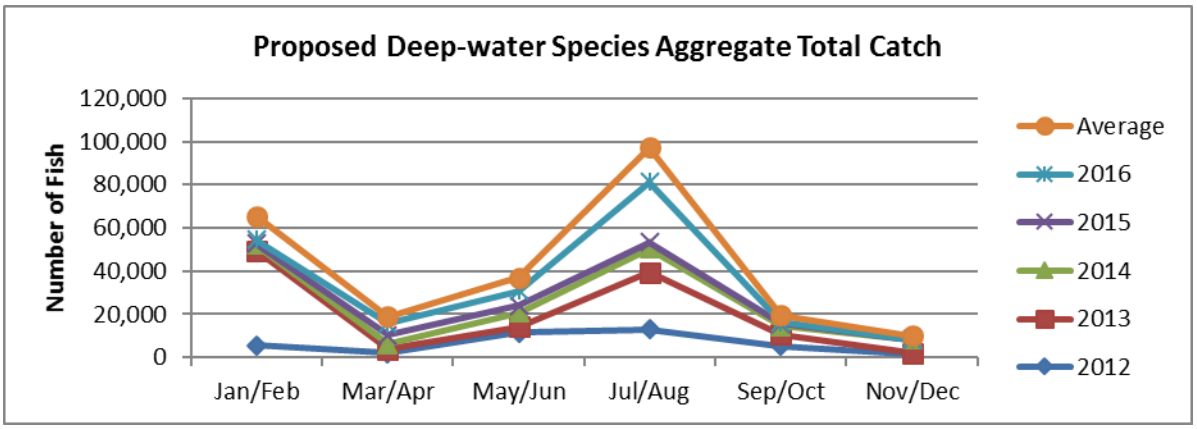

Figure 3.3.2.4. Seasonal distribution of catch of the proposed Deep-water Species Aggregate, by two-month wave, 2012-2016.

Effort

Recreational effort derived from the Marine Recreational Statistics Survey/Marine Recreational Information Program (Marine Recreational Fisheries Statistical Survey [MRFSS]/Marine Recreational Information Program [MRIP]) database can be characterized in terms of the number of trips as follows:

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

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

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

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures, but the three measures of effort listed above are used in this assessment.

The following presents target and catch trips only for the existing three species aggregates and the proposed Deep-water Species Aggregate. Generally, trips for individual species, particularly target trips, are relatively sparse. As with catches, target and catch trips are presented by state and by fishing mode. In estimating target and catch trips by species aggregate, a trip is registered if any one species in the group registers a non-positive trip. In a case where a trip targets or catches more than one species, such trip is recorded only as one trip. This implies that the estimated of total species aggregate trips may be less than the sum of trips from all species within the aggregate. Post-stratification of effort is not done for the current purpose.

Although Florida is the only state with positive target trips for the snapper aggregate species, the other states, particularly Georgia, registered positive catch trips (**Table 3.3.2.10**). All three fishing modes appear to be important fishing modes for both target and catch trips, although the private/rental mode is still the dominant fishing mode (**Table 3.3.2.11**). The pattern of seasonal distribution for both target and catch trips remained about the same throughout the 2012-2016 period (**Figures 3.3.2.5** and **3.3.2.6**).

Table 3.3.2.10. Target and catch trips for species in the Snappers Aggregate, by state, 2012-2016.

	FLE	GA	NC	SC	TOTAL
Target Trips					
2012	113,412	0	0	0	113,412
2013	151,638	0	0	0	151,638
2014	146,501	0	0	0	146,501
2015	184,962	0	0	0	184,962
2016	227,530	0	0	0	227,530
Average	164,809	0	0	0	164,809
Catch Trips					
2012	767,555	17,113	0	293	784,960
2013	948,022	11,271	62	0	959,356
2014	1,058,427	8,154	208	0	1,066,789
2015	644,809	1,738	496	2,477	649,521
2016	1,093,002	1,877	0	0	1,094,879
Average	902,363	8,031	153	554	911,101

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

Table 3.3.2.11. Target and catch trips for species in the Snappers Aggregate, by fishing mode, 2012-2016.

	Shore	Charter	Private/Rental	Total
Target Trips				
2012	41,359	707	71,346	113,412
2013	46,314	523	104,801	151,638
2014	44,264	845	101,392	146,501
2015	51,977	2,589	130,396	184,962
2016	107,959	1,904	117,667	227,530
Average	58,375	1,314	105,120	164,809
Catch Trips				
2012	285,180	16,199	483,582	784,960
2013	254,293	44,168	660,895	959,356
2014	183,248	40,480	843,061	1,066,789
2015	125,157	43,857	480,506	649,521
2016	334,319	44,025	716,535	1,094,879
Average	236,439	37,746	636,916	911,101

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

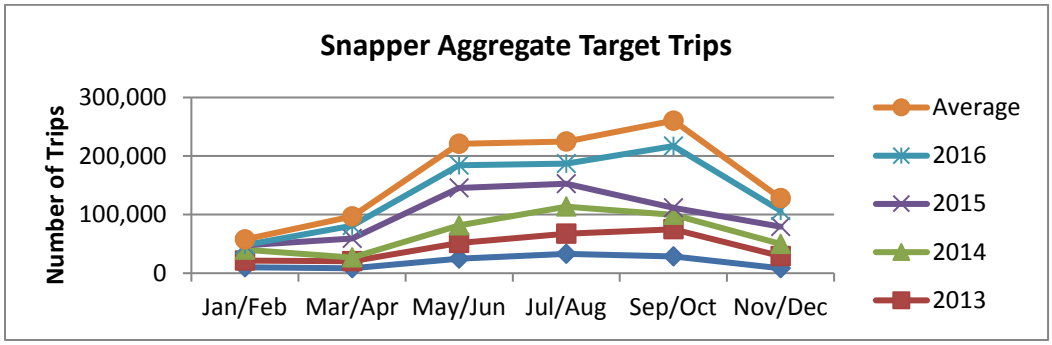

Figure 3.3.2.5. Seasonal distribution of target trips for species in the Snappers Aggregate, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

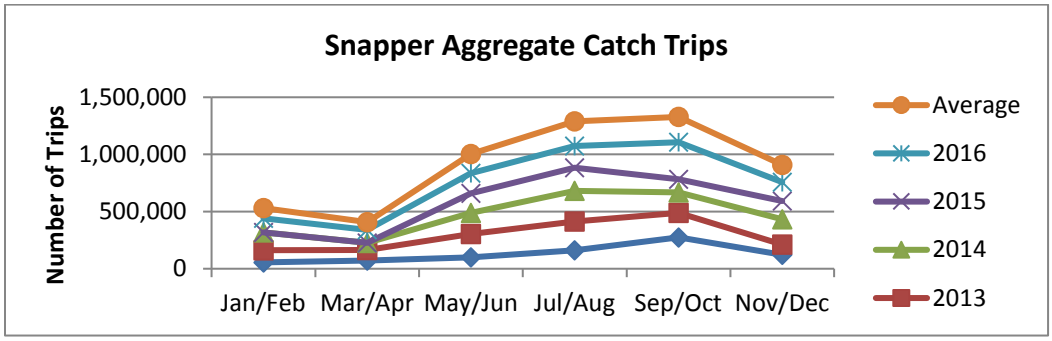

Figure 3.3.2.6. Seasonal distribution of catch trips for species in the Snappers Aggregate, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

For the Grouper and Tilefish Aggregate, most of the target trips are accounted for by Florida, with some coming from North Carolina and a few from South Carolina (**Table 3.3.2.12**). While Florida is the dominant state for catch trips, North and South Carolina also accounted for a

relatively high number of catch trips. The private/rental fishing mode accounted for most of the target and catch trips, but while the other fishing modes reported only few target trips they do account for much higher catch trips than target trips (**Table 3.3.2.13**). The pattern of seasonal distribution for target trips changed over the years; for 2012 through 2014 peaks occurred in the July/August wave but for the later years the peaks shifted to the May/June wave with increases in the November/December wave (**Figure 3.3.2.7**). For catch trips, the pattern of seasonal distribution remained fairly the same throughout, except for increases in the last wave for the last two years (**Figure 3.3.2.8**).

Table 3.3.2.12. Target and catch trips for species in the Grouper and Tilefish Aggregate, by state, 2012-2016.

	FLE	GA	NC	SC	TOTAL
Target Trips					
2012	16,289	0	2,187	0	18,476
2013	33,719	0	0	0	33,719
2014	12,510	0	910	0	13,420
2015	19,871	0	1,374	164	21,409
2016	26,522	0	877	548	27,947
Average	21,782	0	1,070	142	22,994
Catch Trips					
2012	117,476	1,437	30,239	5,671	154,823
2013	185,217	40	12,398	2,350	200,005
2014	123,752	1,274	14,017	8,026	147,069
2015	74,514	722	15,854	2,100	93,190
2016	105,082	221	20,608	4,428	130,339
Average	121,208	739	18,623	4,515	145,085

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

Table 3.3.2.13. Target and catch trips for species in the Grouper and Tilefish Aggregate, by fishing mode, 2012-2016.

	Shore	Charter	Private/Rental	Total
Target Trips				
2012	779	0	17,697	18,476
2013	0	582	33,137	33,719
2014	0	0	13,420	13,420
2015	3,906	2,588	14,916	21,410
2016	0	255	27,692	27,947
Average	937	685	21,372	22,994
Catch Trips				
2012	12,111	24,100	118,612	154,823
2013	3,099	20,158	176,747	200,004
2014	12,220	18,497	116,351	147,068
2015	6,860	14,953	71,377	93,190
2016	0	24,341	105,998	130,339
Average	6,858	20,410	117,817	145,085

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

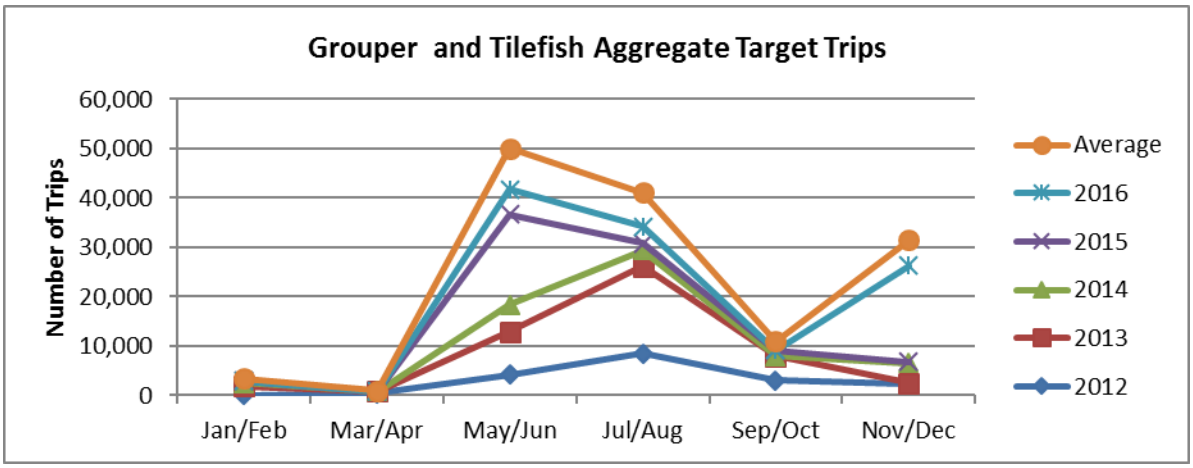

Figure 3.3.2.7. Seasonal distribution of target trips for species in the Grouper and Tilefish Aggregate, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

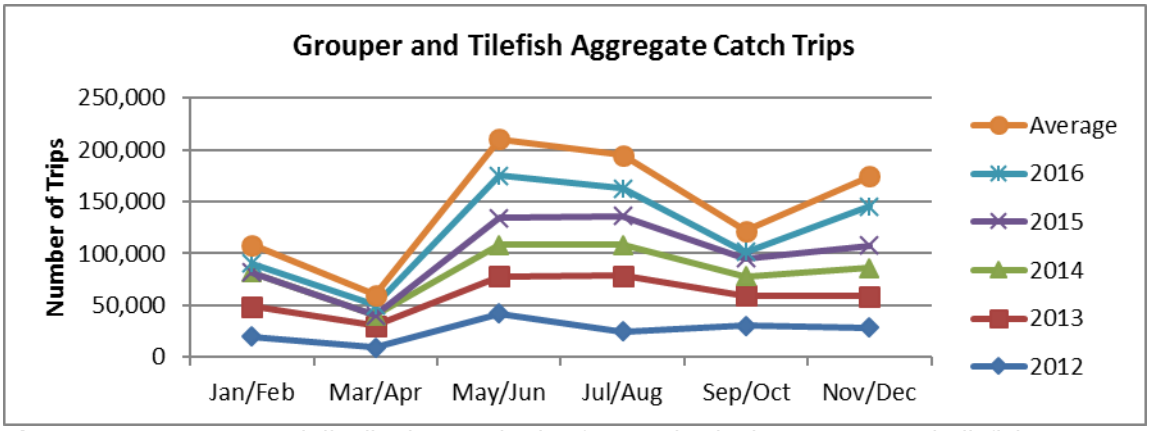

Figure 3.3.2.8. Seasonal distribution catch trips for species in the Grouper and Tilefish Aggregate, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

North and South Carolina registered about the same number of target trips for species in the 20-Fish Aggregate, and Florida reported target trips which are only slightly higher than either North or South Carolina. All states registered positive target and catch trips for any of the species without a bag limit (**Table 3.3.2.14**). North and South Carolina registered about the same number of target trips, but Florida showed significantly more catch trips than either of the two. All fishing modes reported relatively large numbers of target and catch trips, although the private mode still dominated all other fishing modes (**Table 3.3.2.15**). The pattern of seasonal distribution for both target and catch trips remained about the same throughout the 2012-2016 years, with peaks occurring in the July/August wave (**Figures 3.3.2.9** and **3.3.2.10**).

Table 3.3.2.14. Target and catch trips for species in the 20-Fish Aggregate, by state, 2012-2016.

	FLE	GA	NC	SC	TOTAL
Target Trips					
2012	5,595	0	2,393	4,860	12,848
2013	11,439	101	7,558	5,067	24,165
2014	17,422	401	7,208	4,900	29,931
2015	2,204	0	5,035	3,611	10,850
2016	4,287	0	6,457	4,868	15,612
Average	8,189	100	5,730	4,661	18,681
Catch Trips					
2012	343,242	14,430	55,205	24,697	437,574
2013	313,011	11,659	39,984	12,724	377,378
2014	453,577	17,648	24,501	39,217	534,943
2015	348,019	8,014	31,851	41,868	429,752
2016	411,437	9,010	44,328	17,632	482,407
Average	373,857	12,152	39,174	27,228	452,411

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

Table 3.3.2.15. Target and catch trips for species in the 20-Fish Aggregate, by fishing mode, 2012-2016.

	Shore	Charter	Private/Rental	Total
Target Trips				
2012	5,595	0	2,393	4,860
2013	11,439	101	7,558	5,067
2014	17,422	401	7,208	4,900
2015	2,204	0	5,035	3,611
2016	4,287	0	6,457	4,868
Average	8,189	100.4	5,730	4,661
Catch Trips				
2012	118,076	38,065	248,520	404,659
2013	57,582	45,035	257,939	360,556
2014	140,526	65,696	303,461	509,684
2015	156,978	66,297	182,282	405,557
2016	109,723	45,613	283,274	438,608
Average	116,577	52,141	255,095	423,813

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

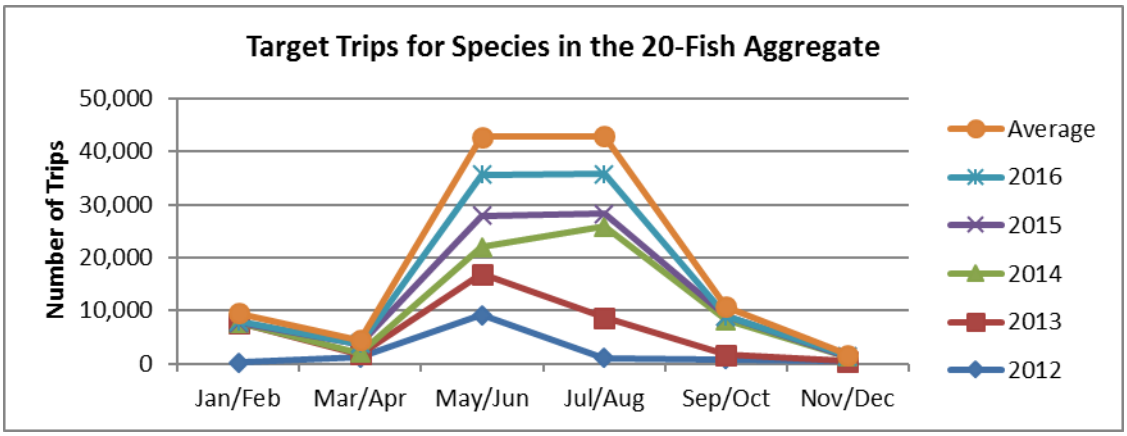

Figure 3.3.2.9. Seasonal distribution of target trips for species in the 20-Fish Aggregate, by two month wave, 2012-2016. Note: Line charts are stacked, including the average.

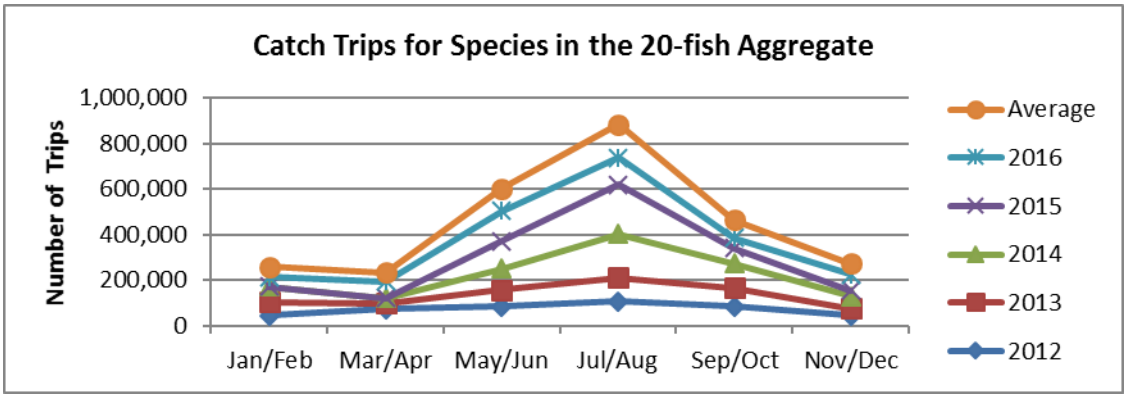

Figure 3.3.2.10. Seasonal distribution of catch trips for species in the 20-Fish Aggregate, by two-month wave, 2012-2016. Note: Line charts are stacked, including the average.

While Florida is the dominant state for target and catch trips for the proposed Deep-water Species Aggregate, North Carolina did register relatively high catch trips (**Table 3.3.2.16**). All the other states did not report any target or catch trips. The private/rental mode accounted for most of the target trips, with the other states showing very little non-zero trips (**Table 3.3.2.17**). In terms, however, of catch trips the other states reported some positive trips, particularly in the earlier years. The pattern of seasonal distribution of both target and catch trips remained about the same throughout the period (**Figures 3.3.2.11** and **3.3.2.12**).

Table 3.3.2.16. Target and catch trips for proposed Deep-water Species Aggregate, by state, 2012-2016.

	FLE	GA	NC	SC	TOTAL
Target Trips					
2012	572	0	462	0	1,034
2013	10,639	0	0	0	10,639
2014	673	0	910	0	1,583
2015	0	0	0	0	0
2016	790	0	877	0	1,667
Average	2,535	0	450	0	2,985
Catch Trips					
2012	10,237	0	7,000	0	17,237
2013	13,473	0	3,693	0	17,166
2014	6,539	0	4,919	0	11,458
2015	2,517	0	2,666	0	5,183
2016	1,568	0	10,610	0	12,178
Average	6,867	0	5,778	0	12,644

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

Table 3.3.2.17. Target and catch trips for the proposed Deep-water Species Aggregate, by fishing mode, 2012-2016.

	Shore	Charter	Private/Rental	Total
Target Trips				
2012	0	0	1034	1,034
2013	0	0	10639	10,639
2014	0	0	1583	1,583
2015	0	0	0	0
2016	0	255	1412	1,667
Average	0	51	2,934	2,985
Catch Trips				
2012	0	12,671	4,566	17,237
2013	399	3,451	13,316	17,166
2014	258	3,975	7,223	11,456
2015	365	1,927	2,891	5,183
2016	0	6,718	5,459	12,177
Average	204	5,748	6,691	12,644

Source: MRIP database, NOAA Fisheries, NMFS, SERO.

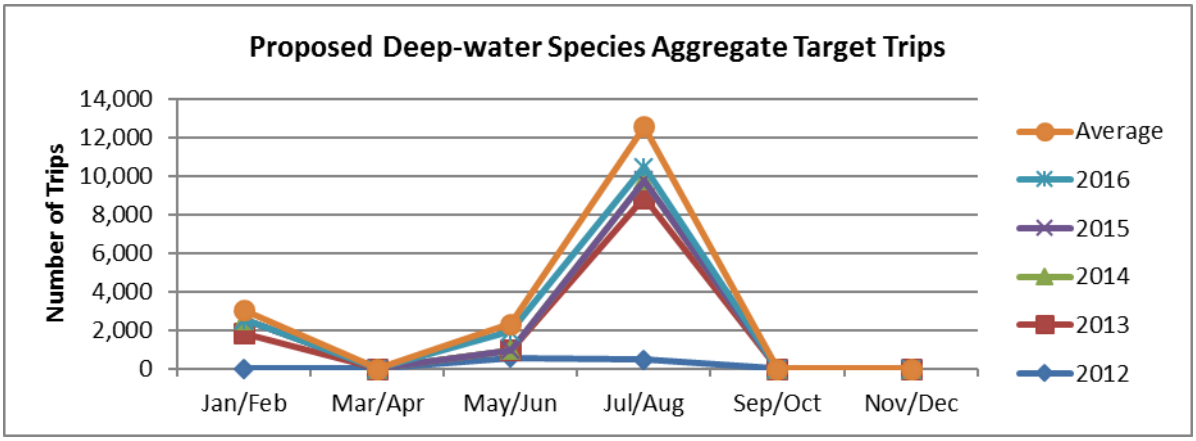

Figure 3.3.2.11. Seasonal distribution of the proposed Deep-water Species Aggregate target trips, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

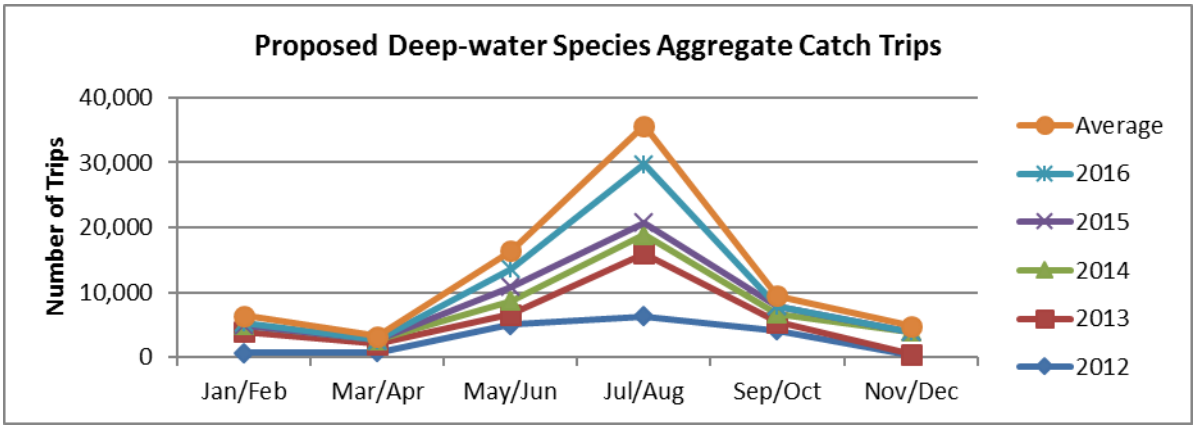

Figure 3.3.2.12. Seasonal distribution of the proposed Deep-water Species Aggregate catch trips, by two-month wave, 2012-2016.
Note: Line charts are stacked, including the average.

Headboat data in the Southeast do not support the estimation of target or catch effort because target intent is not collected and the harvest data (the data reflects only harvest information and not total catch) are collected on a vessel basis and not by individual angler. **Table 3.3.2.18** contains estimates of the number of headboat angler days for the South Atlantic states for 2012-2016. Florida and Georgia data are combined for confidentiality purposes.

Table 3.3.2.18. Headboat angler days, by state, 2012-2016.

	Angler Days			Percent Distribution		
	Florida/Georgia	**North Carolina**	**South Carolina**	**Florida/Georgia**	**North Carolina**	**South Carolina**
2012	123,662	20,766	41,003	69.30%	10.30%	20.40%
2013	124,041	20,547	40,963	72.90%	9.00%	18.00%
2014	139,623	22,691	42,025	75.20%	8.70%	16.10%
2015	194,979	22,716	39,702	75.75%	8.83%	15.42%
2016	196660	21565	42207	75.51%	8.28%	16.21%
Average	155,793	21,657	41,180	71.26%	9.91%	18.84%

Source: NMFS Southeast Region Headboat Survey (SRHS).

Economic Value

Economic value can be measured in the form of consumer surplus (CS) per additional fish kept on a trip for anglers (the amount of money that an angler would be willing to pay for a fish in excess of the cost to harvest the fish). The CS value per fish for each snapper and grouper species examined in this amendment is unknown but some proxies, such as the CS for snapper and the CS for grouper, may be used. The estimated value of the CS per fish for a second snapper kept on a trip is approximately $12.54, with bounds of $8.36 and $18.12 at the 95% confidence interval (Haab et al. 2012; values updated to 2016 dollars), and that for grouper is approximately $103 (Carter and Liese 2012; values updated to 2016 dollars).

Economic value for for-hire vessels can be measured by producer surplus (PS) per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of the PS per for-hire passenger trip are not available. Instead, net operating revenue (NOR), which is the return used to pay all labor wages, returns to capital, and owner profits, is used as a proxy for PS. For vessels in the South Atlantic, the estimated NOR value is $165 (2016 dollars) per charter angler trip (Liese and Carter 2011). The estimated NOR value per headboat angler trip is $45 (2016 dollars) (C. Liese, NMFS SEFSC, pers. comm.).

Recreational Sector Business Activity

Estimates of the business activity (economic impacts) associated with recreational angling for the three species aggregates and the proposed Deep-water Species Aggregate were derived using average impact coefficients for recreational angling for all species. These coefficients were derived from an add-on survey to MRIP to collect economic expenditure information, as described and utilized in NMFS Fisheries Economics of the U.S. (2015). Estimates of these coefficients for target or catch behavior for individual species are not available. Estimates of the average trip expenditures by recreational anglers are also provided in NMFS (2015) and are incorporated herein by reference.

Business activity for the recreational sector is characterized in the form of jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income impacts (commercial sector) and value-added impacts (recreational sector) are not equivalent, though similarity in the magnitude

of multipliers generated and used for the two metrics may result in roughly equivalent values. Similar to income impacts, value-added impacts should not be added to output (sales) impacts because this would result in double counting.

To generate the associated business activity from recreational effort, target trips are selected as a measure of effort. Many of the individual species examined in this amendment have very low or no reported target trips. On this account, estimates of business activity are generated for groups of species. Estimates of business activity are shown in **Table 3.3.2.19** through **Table 3.3.2.22**.

The estimates of the business activity associated with recreational trips are only available at the state level. Addition of the state-level estimates to produce a regional or national total will underestimate the actual amount of total business activity because summing the state estimates will not capture business activity that leaks outside the individual states. A state estimate only reflects activities that occur within that state and not related activity that occurs in another state. For example, if a good is produced in South Carolina but sold in North Carolina, the measure of business activity in North Carolina associated with the sale in North Carolina does not include the production process in South Carolina. Assessment of business activity at the national (or regional) level would capture activity in both states and include all activity except that which leaks into other nations.

It is noted that these estimates do not, and should not be expected to, represent the total business activity associated with a specific recreational harvest sector in a given state or in total. For example, these results do not state, or should be interpreted to imply, that there are only 8 jobs associated with the charter sector in Florida (see **Table 3.3.2.19**). Instead, as previously stated, these results relate only to the business activity associated with target trips for the snapper aggregate. Few businesses or jobs would be expected to be devoted solely to fishing for any of the species in the Snappers Aggregate, but there may be some businesses that have significant dependence and reliance on the various species in the snapper aggregate. The existence of these businesses and jobs, in total, is supported by the fishing for, and expenditures on, the variety of marine species available to anglers throughout the year. In addition, expenditures for durable goods, such as boats, rods, reels, that were used for harvesting aggregate species are not included in the economic impact estimation.

Table 3.3.2.19. Summary of Snappers Aggregate target trips (2012-2016 average) and associated business activity, by state. Output and value added impacts are not additive. Dollar values are in thousands and in 2016 dollars.

	North Carolina	South Carolina	Georgia	Florida
	Charter			
Target Trips	0	0	0	1,314
Value Added Impact	$0	$0	$0	$533
Output/Sales Impact	$0	$0	$0	$964
Income Impact	$0	$0	$0	$343
Jobs Impact	0	0	0	8
	Private/Rental			
Target Trips	0	0	0	105,120
Value Added Impact	$0	$0	$0	$2,175
Output/Sales Impact	$0	$0	$0	$3,701
Income Impact	$0	$0	$0	$1,251
Jobs Impact	0	0	0	34
	Shore			
Target Trips	0	0	0	58,375
Value Added Impact	$0	$0	$0	$1,025
Output/Sales Impact	$0	$0	$0	$1,691
Income Impact	$0	$0	$0	$582
Jobs	0	0	0	16
	All Modes			
Target Trips	0	0	0	164,809
Value Added Impact	$0	$0	$0	$3,734
Output/Sales Impact	$0	$0	$0	$6,356
Income Impact	$0	$0	$0	$2,176
Jobs Impact	0	0	0	57

Source: Effort data from the MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Table 3.3.2.20. Summary of Grouper and Tilefish Aggregate target trips (2012-2016 average) and associated business activity, by state. Output and value added impacts are not additive. Dollar values are in thousands and in 2016 dollars.

	North Carolina	South Carolina	Georgia	Florida
	Charter			
Target Trips	56	33	0	596
Value Added Impact	$19	$13	$0	$242
Output/Sales Impact	$36	$25	$0	$437
Income Impact	$13	$9	$0	$155
Jobs Impact	0	0	0	3
	Private/Rental			
Target Trips	1,014	110	0	20,249
Value Added Impact	$37	$2	$0	$419
Output/Sales Impact	$66	$4	$0	$713
Income Impact	$23	$1	$0	$241
Jobs Impact	1	0	0	6
	Shore			
Target Trips	0	0	0	937
Value Added Impact	$0	$0	$0	$16
Output/Sales Impact	$0	$0	$0	$27
Income Impact	$0	$0	$0	$9
Jobs	0	0	0	0
	All Modes			
Target Trips	1,070	143	0	21,782
Value Added Impact	$57	$16	$0	$677
Output/Sales Impact	$103	$29	$0	$1,177
Income Impact	$36	$10	$0	$406
Jobs Impact	1	0	0	10

Source: Effort data from the MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Table 3.3.2.21. Summary of target trips (2012-2016 average) for species in the 20-Fish Aggregate and associated business activity, by state. Output and value added impacts are not additive. Dollar values are in thousands and in 2016 dollars.

	North Carolina	South Carolina	Georgia	Florida
	Charter			
Target Trips	883	335	100	541
Value Added Impact	$306	$136	$25	$220
Output/Sales Impact	$572	$251	$46	$397
Income Impact	$208	$88	$17	$141
Jobs Impact	5	2	0	3
	Private/Rental			
Target Trips	3,125	4,326	0	5,415
Value Added Impact	$115	$88	$0	$112
Output/Sales Impact	$204	$159	$0	$191
Income Impact	$72	$53	$0	$64
Jobs Impact	2	2	0	2
	Shore			
Target Trips	1,722	0	0	2,234
Value Added Impact	$108	$0	$0	$39
Output/Sales Impact	$188	$0	$0	$65
Income Impact	$66	$0	$0	$22
Jobs	2	0	0	1
	All Modes			
Target Trips	5,730	4,661	100	8,190
Value Added Impact	$529	$224	$25	$371
Output/Sales Impact	$965	$411	$46	$652
Income Impact	$346	$141	$17	$228
Jobs Impact	9	4	0	5

Source: Effort data from the MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Table 3.3.2.22. Summary of the proposed Deep-water Species Aggregate target trips (2012-2016 average) and associated business activity, South Atlantic states. Output and value added impacts are not additive. Dollar values are in thousands and in 2016 dollars.

	North Carolina	South Carolina	Georgia	Florida
	Charter			
Target Trips	51	0	0	0
Value Added Impact	$18	$0	$0	$0
Output/Sales Impact	$33	$0	$0	$0
Income Impact	$12	$0	$0	$0
Jobs Impact	0	0	0	0
	Private/Rental			
Target Trips	399	0	0	2,535
Value Added Impact	$15	$0	$0	$52
Output/Sales Impact	$26	$0	$0	$89
Income Impact	$9	$0	$0	$30
Jobs Impact	0	0	0	1
	Shore			
Target Trips	0	0	0	0
Value Added Impact	$0	$0	$0	$0
Output/Sales Impact	$0	$0	$0	$0
Income Impact	$0	$0	$0	$0
Jobs	0	0	0	0
	All Modes			
Target Trips	450	0	0	2,535
Value Added Impact	$32	$0	$0	$52
Output/Sales Impact	$59	$0	$0	$89
Income Impact	$21	$0	$0	$30
Jobs Impact	1	0	0	1

Source: Effort data from the MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Estimates of the business activity (impacts) associated with headboat effort for the species examined in this amendment in the Southeast are not available. The headboat sector in the Southeast is not covered in the MRFSS/MRIP, so estimation of the appropriate impact coefficients for the headboat sector has not been conducted. While appropriate impact coefficients are available for the charter sector, potential differences in certain factors, such as the for-hire fee, rates of tourist versus local participation, and expenditure patterns, may result in significant differences in the business impacts of the headboat sector relative to the charter sector.

3.4 Social Environment

This amendment affects the recreational management of the snapper grouper management complex in the South Atlantic. This section provides the background for the proposed actions, which are evaluated in **Chapter 4**.

Recreational landings for included species and federal for-hire permits for South Atlantic snapper grouper are included by state to provide information on the geographic distribution of fishing involvement. Descriptions of the top recreational fishing communities in the South Atlantic based on recreational engagement are included, along with the distribution of federal for-hire permits for South Atlantic snapper grouper by community, top ranking communities by the number of federal for-hire permits for South Atlantic snapper grouper, and top communities with Southeast Headboat Survey (SRHS) landings by family of snapper grouper species. Community level data are presented in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Act, which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. Lastly, social vulnerability data are presented to assess the potential for environmental justice concerns. Additional information on the South Atlantic recreational snapper grouper fishery is provided in the Economic Environment in **Section 3.3**.

Landings by State

The greatest proportions of landings for the majority of included species are from waters adjacent to Florida and Georgia (**Table 3.4.1** and **Table 3.4.2**). The exception is scup and the majority of landings for the species are from waters adjacent to North Carolina (**Table 3.4.2**).

Table 3.4.1. Recreational snapper grouper landings (ww) by species and by state, 2016**.**

Species	FLE/GA	NC	SC	Total
almaco jack	165,888	16,176	10,722	192,785
Atlantic spadefish	15,496	12,196	75	27,767
banded rudderfish	32,505	6,332	15,063	53,901
bar jack	2,006	0	0	2,006
black grouper	116,360	0	187	116,547
blackfin snapper	2,419	0	0	2,419
blueline tilefish	23,577	148,673	0	172,249
coney	314	3	0	317
cubera snapper	194	0	12	206
gag*	119,658	25,573	6,225	151,456
golden tilefish**	12,918	93	0	13,011
gray snapper	972,367	0	0	972,367
gray triggerfish	290,621	79,563	23,118	393,301
graysby	14,449	591	215	15,255
jolthead porgy	94,133	526	514	95,172
knobbed porgy	4,724	1,517	270	6,510
lane snapper	80,642	0	0	80,642
lesser amberjack	669	188	56	914
margate	8,137	0	0	8,137
misty grouper	32	0	0	32

Source: SEFSC MRIP and MRFSS datasets.
*Landings are in gutted weight.
**Landings are in numbers of fish.

Table 3.4.2. Recreational snapper grouper landings (ww) by species and by state continued, 2016.

Species	FLE/GA	NC	SC	Total
mutton snapper	608,448	19	13	608,480
queen snapper	8,023	0	0	8,023
red grouper	154,691	503	77	155,271
red hind	1,097	5	10	1,113
rock hind	9,293	391	1,688	11,373
sailors choice	8,872	0	0	8,872
sand tilefish	2,776	141	7	2,924
saucereye porgy	211	0	0	211
scamp	19,146	1,995	9,925	31,066
scup	7	5,665	2,287	7,959
silk snapper	1,837	21	0	1,858
snowy grouper	9,074	670	0	9,745
tilefish	9,642	104	0	9,747
white grunt	176,660	65,068	31,729	273,457
whitebone porgy	25,853	2,173	2,229	30,255
yellowedge grouper	1,717	540	0	2,257
yellowfin grouper	46	0	0	46
yellowmouth grouper	106	0	0	106
yellowtail snapper	760,656	0	7	760,663

Source: SEFSC MRIP and MRFSS datasets.

Permits by State

In 2016, there were a total of 1,867 federal for-hire permits for South Atlantic snapper grouper (**Table 3.3.2.1**). The majority of permits are held by operators in Florida (58.9% in 2016), followed by North Carolina (17.8%), South Carolina (11.4%), other states (5.5%), Gulf states (3.7%), and Georgia (2.8%).

Recreational Communities

Landings for the recreational sector are not available by species at the community level; therefore, it is not possible with available information to identify communities as dependent on recreational fishing for specific species. Because limited data are available concerning how recreational fishing communities are engaged and reliant on specific species, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013; Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as "recreational" by homeport and owners address. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted. Communities were analyzed in ranked order by recreational fishing engagement.

Figure 3.4.1 identifies the top 20 recreational communities located in the South Atlantic that are the most engaged and reliant on recreational fishing, in general. All included communities

demonstrate high levels of recreational engagement. Five communities (Marathon, Florida; Islamorada, Florida; Hatteras, North Carolina; Manteo, North Carolina; and Atlantic Beach, North Carolina) demonstrate high levels of recreational reliance.

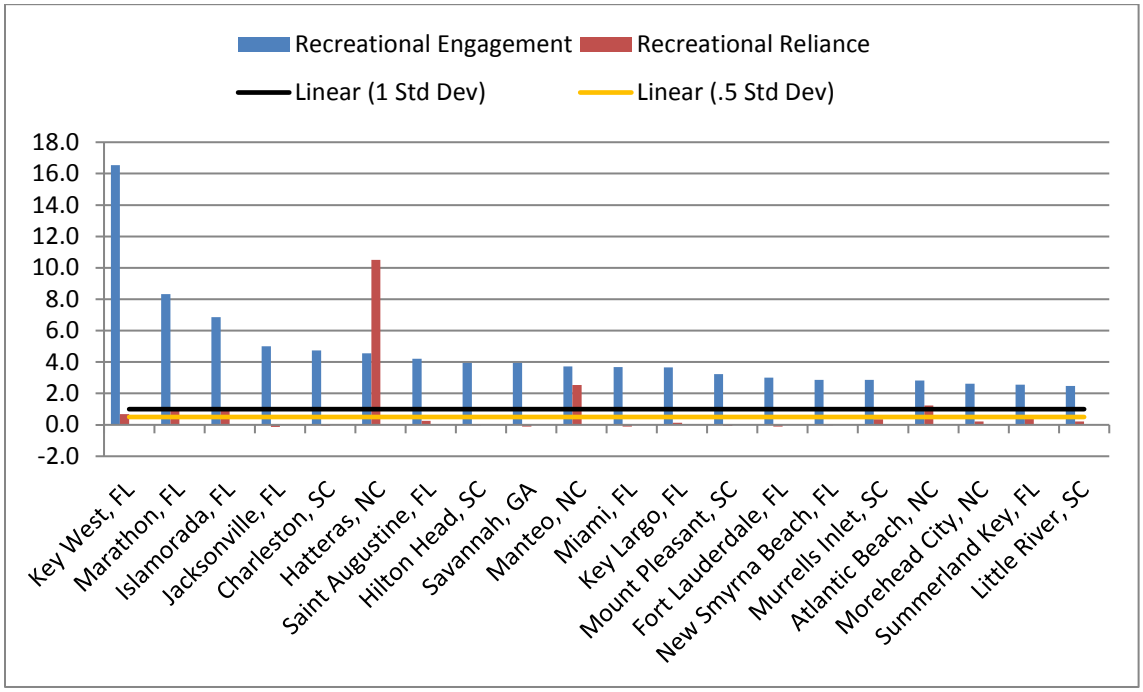

Figure 3.4.1. Recreational fishing communities' engagement and reliance.
Source: SERO, Community Social Vulnerability Indicators Database 2016 (American Community Survey 2010-2014).

Charter Vessels and Headboats by Community

Federal for-hire permits for South Atlantic snapper grouper are held by those with mailing addresses in a total of 438 communities, located in 26 states (SERO permit office, December 27, 2017). **Figure 3.4.2** provides the geographical distribution of federal for-hire permits by community. The figure focuses on the eastern US because the majority of permits are issued to individuals with addresses in the South Atlantic, Gulf, and Mid-Atlantic regions. A small number of permits are held by individuals with addresses in the western US, which is not shown. The communities with the most for-hire permits for snapper grouper are provided in **Table 3.4.3**. The majority is located in Florida, followed by North Carolina, South Carolina, and Georgia.

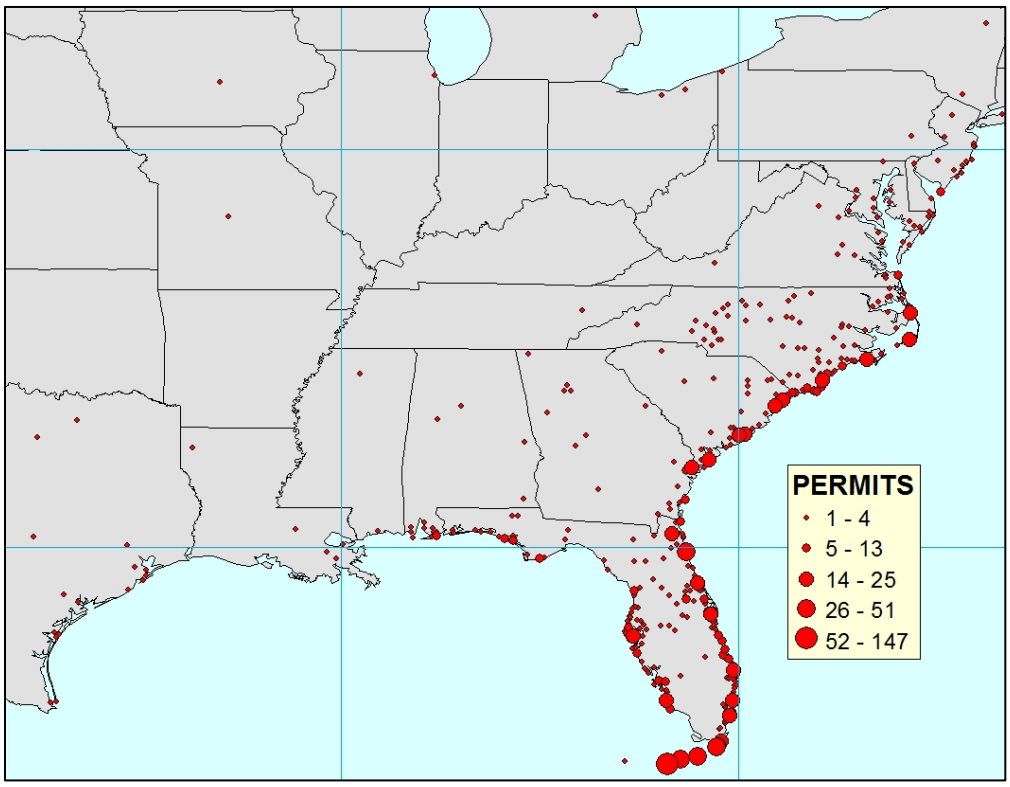

Figure 3.4.2. Number of federal for-hire permits for South Atlantic snapper grouper by community. Source: NMFS SERO permit office, December 27, 2017.

Table 3.4.3. Top ranking communities based on the number of federal for-hire permits for South Atlantic snapper grouper, in descending order.

State	Community	Permits
FL	Key West	147
FL	Marathon	51
FL	St. Augustine	34
FL	Islamorada	31
FL	Summerland Key	29
FL	Merritt Island	25
FL	Tavernier	24
NC	Hatteras	24
FL	Naples	22
NC	Wilmington	22
FL	Port Orange	21
NC	Manteo	21
SC	Hilton Head	21
FL	Jacksonville	20
SC	Murrells Inlet	20
FL	Fort Lauderdale	19
GA	Savannah	19
SC	Charleston	19
FL	St. Petersburg	18

Source: NMFS SERO permit office, December 27, 2017.

Charter vessels and headboats target snapper grouper species throughout the South Atlantic. At this time it is not possible to determine which species are targeted by specific charter vessels and associate those vessels with their homeport communities. However, harvest data are available for headboats by species and can be linked to specific communities through the homeport identified for each vessel. These data are available for headboats registered in the SRHS. The SRHS includes a subset of vessels with federal for-hire permits.

In 2016, 75 federal for-hire vessels in the South Atlantic were registered in the SRHS (SRHS, SERO Limited Access Privilege Programs/Data Management database). The top three communities by headboat landings and by family of snapper grouper species are provided in **Table 3.4.4**. Top communities are located in Florida, North Carolina, and South Carolina.

Table 3.4.4. Top homeports based on number of fish landed by headboats included in the SRHS and by family of snapper grouper species.

Family	1st Port	2nd Port	3rd Port
Sea Basses and Groupers	Atlantic Beach, NC	Little River, SC	Mayport, FL
Snappers	Islamorada, FL	Marathon, FL	Key West, FL
Porgies	Atlantic Beach, NC	Morehead City, NC	Murrells Inlet, SC
Grunts	Marathon, FL	Islamorada, FL	Atlantic Beach, NC
Jacks	Mayport, FL	North Myrtle Beach, SC	Calabash, NC
Tilefishes	Stock Island, FL	Manteo, NC	Lantana, FL
Triggerfishes	Atlantic Beach, NC	Hatteras, NC	Morehead City, NC
Wrasses	Marathon, FL	Islamorada, FL	Key West, FL
Spadefishes	St. Augustine, FL	Mayport, FL	Hilton Head Island, SC

Source: SRHS, SERO Limited Access Privilege Programs/Data Management Database, 2016.
Note: Prohibited species and ecosytem composition species are not included.

Environmental Justice

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

Recreational fishermen, their households, and associated industries could be impacted by the proposed actions. However, information on the race and income status for groups at the different participation levels is not available. Although information is available concerning communities overall status with regard to minorities and poverty (e.g., census data), such information is not available specific to fishermen, their households, and those involved in the industries and activities, themselves. To help assess whether any environmental justice concerns arise from the actions in this amendment, a suite of indices were created to examine the social vulnerability of coastal communities. 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. Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the age of five, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figure 3.4.3 provides the social vulnerability of the top recreational communities (**Figure 3.4.1**), top ranking communities based on the number of federal for-hire permits for South Atlantic snapper grouper (**Table 3.4.3**), and top South Atlantic communities with headboats included in the SRHS and with landings by family of snapper grouper species (**Table 3.4.4**). Several South Atlantic communities exceed the threshold of 0.5 standard deviation for at least one of the social vulnerability indices: Marathon, St. Augustine, Miami, Ft. Lauderdale, Stock Island, and Lantana, Florida; Manteo, Morehead City, Wilmington, and Calabash, North Carolina; and Savannah, Georgia. The communities of Miami, Florida and Savannah, Georgia exceed the threshold for all three social vulnerability indices. These communities have substantial vulnerabilities and may be susceptible to further effects from any regulatory changes depending upon the direction and extent of that change.

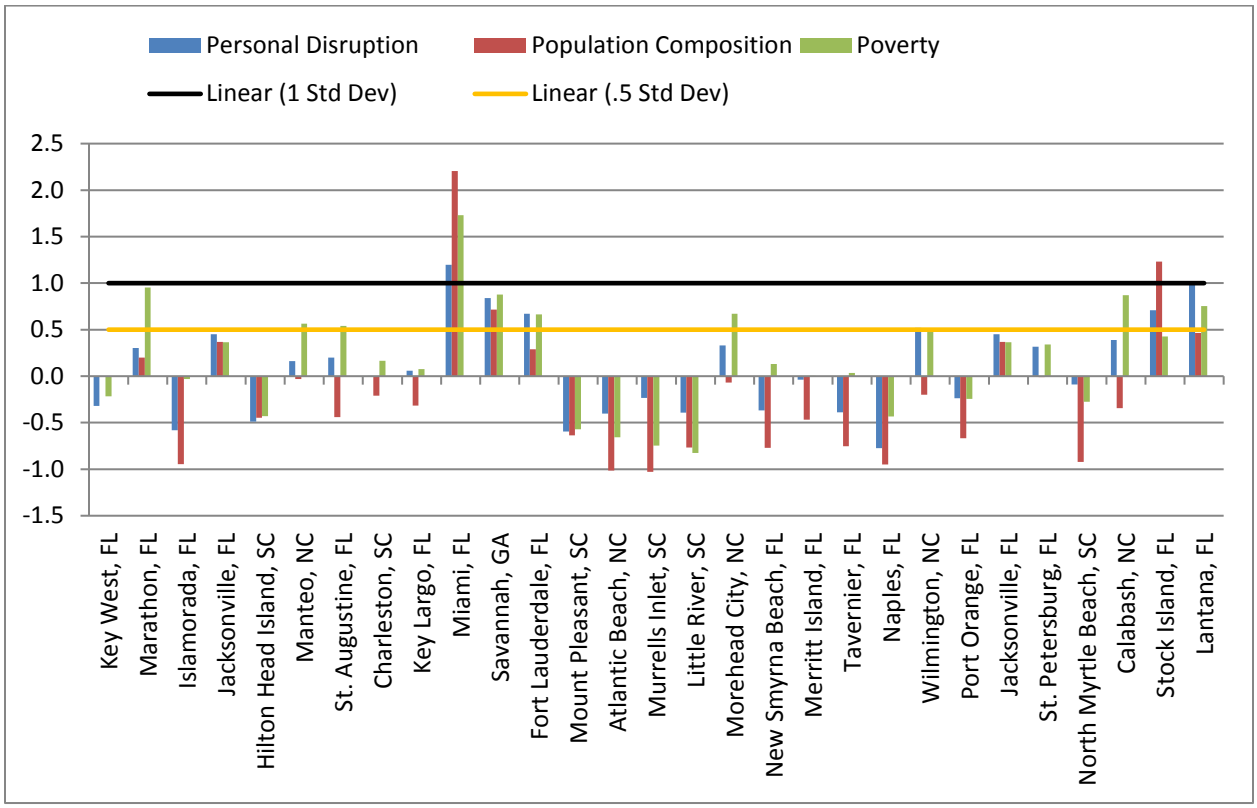

Figure 3.4.3. Social vulnerability indices for top recreational communities.
Source: SERO, Community Social Vulnerability Indicators Database 2014 (American Community Survey 2010-2014).

People in these communities may be affected by fishing regulations in two ways: participation (including targeting, catching, and/or consuming the fish) and employment. Although these communities may have the greatest potential for EJ concerns, no data are available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on specific snapper grouper species (participation). However, the implementation of the proposed actions of this amendment would not discriminate against any group based on their race, ethnicity, or income status because the proposed actions would be applied to all participants in the fishery, although there may be income and/or race or other demographic differences between the average private angler and the average owner of a for-hire fishing business with a federal permit. Thus, the actions of this amendment are not

expected to result in adverse or disproportionate environmental or public health impacts to EJ populations. Although no EJ issues have been identified, the absence of potential EJ concerns cannot be assumed.

3.5 Administrative Environment

3.5.1 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.

3.5.2 State Fishery Management

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

3.5.3 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. Establish a deep-water species aggregate

4.1.1 Biological Effects

Expected Effects to Deep-water Species and Bycatch of Co-Occurring Species

Alternatives proposed under this action would not result in any direct biological effects, positive or negative, relative to **Preferred Alternative 1 (No Action)**. Only the species composition of the grouper and tilefish aggregate would be modified to establish a Deep-water Species Aggregate, and would not alter the manner in which the recreational portion of the snapper grouper fishery is prosecuted.

Alternatives**

1. No Action. Aggregates* currently in place:
Snappers: lane, yellowtail, gray, mutton, cubera, queen, blackfin, and silk.
Grouper and Tilefish: gag, black, red, scamp, yellowfin, yellowmouth, red hind, rock hind, graysby, coney, sand tilefish, snowy, misty, yellowedge, blueline tilefish, and golden tilefish.
20-Fish whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, Atlantic spadefish.
***Wreckfish is not included in an aggregate**

2. Establish a deep-water species aggregate: snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish

3. Establish a deep-water species aggregate: snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, silk snapper, queen snapper, blackfin snapper

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

Establishing a Deep-water Species Aggregate could reduce bycatch, allowing managers to better focus measures and achieve the intended results for species groupings that are being captured together. The action, indirectly, could have positive long-term population effects.

Expected Effects to Protected Species

The alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types. Therefore, there are no additional impacts on Endangered Species Act (ESA)-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.5** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on Essential Fish Habitat (EFH) or EFH-Habitat Areas of Particular Concern are expected to result from any of the alternatives considered for this action (see **Section 3.1.3** and **Appendix H** for detailed descriptions of EFH in the South Atlantic region). Theses predicted effects on EFH and ESA-listed species and designated critical habitats are applicable to all actions in this framework amendment.

4.1.2 Economic Effects

Modifying the species composition of recreational aggregates would not alter the current harvest or use of the resource. As such, there would be no anticipated direct economic effects on private recreational and for-hire participants, associated industries, or communities from **Action 1**.

Specification of aggregates in **Alternative 2** and **Alternative 3** may have indirect economic effects in comparison to **Preferred Alternative 1 (No Action)**, as other management measures that alter fishing behavior and resource use may rely on how the aggregates are specified as far as the species and fisheries that may be affected. These indirect effects are highly dependent on the subsequent management measures chosen and such effects would be addressed in the analyses for these actions.

4.1.3 Social Effects

A description of the communities that would most likely be affected by changes in recreational management of snapper grouper species can be found in **Section 3.4**. These communities have a high reliance on recreational fishing for snapper grouper species and would likely be affected by the establishment of a deep-water species aggregate and associated management measures.

Alternative 2 and **Alternative 3** are expected to have slight indirect positive social effects when compared to **Preferred Alternative 1 (No Action)**. The current aggregates under **Preferred Alternative 1 (No Action)** no longer reflect scientific knowledge of snapper grouper species life histories. The addition of a Deep-water Species Aggregate in **Alternative 2** and **Alternative 3** would allow management measures to be tailored based on species characteristics. Additionally, **Alternative 2** and **Alternative 3** would allow future management measures to better address concerns related to stability of fishing seasons and complexity of regulations as identified by recreational snapper grouper fishermen during the visioning process. Addressing stakeholder concerns by striving for consistency between what fishermen experience on the water and management measures can result in increased trust in the science and management process and long-term positive social effects. However, there are regional differences in the composition of the catch in the South Atlantic region. The timing and importance of different deep-water species can vary considerably by state making it challenging to create consistency throughout the entire region.

4.1.4 Administrative Effects

Preferred Alternative 1 (No Action) would not change the administrative environment from its current condition. Currently, the recreational snapper grouper aggregates and the species composition of these aggregates are already established. Under **Alternative 2** and **Alternative 3**, there would be increased administrative impacts on the National Marine Fisheries Service (NMFS) associated with establishing a Deep-water Species Aggregate, which would be incurred by rulemaking, outreach, and education. The public would have to be informed and educated on changes to the species composition of the snapper grouper aggregates, which would add to the administrative burden in the form of cost and time compared to **Preferred Alternative 1 (No Action)**. Therefore, **Alternative 2** and **Alternative 3** would impose the most administrative burden, followed by **Preferred Alternative 1 (No Action**).

4.2 Action 2. Specify the recreational season for the deep-water species aggregate

4.2.1 Biological Effects

Expected Effects to Deep-water Species and Bycatch of Co-Occurring Species

Under **Action 2**, the South Atlantic Council considered a range of recreational season alternatives for the Deep-water Species Aggregate considered in Alternative 2 of **Action 1** that was intended to meet the needs of recreational fishermen throughout the South Atlantic Council's area of jurisdiction. Access to deep-water species differs in various areas of the South Atlantic due to seasonal factors and distance to productive fishing grounds. For instance, fishermen in south Florida target deep-water species during winter months, when tourism along the coast is high and weather and current patterns allow for fishing in deep water. On the other hand, recreational fishermen in the Carolinas target deep-water species during summer, when weather is mild and tourists frequent that portion of the South Atlantic coast.

Alternatives*

1 (No Action). Fishing for blueline tilefish and snowy grouper is allowed May 1 – Aug 31. Fishing for wreckfish is allowed July 1 – Aug 31. There are no seasonal restrictions on recreational fishing for other deep-water species (misty grouper, yellowedge grouper, and golden tilefish).

2. Allow recreational fishing and possession of species in the deep-water species aggregate annually (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish):
   - 2a. May 1 – Jun 30
   - 2b. May 1 – Aug 31
   - 2c: Jan 1 – End of February
   - 2d: Dec 1 – Jan 31

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

Overall, the recreational seasons for the Deep-water Species Aggregate considered under this action would be expected to result in a decrease in landings. However, with a longer fishing season, there is an increased likelihood that an in-season closure could occur if annual catch limits (ACL) are predicted to be met and accountability measures (AM) are triggered. Thus, with the presence of ACLs and AMs, there might not be much change in the magnitude of recreational landings with a longer fishing season. In addition, estimates of the number of fish landed based on the proposed recreational season alternatives for the Deep-water Species Aggregate can be uncertain. For instance, misty grouper, queen snapper, and wreckfish were not intercepted on charter trips from 2014 to 2016, and misty grouper and wreckfish were not intercepted from 2014 through 2016 on private recreational trips. There were 165 intercepts through the Marine Recreational Information Program (MRIP) of species in the proposed Deep-water Species Aggregate from 2014 through 2016 and 12.1% of the intercepts had multiple deep-water aggregate species reported for a trip.

Sub-alternative 2b would be expected to result in the smallest decrease in landings of species in the proposed Deep-water Species Aggregate compared to landings of those species in 2014-2016 (**Table 4.2.1.1**). On average **Sub-alternatives 2a**, **2b**, **2c**, and **2d** are predicted to result in a reduction in recreational harvest of deep-water species from about 50% to as much as a 97% compared to landings from 2014 to 2016. The combination of **Sub-alternatives 2b** and

2c would result in the smallest decrease in landings of Deep-water Species Aggregate compared to landings for those species in 2014-2016, resulting in an average 35% reduction in landings. The percent reduction in harvest under each of the sub-alternatives would vary by species but based on past catch rates, may not be sufficient to prevent ACLs from being exceeded. It is noted that there were many regulatory changes for blueline tilefish during 2015 and 2016 (e.g., ACL changes and established a recreational season). Also, recreational landings of golden tilefish exceeded the recreational ACL in 2015 and 2016. Snowy grouper landings exceed the recreational ACL in 2014 and 2016 and its ACL was increased in 2015 (**Appendix I**, **Table I-3**). In addition, interpretation of results should consider that harvest of some species occurs in state waters, where regulations may be different than those in federal waters, and all landings from state and federal waters are applied to the ACL.

Table 4.2.1.1. Predicted landings (in numbers of fish) and percent reduction of deep-water aggregate species for **Action 2** based on season alternatives from 2014 to 2016 for (A) deep-water grouper and tilefish (**Action 1 Alternative 2**) and (B) deep-water grouper, tilefish, and snapper (**Action 1 Alternative 3**). Preferred alternative indicated in bold.

(A)

	Year	Pref Alt 1	Sub-Alt 2a	Sub-Alt 2b	Sub-Alt 2c	Sub-Alt 2d	Sub-Alt 2a + 2c	Sub-Alt 2a + 2d	Sub-Alt 2b + 2c	Sub-Alt 2b + 2d
Deepwater Grouper and Tilefish	2014	**30,117**	6,305	14,335	2,531	1,901	8,836	8,206	16,866	16,236
	2015	**20,290**	4,591	7,212	6,226	505	10,817	5,096	13,438	7,717
	2016	**50,545**	10,138	35,045	1,718	1,150	11,856	11,288	36,763	36,195
	2014	Percent Reduction in landings	79.07%	52.40%	91.60%	93.69%	70.66%	72.75%	44.00%	46.09%
	2015		77.37%	64.45%	69.32%	97.51%	46.69%	74.88%	33.77%	61.97%
	2016		79.94%	30.67%	96.60%	97.72%	76.54%	77.67%	27.27%	28.39%
		Average	78.79%	49.17%	85.84%	96.31%	64.63%	75.10%	35.01%	45.48%

(B)

	Year	Pref Alt 1	Sub-Alt 2a	Sub-Alt 2b	Sub-Alt 2c	Sub-Alt 2d	Sub-Alt 2a + 2c	Sub-Alt 2a + 2d	Sub-Alt 2b + 2c	Sub-Alt 2b + 2d
Deepwater Grouper, Tilefish, and Snapper	2014	**32,784**	6,440	14,980	2,771	2,079	9,210	8,519	17,751	17,059
	2015	**23,788**	5,567	9,349	6,373	506	11,940	6,073	15,722	9,855
	2016	**60,530**	11,254	43,516	1,916	1,151	13,170	12,405	45,432	44,667
	2014	Percent Reduction in landings	80.36%	54.31%	91.55%	93.66%	71.91%	74.01%	45.85%	47.97%
	2015		76.60%	60.70%	73.21%	97.87%	49.81%	74.47%	33.91%	58.57%
	2016		81.41%	28.11%	96.83%	98.10%	78.24%	79.51%	24.94%	26.21%
		Average	79.45%	47.70%	87.20%	96.54%	66.65%	76.00%	34.90%	44.25%

Given the paucity of data (see **Tables I-1** and **I-2** in **Appendix I**) and the inability to predict how fishermen might change their behavior in response to the proposed changes in regulations, it

is difficult to determine expected effects. In general, biological benefits would be realized if fishing pressure were to diminish during the time deep-water species are spawning. Current information on spawning activity for several snapper grouper species is summarized in **Table 3.2.1**.[4] Moreover, a prohibition on commercial harvest of wreckfish is in place annually from January 15 through April 15 to protect the spawning stock.

Since all of the proposed alternatives would allow fishing during times of the year when blueline tilefish, golden tilefish, snowy grouper, and wreckfish are spawning, potential biological benefits may not be realized. Sub-alternatives that shorten the duration of fishing activity or shift it away from periods of peak spawning would be expected to impart some biological benefit. As such, **Sub-alternative 2a** may provide some benefit to the golden tilefish stock since harvest would shift away from the period of peak spawning for that species and would limit harvest to two months of the year. In general, **Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d** would be expected to result in greater biological benefits as fishing activity would be constrained to only two months of the year, relative to **Sub-alternative 2b**, which would allow recreational fishing and possession of deep-water species for four months of the year. However, **Sub-alternatives 2c** and **2d** may have direct negative biological impacts on wreckfish since it would allow recreational harvest during a portion of the time the species is spawning and while a closure for the commercial sector is in place. Biological effects would be greatest under alternatives that predict the highest reduction in recreational harvest compared to **Preferred Alternative 1 (No Action)**; hence, individually, **Sub-alternative 2d** would be the most biologically beneficial, followed by **Sub-alternative 2c**, **Sub-alternative 2a**, and **Sub-alternative 2b**. Combining **Sub-alternatives 2b** and **2c** would result in the least biological benefit among all the alternatives considered (and their combinations) since it is predicted to result in the lowest reduction in landings as recreational harvest would be allowed for six months of the year. However, as mentioned previously, AMs are in place to constrain harvest if the ACL is expected to be met. Further, estimates of the number of fish landed based on the proposed recreational season alternatives for the Deep-water Species Aggregate can be uncertain.

Aligning the fishing season between species likely to co-occur should minimize discards as fishers would likely be targeting species in the Deep-water Species Aggregate at the same time. However, discards could also increase if the ACL is reached for one of the species in the aggregate, causing a closure for that one species while the season is still open for other species in the aggregate.

4.2.2 Economic Effects

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus (CS). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips, both private and for-hire. While CS estimates specifically for deep-

[4] https://www.fisheries.noaa.gov/species/wreckfish

water species are not available, there are generic estimates for grouper and snapper species. The estimated value of the CS for catching and keeping a snapper is $12.54 and approximately $103 for the second grouper on an angler trip (2016 dollars[5]) (**Section 3.3.2**).

Recreational landings of deep-water species have been variable and in many cases landings data are sparse (**Section 4.2.1**). Nevertheless, while not accounting for likely changes in angling behavior, past landings can be used to project the effects of changes in the fishing season within **Action 2**. Overall, specifying a recreational season for the deep-water aggregate is expected to result in a decrease in landings and thus a decrease in CS. To estimate the economic effects from changes in harvest, average landings for deep-water species (both inclusive and exclusive of deep-water snappers) in numbers of fish from 2014-2016 were examined and compared to the anticipated mean reductions (**Table 4.2.1.1)** to provide an estimated reduction in recreational landings **(Table 4.2.2.1)**. The reductions were then multiplied by the appropriate CS value per fish to produce an estimated change in total CS that may result from the sub-alternatives of **Alternative 2** (**Table 4.2.2.2**). A marginal CS estimate for generic snapper of $12.54 (2016 dollars) per fish was applied to landings of queen snapper, blackfin snapper, and silk snapper (deep-water snappers) while a generic grouper value of $103 (2016 dollars) was applied to landings of other deep-water species being considered (blueline tilefish, golden tilefish, snowy grouper, wreckfish, misty grouper, and yellowedge grouper). The estimated changes in recreational landings and CS are provided for both deep-water grouper and tilefish (**Action 1 Alternative 2**) as well as deep-water grouper, tilefish, and snapper (**Action 1 Alternative 3**).

Table 4.2.2.1. Estimated change in recreational landings of deep-water species for **Action 2** in comparison to status quo (**Preferred Alternative 1 (No Action)**) (numbers of fish).

Sub-Alternative	Deep-water Grouper and Tilefish[1]	Deep-water Grouper, Tilefish, and Snapper[2]
Sub-alt 2a	-26,639	-31,280
Sub-alt 2b	-14,787	-16,419
Sub-alt 2c	-30,159	-35,347
Sub-alt 2d	-32,465	-37,789
Sub-alt 2a + Sub-alt 2c	-23,148	-27,594
Sub-alt 2a + Sub-alt 2d	-23,283	-27,173
Sub-alt 2b + Pref. Sub-alt 2c	-11,627	-13,229
Sub-alt 2b + Sub-alt 2d	-14,556	-16,187

[1]Includes snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish (**Action 1, Alternative 2**).
[2]Includes snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, silk snapper, queen snapper, and blackfin snapper (**Action 1, Alternative 3**).

[5] Converted to 2016 dollars using the annual gross domestic product implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Table 4.2.2.2. Estimated change in consumer surplus for **Action 2** in comparison to status quo (**Preferred Alternative 1 (No Action)**) (2016 dollars).

Sub-Alternative	Deep-water Grouper and Tilefish[1]	Deep-water Grouper, Tilefish, and Snapper[2]	Short-term Economic Rank[3]
Sub-alt 2a	-$2,743,851	-$2,802,049	7
Sub-alt 2b	-$1,523,027	-$1,543,496	4
Sub-alt 2c	-$3,106,377	-$3,171,439	8
Sub-alt 2d	-$3,343,929	-$3,410,684	9
Sub-alt 2a + Sub-alt 2c	-$2,384,210	-$2,439,967	5
Sub-alt 2a + Sub-alt 2d	-$2,398,183	-$2,446,960	6
Sub-alt 2b + Pref. Sub-alt 2c	-$1,197,615	-$1,217,700	2
Sub-alt 2b + Sub-alt 2d	-$1,499,268	-$1,519,721	3

[1]Includes snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish (**Action 1, Alternative 2**).
[2]Includes snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, silk snapper, queen snapper, and blackfin snapper (**Action 1, Alternative 3**).
[3] **Preferred Alternative 1 (No Action)** would rank 1st, as it does not have anticipated negative short-term economic effects.

Based on the anticipated reduction in landings, the projected change in consumer surplus resulting from the sub-alternatives of **Alternative 2** range from approximately -$1.52 million to -$3.3 million (2016 dollars) (**Table 4.2.2.2**). For **Sub-alternative 2b**, the estimated change in consumer surplus is approximately -$1.52 million for the species under **Alternative 2** in **Action 1**. For **Sub-alternative 2c**, the estimated change in consumer surplus is approximately -$3.1 million for the species under **Alternative 2** in **Action 1**. In combination, the estimated change in consumer surplus for **Sub-alternative 2b** and **2c** is approximately -$1.2 million for the species under **Alternative 2** in **Action 1**. It is noted that angler behavior is highly likely to adapt to the new seasons specified in **Action 2**, with realized reductions in harvest being less than reductions projected based on previous years of fishing behavior. As such, the provided estimated reductions in CS may be viewed as a likely upper range estimate of the potential direct negative economic effects resulting from this action. Under **Preferred Alternative 1 (No Action)** there would be no anticipated change in landings and thus an expected change in CS of $0.

The difficulty in projecting changes in fishing behavior combined with the relative uncertainty in landings estimates for deep-water species, makes quantifying the realized projected change in recreational landings challenging. Nevertheless, ranking of alternatives provides qualitative information on how the effects of the different alternatives may compare to one another. Based on the results found in **Table 4.2.2.2**, **Preferred Alternative 1 (No Action)** is anticipated to have lowest negative economic effects, followed by **Sub-alternative 2b, Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d.**

4.2.3 Social Effects

Establishing a recreational season for deep-water species under **Alternative 2** could change the level of access to the aggregate during periods when participation in that portion of the snapper grouper fishery is highest. However, long-term biological benefits of maintaining a healthy stock would contribute to future fishing opportunities for the recreational sector and direct and indirect social benefits. As noted in **Section 4.2.1**, blueline tilefish, silk snapper, and snowy grouper are most the commonly reported deep-water species landed during private recreational and for-hire trips. Communities reliant on these species are most likely to experience the social effects associated with specification of a season for the Deep-water Species Aggregate.

The longer season under **Sub-alternative 2b** would result in the smallest decrease in deep-water species landings and is expected to be more beneficial to fishermen and communities than those proposed under **Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d** as deep-water species would be expected to be available to recreational fishermen for a longer period of time (**Table 4.2.1.1**). However, AMs could be triggered if an ACL was expected to be met, which could result in an in-season closure. When combined, **Sub-alternatives 2b** and **2c** result in the smallest percent reduction in landings; a 35.01% reduction compared to 49.17% under **Sub-alternative 2b** alone (**Table 4.2.1.1**). Overall, longer seasons result in increased fishing opportunities for the recreational sector and increased revenue opportunities for the for-hire sector, so long as overharvest during peak spawning does not occur to negatively affect the long-term health of the stock or result in an early closure due to ACL being reached. Additionally, when combined, **Sub-alternatives 2b** and **2c** allow access to deep-water species in both the summer and winter months, respectively. This combination of alternatives would address regional differences in when fishing communities are able to access deep-water species, assuming the ACL was not met resulting in an early closure. If the ACL is met or projected to be met during the first season, resulting in an in-season closure, fishermen who only have access to deep-water species in the second season would experience direct negative social effects associated with decreased fishing opportunities. Ensuring deep-water species can be harvested at various times throughout the year would ensure the realization of long-term social benefits to all South Atlantic fishing communities reliant on deep-water species.

Alternative 2 would decrease regulatory complexity. Under **Preferred Alternative 1 (No Action)**, deep-water species are managed under different seasonal closures or no closure at all. **Alternative 2** would align the seasonal closure for all deep-water species, creating consistency in management for species with similar habitat preferences that are often caught together. This would directly benefit both the private and for-hire components of the recreational sector who rely on harvest for a species being open during set times of the year to schedule trips. This predictability is especially important for fishing communities in the South Atlantic that require long travel times to reach productive fishing grounds for deep water species. Additionally, if consistency in management measures for deep-water species decreases regulatory discards, long-term improvements to the sustainability of the resource would ensure long-term social benefits continue to be realized by fishing communities. Alternatively, **Alternative 2** would decrease access to those species that do not currently have seasonal restrictions. Furthermore, closing all deep-water species during the same time period could negatively impact recreational fishermen and fishing businesses who primarily target deep-water species.

4.2.4 Administrative Effects

Currently, the recreational snapper grouper aggregates and the species composition of these aggregates are already established. Under **Alternative 2** (and its sub-alternatives), there would be increased administrative impacts associated with establishing a recreational fishing season for the Deep-water Species Aggregate (considered in Alternatives 2 and 3 of **Action 1)**, which would include outreach to notify and educate the public, and more law enforcement efforts to enforce the regulations. The public would first have to be informed and educated on changes to the species composition of the snapper grouper aggregates, and then to the changes to the recreational fishing seasons for the Deep-water Species Aggregate. **Preferred Alternative 1 (No Action)** would impose the least administrative burden to inform and educate the public since this alternative would not change the administrative environment from its current condition. **Sub-alternative 2b**, which would not change the season for two of the deep-water species, followed by **Sub-alternatives 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d,** would be the largest change from the status quo for each of the deep-water species, so these alternatives would impose the greatest administrative burden to inform and educate the public. However, alternatives that specify a consistent seasonal prohibition for deep-water species throughout the South Atlantic Council's jurisdiction may be easier for the public to understand, resulting in less time and lower costs to inform and educate the public. Overall, administrative effects expected from **Preferred Alternative 1 (No Action)** would be the least burdensome on NMFS, followed by **Sub-alternatives 2b, 2a**, **2c**, and **2d**.

4.3 Action 3. Specify the aggregate bag limit for the deep-water species aggregate

4.3.1 Biological Effects

Proposed aggregate bag limit alternatives for deep-water species were analyzed in combination with proposed recreational season alternatives under **Action 2**. Refer to **Appendix I** for detailed analytical methodology.

Table 4.3.1.1 shows estimates of the number of trips reaching different bag limits. While some deep-water species have bag limits of three fish per person or less (blueline tilefish, snowy grouper, golden tilefish and wreckfish), queen snapper, silk snapper and blackfin snapper are currently included in the 10-snapper aggregate. Also, as mentioned in **Section 4.2.1**, regulations on the harvest of some species are different in state versus federal waters. Very few of the trips examined reached the maximum proposed bag limit of three fish per person per day even if the Deep-water Species Aggregate were to include the three deep-water snappers (**Action 1, Alternative 3**), which would result in the most species included in the aggregate bag limit.

Alternatives*

1 (No Action). Aggregate bag limits currently in place:
Grouper and Tilefish: Three per person per day: red, scamp, yellowfin, yellowmouth, red hind, rock hind, graysby, coney, sand tilefish, snowy, misty, yellowedge, blueline tilefish, and golden tilefish. Within the aggregate: one gag or black grouper; one snowy grouper per *vessel* per day; one golden tilefish per person per day.

The bag limit for wreckfish is one per *vessel* per day.

2. Specify the aggregate bag limit for the deep-water species aggregate (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish)

- 2a. One per person per day.
- 2b. One per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.
- 2c. Two per person per day.
- 2d. Two per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.
- 2e. Three per person per day.
- 2f. Three per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.

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

Table 4.3.1.1. Percent of trips reaching combined bag limits for deep-water species (**Action 1 Alternative 3**) from 2014 to 2016. Trips from MRIP were expanded using expansion factors and headboat estimates were developed from reports in the SRHS.

Number Kept Per Person	2014	2015	2016
All Released	15.95%	9.52%	1.44%
Less than 1 per person	50.88%	67.79%	67.10%
1 to 1.99	17.33%	21.54%	9.35%
2 to 2.99	12.57%	1.12%	12.27%
3 to 3.99	2.09%	0.02%	6.32%
4 to 4.99	0.83%	0.01%	0.55%
5 to 5.99	0.00%	0.01%	0.00%
6 to 6.99	0.33%	0.00%	1.24%
Greater than 7	0.01%	0.00%	1.74%

Expected Effects to Deep-water Species and Bycatch of Co-Occurring Species

Landings for all species in the Deep-water Species Aggregate considered in Alternatives 2 and 3 of **Action 1** were combined and then averaged to determine the effect of the proposed aggregate bag limits. Each bag limit alternative was combined with the proposed recreational season sub-alternatives under **Action 2 (Table 4.3.1.2)**. Estimates at the species-level are not possible due to insufficient data, but it can be assumed most of the reduction in landings of the Deep-water Species Aggregate would be due to changes in the harvest of blueline tilefish, silk snapper, and snowy grouper since these species make up the majority of the landings. Most of the alternatives resulted in a decrease of Deep-water Species Aggregate landings mainly due to the effect of imposing a recreational season under **Action 2**. The smallest reduction in landings would occur under a three-fish bag limit with minor differences between **Sub-Alternative 2e** (three fish per person per day) and **Sub-alternative 2f** (three fish per person per day but maintaining existing restrictions for golden tilefish, snowy grouper, and wreckfish), and **Sub-alternative 2c** (two fish per person per day). The largest reduction is predicted under **Sub-alternative 2b** (one fish per person per day maintaining restrictions on golden tilefish, snowy grouper, and wreckfish) followed by **Sub-alternative 2d** (2 fish per person per day maintaining restrictions on golden tilefish, snowy grouper, and wreckfish). This is expected since current regulations limit recreational harvest of snowy grouper and wreckfish to one per *vessel* per day. Similarly, **Sub-alternatives 2b**, **2d,** and **Sub-alternative 2f** resulted in higher landing reductions compared to the corresponding alternatives that did not propose retaining current possession limits on golden tilefish, snowy grouper, and wreckfish since golden tilefish and snowy grouper are two of the more common deep-water species being landed.

The expected biological effects of proposed aggregate bag limits (**Alternative 2** and its sub-alternatives) for deep-water species would be neutral relative to **Preferred Alternative 1 (No Action)** in terms of risk of overfishing since ACLs are in place to maintain harvest at levels that prevent overfishing and AMs are triggered to correct for overages. **Sub-alternatives 2b** and **2d**, and **Sub-alternative 2f** maintain more conservative regulations on the harvest of golden tilefish, snowy grouper, and wreckfish and would thus be expected to be more biologically beneficial to those species than **Sub-alternatives 2a**, **2c**, and **2e**.

Bycatch and discards could increase, decrease, or remain the same with this action. A more restrictive bag limit can encourage discards from high-grading if the bag limit has been met. Bycatch and discards could also decrease if fishers stop fishing or move to water unlikely to encounter a deep-water species once the aggregate bag limit has been met.

Table 4.3.1.2. Average estimated landings (in numbers of fish) and percent reduction for **Action 3 Sub-Alternatives 2a-2f** (bag limit) combined with **Action 1 Alternatives 2** (A) and **3** (B) and **Action 2 Alternatives 2a-2d** (recreational season). Aggregate bag limit sub-alternatives that would maintain exiting restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. The reductions are based on comparing to the status quo for both actions.

(A)

Deep-water Grouper and Tilefish (Action 1 Alt 2)									
	Recreational season (Action 2) sub-alternatives								
Bag limit (Action 3) sub-alts	**Pref. Alt 1 (No action)**	**2a**	**2b**	**2c**	**2d**	**2a + 2c**	**2a + 2d**	**2b + 2c**	**2b + 2d**
1	**33,651**	**7,012**	**18,864**	**3,491**	**1,185**	**10,503**	**8,197**	**22,356**	**20,050**
2a (1 fish)	25,950	6,883	14,484	6,924	7,458	13,806	14,341	21,408	21,943
2b (1 fish*)	22,045	5,411	11,378	2,918	1,020	8,329	6,431	14,295	12,398
2c (2 fish)	33,671	9,121	19,966	9,723	10,320	18,845	19,441	29,689	30,286
2d (2 fish*)	27,805	6,625	16,895	3,449	1,177	10,074	7,803	20,344	18,073
2e (3 fish)	35,883	9,459	21,949	11,061	11,739	20,520	21,198	33,010	33,688
2f (3 fish*)	30,002	6,993	18,806	3,478	1,185	10,471	8,178	22,284	19,991
2a (1 fish)		79.55%	56.96%	79.42%	77.84%	58.97%	50.04%	36.38%	34.79%
2b (1 fish*)		83.92%	66.19%	91.33%	96.97%	75.25%	74.53%	57.52%	63.16%
2c (2 fish)		72.89%	40.67%	71.10%	69.33%	44.00%	32.31%	11.77%	10.00%
2d (2 fish*)		80.31%	49.79%	89.75%	96.50%	70.06%	67.99%	39.54%	46.29%
2e (3 fish)		71.89%	34.77%	67.13%	65.11%	39.02%	25.50%	1.90%	-0.11%
2f (3 fish*)		79.22%	44.11%	89.66%	96.48%	68.88%	65.16%	33.78%	40.59%

(B)

Deep-water Grouper, Tilefish, and Snapper (Action 1 Alt 3)									
	Recreational season (Action 2) sub-alternatives								
Bag limit (Action 3) sub-alts	**Pref Alt 1 (no action)**	**2a**	**2b**	**2c**	**2d**	**2a + 2c**	**2a + 2d**	**2b + 2c**	**2b + 2d**
1	**39,034**	**7,753**	**22,615**	**3,686**	**1,245**	**11,440**	**11,861**	**26,302**	**23,860**
2a (1 fish)	29,505	7,538	16,776	8,183	8,780	15,721	16,318	24,959	25,556
2b (1 fish*)	25,817	6,134	13,737	3,081	1,063	9,215	7,196	16,818	14,800
2c (2 fish)	37,074	9,640	22,207	11,173	11,860	20,814	21,500	33,380	34,066
2d (2 fish*)	31,609	7,271	19,392	3,600	1,237	10,871	8,508	22,992	20,629
2e (3 fish)	39,446	9,958	24,366	12,730	13,498	22,688	23,456	37,096	37,864
2f (3 fish*)	33,820	7,564	21,388	3,614	1,245	11,178	8,809	25,002	22,633
2a (1 fish)		80.69%	57.02%	79.04%	77.51%	59.73%	58.19%	36.06%	34.53%
2b (1 fish*)		84.29%	64.81%	92.11%	97.28%	76.39%	81.56%	56.91%	62.09%
2c (2 fish)		75.30%	43.11%	71.38%	69.62%	46.68%	44.92%	14.49%	12.73%
2d (2 fish*)		81.37%	50.32%	90.78%	96.83%	72.15%	78.20%	41.10%	47.15%
2e (3 fish)		74.49%	37.58%	67.39%	65.42%	41.88%	39.91%	4.96%	3.00%
2f (3 fish*)		80.62%	45.21%	90.74%	96.81%	71.36%	77.43%	35.95%	42.02%

4.3.2 Economic Effects

The economic effects of **Action 3** would be highly dependent on the species chosen to be included in the deep-water aggregate in **Action 1** as well as the season length that is chosen for the deep-water species in **Action 2**. Sub-alternatives that lead to higher harvest reductions can be assumed to have larger negative direct economic effects, however, the economic effects would also be dependent on the species that are impacted. In **Action 3**, **Sub-alternative 2a** is less restrictive than current measures for snowy grouper and wreckfish, with **Sub-alternatives 2c** and **2e** being less restrictive for golden tilefish, snowy grouper, and wreckfish. As such, it is possible that harvest for these species may increase, thereby, increasing the CS attributed to these species as well.

To estimate the economic effects from changes in harvest, projected landings for deep-water species (both inclusive and exclusive of deepwater snappers) in numbers of fish from **Table 4.3.1.2** were examined to provide an estimated change in recreational landings (**Table 4.3.2.1** and **Table 4.3.2.2**). The change in landings were then multiplied by the appropriate CS value per fish to produce an estimated change in total CS that may result from the sub-alternatives of **Action 3** (**Table 4.3.2.3** and **Table 4.3.2.4**). A generic snapper value of $12.54 (2016 dollars) per fish was applied to landings of queen snapper, blackfin snapper, and silk snapper (deepwater snappers) while the generic grouper value of $103 (2016 dollars) per fish was applied to landings of all other deep-water species being considered (blueline tilefish, golden tilefish, snowy grouper, wreckfish, misty grouper, and yellowedge grouper) (**Section 3.3.2**). The estimated changes in recreational landings and CS are provided for both deep-water grouper and tilefish (**Action 1 Alternative 2**) as well as deep-water grouper, tilefish, and snapper (**Action 1 Alternative 3**). Additionally, potential deep-water species seasons found in **Action 2** were also applied.

The anticipated marginal change in landings and CS solely from applying bag limits in **Action 3** can be seen in each table under the column for **Action 2**, **Preferred Alternative 1 (No Action)**. Based on the anticipated reduction in landings, the projected change in CS resulting solely from the sub-alternatives of **Alternative 2** in **Action 3** range from approximately-$1,216,000 to $230,000 (2016 dollars) **(Table 4.3.2.3** and **Table 4.3.2.4)**. For **Sub-alternative 2f**, the estimated change in CS is approximately -$376,000 to -$396,000, depending on the species chosen in **Action 1**. Under **Preferred Alternative 1 (No Action)** there would be no anticipated change in landings and thus an expected change in CS of $0. Estimated cumulative economic effects for varying combinations of **Actions 1, 2,** and **3** can also be found in **Table 4.3.2.3** and **Table 4.3.2.4.** It is noted that angler behavior is highly likely to adapt to the new seasons specified in **Action 2**, with realized reductions in harvest being less than reductions projected based on previous fishing behavior. As such, the provided estimated reductions in CS may be viewed as a relatively upper range estimate of the potential negative economic effects resulting from this action.

Based on anticipated reductions in harvest when paired with **Action 3** (**Tables 4.3.2.1** through **4.3.2.4**), **Sub-alternative 2e** would be expected to have the greatest short-term positive economic effect, followed by **Sub-alternative 2c** and **Preferred Alternative 1 (No Action)**, **Sub-alternative 2f**, **Sub-alternative 2d**, **Sub-alternative 2a**, and **Sub-alternative 2b** (**Table 4.3.2.5**).

Table 4.3.2.1. Estimated change in recreational landings of deep-water species for **Action 3,** in comparison to **Action 1, Alternative 2** and **Action 2** (numbers of fish). Aggregate bag limit sub-alternatives that would maintain existing restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. Preferred alternative in bold.

Deep-water Grouper and Tilefish (Action 1 Alt 2)									
Recreational Season Sub-alternatives (Action 2)									
Bag Limit Sub-Alts (Action 3)	**Pref Alt. 1**	**2a**	**2b**	**2c**	**2d**	**2a+2c**	**2a+2d**	**2b+2c**	**2b+2d**
1	**0**	**-26,639**	**-14,787**	**-30,160**	**-32,466**	**-23,148**	**-25,454**	**-11,295**	**-13,601**
2a: 1 fish	-7,701	-26,768	-19,167	-26,727	-26,193	-19,845	-19,310	-12,243	-11,708
2b: 1 fish*	-11,606	-28,240	-22,273	-30,733	-32,631	-25,322	-27,220	-19,356	-21,253
2c: 2 fish	20	-24,530	-13,685	-23,928	-23,331	-14,806	-14,210	-3,953	-3,365
2d: 2 fish*	-5,846	-27,026	-16,756	-30,202	-32,474	-23,577	-25,848	-13,307	-15,578
2e: 3 fish	2,232	-24,192	-11,702	-22,590	-21,912	-13,131	-12,453	-641	37
2f: 3 fish*	-3,649	-26,658	-14,845	-30,173	-32,466	-23,180	-25,473	-11,367	-13,660

Table 4.3.2.2. Estimated change in recreational landings of deep-water species for **Action 3** in comparison to **Action 1, Alternative 3** and **Action 2** (numbers of fish). Aggregate bag limit sub-alternatives that would maintain existing restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. Preferred alternative in bold.

Deepwater Grouper, Tilefish, and Snapper (Action 1 Alt 3)									
Recreational Season Sub-alternatives (Action2)									
Bag Limit Sub-Alts (Action 3)	**Pref Alt. 1**	**2a**	**2b**	**2c**	**2d**	**2a+2c**	**2a+2d**	**2b+2c**	**2b+2d**
1	**0**	**-31,281**	**-16,419**	**-35,348**	**-37,789**	**-27,594**	**-30,035**	**-12,732**	**-15,174**
2a: 1 fish	-9,529	-31,496	-22,258	-30,851	-30,254	-23,313	-22,716	-14,075	-13,478
2b: 1 fish*	-13,217	-32,900	-25,297	-35,953	-37,971	-29,819	-31,838	-22,216	-24,234
2c: 2 fish	-1,960	-29,394	-16,827	-27,861	-27,174	-18,220	-17,534	-5,654	-4,968
2d: 2 fish*	-7,425	-31,763	-19,642	-35,434	-37,797	-28,163	-30,526	-16,042	-18,405
2e: 3 fish	412	-29,076	-14,668	-26,304	-25,536	-16,346	-15,578	-1,938	-1,170
2f: 3 fish*	-5,214	-31,470	-17,646	-35,420	-37,789	-27,856	-30,225	-14,032	-16,401

Table 4.3.2.3. Estimated change in consumer surplus for deep-water species for **Action 3** in comparison to **Action 1, Alternative 2** and **Action 2** (2016 dollars). Aggregate bag limit sub-alternatives that would maintain existing restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. Preferred alternative in bold.

Deep-water Grouper and Tilefish (Action 1 Alt 2)									
Recreational Season Sub-alternatives (Action 2)									
Bag Limit Sub-alts (Action 3)	**1**	**2a**	**2b**	**2c**	**2d**	**2a + 2c**	**2a + 2d**	**2b + 2c**	**2b + 2d**
1	**$0**	**-$2,743,817**	**-$1,523,061**	**-$3,106,480**	**-$3,343,998**	**-$2,384,244**	**-$2,621,762**	**-$1,163,385**	**-$1,400,903**
2a: 1 fish	-$793,203	-$2,757,104	-$1,974,201	-$2,752,881	-$2,697,879	-$2,044,035	-$1,988,930	-$1,261,029	-$1,205,924
2b: 1 fish*	-$1,195,418	-$2,908,720	-$2,294,119	-$3,165,499	-$3,360,993	-$2,608,166	-$2,803,660	-$1,993,668	-$2,189,059
2c: 2 fish	$2,060	-$2,526,590	-$1,409,555	-$2,464,584	-$2,403,093	-$1,525,018	-$1,463,630	-$407,159	-$346,595
2d: 2 fish*	-$602,138	-$2,783,678	-$1,725,868	-$3,110,806	-$3,344,822	-$2,428,431	-$2,662,344	-$1,370,621	-$1,604,534
2e: 3 fish	$229,896	-$2,491,776	-$1,205,306	-$2,326,770	-$2,256,936	-$1,352,493	-$1,282,659	-$66,023	$3,811
2f: 3 fish*	-$375,847	-$2,745,774	-$1,529,035	-$3,107,819	-$3,343,998	-$2,387,540	-$2,623,719	-$1,170,801	-$1,406,980

Table 4.3.2.4. Estimated change in consumer surplus for deep-water species for **Action 3** in comparison to **Action 1, Alternative 3** and **Action 2** (2016 dollars). Aggregate bag limit sub-alternatives that would maintain existing restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. Preferred alternative in bold.

Deep-water Grouper, Tilefish, and Snapper (Action 1 Alt 3)									
Recreational Season Sub-alternatives (Action 2)									
Bag Limit Sub-alts (Action 3)	**1**	**2a**	**2b**	**2c**	**2d**	**2a + 2c**	**2a + 2d**	**2b + 2c**	**2b + 2d**
1	**$0**	**-$2,802,028**	**-$1,543,526**	**-$3,171,538**	**-$3,410,748**	**-$2,439,997**	**-$2,679,208**	**-$1,181,405**	**-$1,420,628**
2a: 1 fish	-$816,126	-$2,816,393	-$2,012,962	-$2,804,596	-$2,748,804	-$2,087,524	-$2,031,641	-$1,284,002	-$1,228,120
2b: 1 fish*	-$1,215,620	-$2,967,156	-$2,332,040	-$3,230,958	-$3,427,957	-$2,664,558	-$2,861,570	-$2,029,532	-$2,226,441
2c: 2 fish	-$22,769	-$2,587,585	-$1,448,956	-$2,513,904	-$2,451,284	-$1,567,830	-$1,505,313	-$428,490	-$366,697
2d: 2 fish*	-$621,939	-$2,843,080	-$1,762,058	-$3,176,415	-$3,411,572	-$2,485,939	-$2,721,006	-$1,404,918	-$1,639,985
2e: 3 fish	$207,073	-$2,553,021	-$1,242,500	-$2,373,344	-$2,302,381	-$1,392,809	-$1,321,847	-$82,287	-$11,325
2f: 3 fish*	-$395,472	-$2,806,116	-$1,564,160	-$3,173,616	-$3,410,748	-$2,446,177	-$2,683,309	-$1,204,220	-$1,441,352

Table 4.3.2.5. Estimated economic ranking of alternatives in **Action 3**. Aggregate bag limit sub-alternatives that would maintain existing restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. Preferred alternative in bold.

Alternative/Sub-alternative	Short-term Economic Rank
Alternative 1 (No Action)	**3**
Sub-alternative 2a (1 fish)	6
Sub-alternative 2b (1 fish*)	7
Sub-alternative 2c (2 fish)	2
Sub-alternative 2d (2 fish*)	5
Sub-alternative 2e (3 fish)	1
Sub-alternative 2f (3 fish*)	4

4.3.3 Social Effects

In general, the social effects of modifying the recreational bag or vessel limit would be associated with the biological costs of each alternative (see **Section 4.3.1**), as well as the effects on current recreational fishing opportunities. Different levels of recreational fishing opportunities under each alternative could affect recreational anglers and for-hire businesses targeting deep-water species. The social effects of bag limits can be associated with how many and at what times of year (**Action 2**) the recreational catch may be retained. Additionally, any long-term negative biological effects on the stock due to recreational landings from higher bag limits, or dead discards due to lower bag limits, would also likely result in negative effects on recreational fishing opportunities in future years. In general, the greatest social benefits would result from a bag limit that has the largest portion of the year open to recreational harvest, with the highest number of fish per person.

All sub-alternatives under **Alternative 2** would result in a decrease in fishing opportunities for deep-water species, in part due to the seasons suggested in **Action 2**. **Sub-alternatives 2a**, **2c**, and **2e** propose to remove the existing restrictions for golden tilefish, snowy grouper, and wreckfish and are likely to result in direct positive social effects in the short run. These gains would be most beneficial for communities with high recreational reliance on golden tilefish, snowy grouper, and wreckfish. However, removing the restrictive bag limits for these species is expected to have negative biological consequences (see **Section 4.3.1**). **Sub-alternatives 2b**, **2d**, and **Sub-alternative 2f** would preserve the bag limits for golden tilefish (one per person per day), snowy grouper (one per vessel per day), and wreckfish (one per vessel per day) and would provide direct and indirect social benefits to communities in the long run. Blueline tilefish and snowy grouper are the deep-water species most commonly caught on recreational and for-hire trips. The social effect of increasing or decreasing access to these species is expected to have the greatest impact on fishing communities engaged in the deep-water fisheries.

Overall, **Sub-alternative 2e** results in the smallest reduction to recreational landings thus providing higher recreational fishing opportunities. However, **Sub-alternative 2e**, as well as **Sub-alternatives 2a** and **2c**, are anticipated to have a negative biological effect which may prevent the realization of long-term social benefits to communities reliant on deep-water species. **Sub-alternative 2b**, **2d**, and **2f** would maintain conservative regulations on snowy grouper, golden tilefish, and wreckfish, providing lower recreational fishing opportunities and would

negatively affect recreational anglers and for-hire businesses targeting deep-water species in the short term. However, more conservative harvest limits may be more beneficial to fishing communities in the long-term by preventing overharvest and providing for consistent fishing opportunities and profit for for-hire businesses.

Additionally, **Alternative 2** and its sub-alternatives would decrease regulatory complexity. Under **Preferred Alternative 1 (No Action)**, deep-water species would be managed under different bag limits. **Sub-alternatives 2a**, **2c**, and **2e** would reduce regulatory complexity the most by creating one consistent bag limit for all deep-water species.

4.3.4 Administrative Effects

Currently, the recreational snapper grouper aggregates, and the species composition and bag limits of these aggregates, are already established. Specifying the bag limits for the Deep-water Species Aggregate considered in **Alternative 2** (and its sub-alternatives) of **Action 3** would require outreach to notify and educate the public, and more law enforcement efforts to enforce the regulations, when compared with **Preferred Alternative 1 (No Action)**, which would not change the administrative environment from its current condition. However, since bag limits are already in place, the effects to the administrative environment are not expected to be unusually burdensome. **Sub-alternatives 2c** and **2a**, would be the most burdensome since these alternatives would impose the greatest change to bag limits for these species from the status quo, followed by **Sub-alternatives 2b**, **2d**, and **2e**. However, **Sub-alternatives 2a**, **2c**, and **2e** would specify a consistent aggregate bag limit year-round for all of the deep-water species within the aggregate, may be easier for the public to understand, resulting in less time and lower costs to inform and educate the public. However, the bag limits for the deep-water species under **Sub-alternative 2f** would ultimately specify the same bag limits as **Preferred Alternative 1 (No Action)**; therefore overall administrative effects on NMFS expected from **Preferred Alternative 1 (No Action**) and **Sub-alternative 2f** would be the least burdensome, when compared with **Sub-alternatives 2a-2e**.

4.4. Action 4. Remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper

4.4.1 Biological Effects

Expected Effects to Deep-water Species and Bycatch of Co-Occurring Species

Removing the 12-inch total length (TL) minimum size limit for queen snapper, silk snapper, and blackfin snapper is expected to increase the landings of these deep-water snapper species by 334 fish over the three years (2014-2016) or 111 fish per year (**Table 4.4.1.1**). The potential increase in harvest is not likely to result in the recreational ACL for the Deep-water Complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, and blackfin snapper) being reached. The estimates of landings of Deep-water Complex species can be uncertain.

Alternatives*

1 (No Action). The recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper is 12 inches total length.

2. Remove the 12-inch total length recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper

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

Table 4.4.1.1. Estimated increase in deep-water snapper (queen, silk, and blackfin) landings (in numbers of fish) as a result of **Preferred Alternative 2**, removing the 12-inch minimum size limit, compared to **Alternative 1 (No Action)**.

Species	Average Increase in Number	Average Percent Increase in Number	Average Increase in Weight (ww)
Blackfin Snapper	76	7.4%	134
Queen Snapper	0	0.0%	0
Silk Snapper	35	1.6%	67

Available data suggest minimal changes in discard or harvest rates would be expected under **Preferred Alternative 2** as queen snapper, silk snapper, and blackfin snapper are not caught in high numbers recreationally. Thus, biological effects of **Preferred Alternative 2** would be neutral compared to **Alternative 1 (No Action)** as removing the minimum size limit would not be expected to have an effect on overall harvest, which is limited by the ACL, and AMs are in place to prevent the ACL from being exceeded.

Minimum size limits can cause increased regulatory discarding and, depending on depth of capture, may increase discard mortality. Deep-water species generally have high discard mortality rates due to barotrauma. When reeled in from various water depths, expansion of gas in a fish's swim bladder causes bloating and prevents the fish from regulating its buoyancy. Venting (puncturing the swim bladder with a needle to release gas) or use of descending devices to assist fish to return to depth can increase release survival. However, even with venting, a small portion of the discarded fish would be expected to survive since these species are caught in very deep water and fish often experience catastrophic injuries related to barotrauma.

For all sectors reported from 2014 through 2016, many of the deep-water snapper grouper species directly affected by the actions in this framework amendment, including blackfin

snapper, queen snapper, and silk snapper had zero or very low discards (**Table D-2**). It is expected that eliminating the minimum size limit proposed under **Preferred Alternative 2**, would potentially impart biological benefits relative to **Alternative 1 (No Action)** if there is a decrease in the number of fish that die. However, available data suggest minimal changes in discard or harvest rates would be expected under **Preferred Alternative 2** as queen snapper, silk snapper, and blackfin snapper are not caught in high numbers recreationally. Thus, biological effects of **Preferred Alternative 2** would be neutral compared to **Alternative 1 (No Action)** in terms of risk of overfishing as removing the minimum size limit would have no effect on overall harvest, which is limited by the ACL and AMs are in place to prevent overages.

4.4.2 Economic Effects

Removing minimum size limits for queen snapper, silk snapper, and blackfin snapper may increase harvest, which would provide positive direct economic effects for the recreational sector provided there are no long-term negative effects for these deep-water snapper stocks. Based on the projected increases in harvest in **Table 4.4.1.1**, the overall change in harvest and economic effects would be minimal (**Table 4.4.2.1**). When a marginal CS value of $12.54 (2016 dollars) per snapper is applied (**Section 3.3.2**), **Preferred Alternative 2** is estimated to increase CS by approximately $1,400 over **Alternative 1 (No Action)** due to the anticipated increase in harvest of the affected snapper species.

Table 4.4.2.1. Estimated change in consumer surplus for **Preferred Alternative 2** of **Action 4** in comparison to status quo (**Alternative 1** (**No Action**)) (2016 dollars).

Species	Change in Landings (numbers of fish)	Change in Consumer Surplus
Blackfin Snapper	76	$953
Queen Snapper	0	$0
Silk Snapper	35	$439
Total	111	$1,392

4.4.3 Social Effects

Some social effects of removing the minimum size limits from the deep-water species would be associated with reduced discards and discard mortality. Most queen snapper, silk snapper, and blackfin snapper die after being caught by fishermen because these fish occur in very deep water. Social benefits would be realized by recreational fishermen with the removal of minimum size limits because they would not have to release dead fish.

As discussed in **Section 4.4.1**, harvest of queen snapper, silk snapper, and blackfin snapper is generally at low levels and estimates are uncertain. Removing the minimum size limit (**Preferred Alternative 2**) would likely have minimal effect on current recreational trips and expected social effects to fishing communities are similar to those of **Alternative 1 (No Action)**, because these species are not commonly caught.

4.4.4 Administrative Effects

Administrative impacts on NMFS associated with the action alternatives would be incurred by rulemaking, outreach, education, and enforcement. However, removing the minimum size limit for silk snapper, queen snapper, and blackfin snapper under **Preferred Alternative 2** would create consistent regulations with other managed deep-water species, which would help the public avoid confusion with regulations and aid law enforcement. Additionally, because there is a minimum size limit currently in place for queen snapper, silk snapper, and blackfin snapper in the South Atlantic Region, administrative effects incurred through outreach, education, and enforcement from **Preferred Alternative 2**, when compared with **Alternative 1 (No Action),** are expected to be beneficial.

4.5 Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

4.5.1 Biological Effects

> ***Alternatives****
>
> 1 (No Action). The recreational minimum size limit for gray triggerfish in the South Atlantic exclusive economic zone off east Florida is 14 inches fork length. The recreational minimum size limit for gray triggerfish in the exclusive economic zone off Georgia, South Carolina, and North Carolina is 12 inches fork length.
>
> **2. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida to 12 inches fork length.**
>
> * Preferred indicated in bold. Refer to Chapter 2 for detailed language of alternatives

The impacts from the proposed reduction in the minimum size limit of gray triggerfish were analyzed before proposed changes to the 20-fish aggregate bag limit (**Action 6**) since such a change would affect the bag limit analysis. To determine the effect of reducing the minimum size limit, the percentage of gray triggerfish between 12 and 14 inches fork length (FL) was first obtained to determine any regional differences. Based on observer data, there was a higher percentage of 12- to 14-inch FL gray triggerfish in the northeast portion of Florida (Nassau County through Indian River County) compared to the southeast (St. Lucie County through Miami-Dade County) and the Florida Keys in the charter and headboat components of the recreational sector from 2014 through 2016 (**Table 4.5.1.1**).

Expected Effects to Gray Triggerfish and Bycatch of Co-Occurring Species

Preferred Alternative 2 is expected to increase gray triggerfish recreational landings by 67% (**Table 4.5.1.2**). This estimate is based on only 2015 and 2016 average landings since changes to the regulations increased the minimum size limit from 12 inches FL to 14 inches FL in July 2015. Additionally, since **Preferred Alternative 2** would establish a 12-inch FL minimum size limit, the predicted overall increase in harvest is likely a minimum. The estimated change in landings compared to landings in 2016 was over 100% (**Table 4.5.1.2**). This increase in landings would likely cause the ACL for gray triggerfish to be met and AMs to be triggered. These predicted increases include landings that would occur in Monroe County, Florida; however, landings from Monroe County would not be counted toward the South Atlantic gray triggerfish recreational ACL[6]. The predicted increases in 2015 and 2016 would result in an additional 43,084 to 402,487 pounds whole weight of gray triggerfish being landed, respectively (**Table 4.5.1.3**). The predicted closure would occur in November-December (Wave 6 of MRIP) based on average landings from 2015 and 2016 (**Figure 4.5.1.1**).

[6] This is because of the manner in which the Marine Recreational Information Program's survey is partitioned in that area.

Table 4.5.1.1. Percent of gray triggerfish between 12 and 14 inches that could potentially change from released fish to landed fish off Florida based on observer data from 2014 to 2016. NE = Nassau County through Indian River County, SE = St. Lucie County through Miami-Dade County, and KW = Keys.

Component	Region	Average Percentage	Lower Limit	Upper Limit
Charter	NE	79.41%	71.42%	87.40%
Charter	SE	29.76%	23.08%	39.21%
Charter	KW	7.68%	0.00%	15.48%
Headboat	NE	57.02%	47.40%	66.64%
Headboat	SE	24.29%	20.05%	28.52%
Headboat	KW	7.93%	0.00%	15.94%

Table 4.5.1.2. Estimated gray triggerfish landings (in numbers of fish) for **Alternative 1 (No Action)**, and due to a decrease in the minimum size limit for gray triggerfish off east Florida under **Preferred Alternative 2**.

Year	Alt 1	Alt 2	% Change
2014	220,044	219,822	-0.10%
2015	155,877	184,599	18.43%
2016	193,916	417,519	115.31%
Average last 2 years		301,059	**66.87%**
Average last 3 years		273,980	44.55%

Table 4.5.1.3. Gray triggerfish landings (pounds whole weight), annual catch limit, and potential increase in landings due to size limit change in the South Atlantic region from 2014 to 2016.

Year	Landings (lbs)	ACL (lbs)	Increase in landings with average weight 1.5 lbs	Increase in landings with average weight 1.8 lbs
2014	495,706	353,638	0	0
2015	358,707	404,675	43,084	51,700
2016	378,257	404,675	335,406	402,487

Source: Landings and ACL from SERO ACL Monitoring website and average weight is based length-weight equation in SEDAR 41 for 12-inch and 13-inch fork length for gray triggerfish (SEDAR 2016).
*Note: Average weights for gray triggerfish of 1.5 pounds and 1.8 pounds were based on a 12 inch and 13 inch gray triggerfish, respectively.
*The landings estimate was developed using number of fish in the MRIP database downloaded 5/8/2017 and provided by SRHS 5/8/2017. These numbers have changed and are different than information included in the more recent Recreational ACL Monitoring File (6/11/2018).

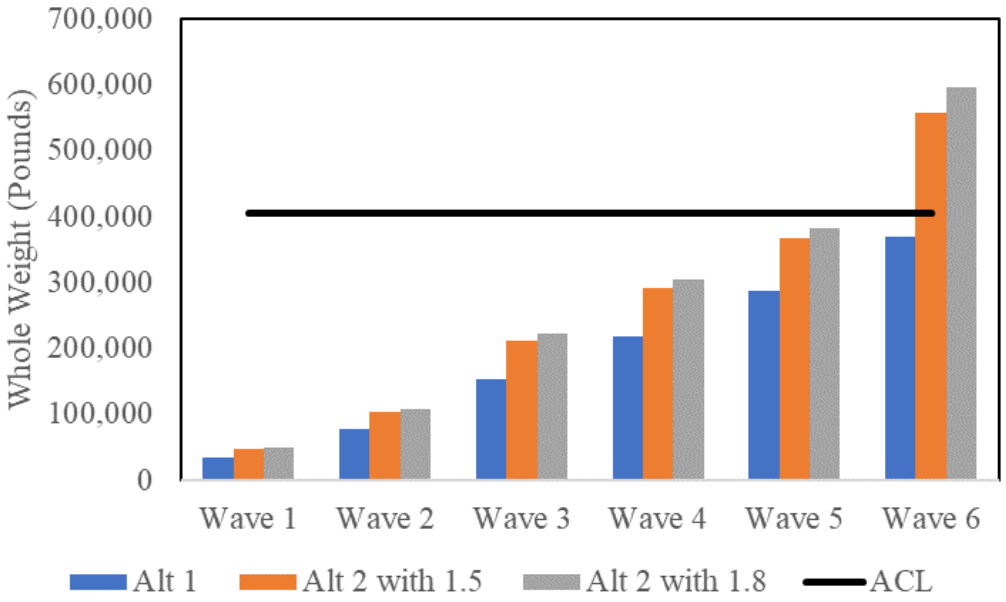

Figure 4.5.1.1. Cumulative average landings (2015 and 2016) of triggerfish based on **Alternative 1 (No Action)** , **Preferred Alternative 2** with landings based on weight for 12-inch fork length fish (1.5 lbs), and **Preferred Alternative 2** with landings based on weight for 13-inch fork length fish (1.8 lbs), and annual catch limit (ACL) for gray triggerfish.

The biological effects of **Preferred Alternative 2** could be negative relative to **Alternative 1 (No Action)** even with overall harvest limited to the ACL and with AMs in place to prevent overages. Reducing the minimum size limit should reduce discards when the gray triggerfish of the snapper grouper fishery is open, but the increase in harvest could shorten the fishing season and increase discards due to an earlier closure if the ACL is met. Any benefit from reduced discarding when harvest for gray triggerfish is open may be minimal because of the low (12.5%) current estimated release mortality rate (e.g., most of the undersized gray triggerfish caught are likely survive). However, if release mortality is much higher as new research suggests, the benefits from reduced discarding would be substantially greater. Further, the stock status may be negatively affected by harvesting gray triggerfish at an earlier age, potentially reducing spawning potential. A decrease in the minimum size limit to 12 inches FL, as proposed under **Preferred Alternative 2**, could have negative biological effects if larger fish produce more eggs. The length at 50% maturity in SEDAR 41 (2016) was estimated at 177 mm (7 inches) FL for female gray triggerfish. Based on equations in SEDAR 41 for length-age relationship (Von Bertalanffy equation) and egg production at-age, a 12-inch FL gray triggerfish female produces about half the number of eggs as a 14-inch FL fish.

4.5.2 Economic Effects

The economic effects of lowering the minimum size limit for gray triggerfish in the exclusive economic zone (EEZ) off the east coast of Florida (**Action 5**) would be variable depending on how landings change in reaction to such a management adjustment as well as whether **Alternatives 2** or **4** are chosen in **Action 6**. In **Action 5**, harvest of gray triggerfish would increase under **Preferred Alterative 2**, which would more thoroughly harvest the recreational ACL for gray triggerfish and incur direct positive economic benefits through increased CS in the

fishery derived from such harvest. Estimates of the increase in harvest and CS are provided in **Table 4.5.2.1**. **Preferred Alternative 2** is expected to result in a positive direct economic effect of approximately $189,000. Assumptions made when calculating the change in CS include that harvest would be capped at the ACL by the AM currently in place for the species. The gray triggerfish ACL of 404,675 pounds ww (lbs ww) was converted to numbers of fish using a conversion rate of 2.13 lbs ww per fish which is the average observed weight of recreationally landed triggerfish in the South Atlantic Region from 2015-2016 according to weight estimates gathered through MRIP. The resulting estimated recreational ACL for gray triggerfish is 189,988 fish. Additionally, it was assumed that the baseline landings of triggerfish was 174,907 in numbers of fish, which is the average number of triggerfish landed from 2015-2016 when landings are converted from pounds to numbers of fish (**Table 4.5.1.3**). Finally, a marginal estimate of CS is not available specifically for gray triggerfish, however, it is assumed that the CS for gray triggerfish is similar to that of snappers, so a marginal CS of $12.54 (2016 dollars) was applied to the estimated change in numbers of gray triggerfish that may be landed by the recreational sector as a result of lowering the minimum size limit in **Preferred Alternative 2** (**Section 3.3.2**).

Table 4.5.2.1. Estimated change in consumer surplus for **Preferred Alternative 2** of **Action 5** in comparison to status quo (**Alternative 1** (**No Action**)) (2016 dollars).

Alternative	Change in Gray Triggerfish Landings (numbers of fish)	Change in Consumer Surplus
Preferred Alternative 2	15,082	$189,125

The benefit of an increase in harvest and CS for gray triggerfish can be weighed with the likelihood of the management change causing an in-season harvest closure for the species due to the ACL being met and AMs being triggered. An in-season closure is likely, as recreational landings are projected to greatly increase under **Preferred Alternative 2** (**Table 4.5.1.3**) and have reached or come close to reaching the ACL in recent years, with recreational landings of gray triggerfish at 122%, 88%, and 97% of the recreational ACL in 2014, 2015, and 2016, respectively[7]. A harvest closure for recreationally landed triggerfish is projected to occur in Wave 6 (November to December) due to meeting the ACL as a result of an increase in landings from lowering the minimum size limit for gray triggerfish in the EEZ off Florida (**Figure 4.5.1.1**).

In-season closures may negatively affect angler demand for for-hire (charter and headboat) trips, resulting in decreased booking rates and for-hire business net operating revenue (NOR). Due to the complex nature of angler behavior and the for-hire industry, it is not possible to quantify these potential economic effects with available data.[8] As such, no estimates of the change in for-hire NOR are provided, although they may exist. The estimates of NOR per charter and headboat trip in the South Atlantic are provided in **Section 3.3.2**. It is expected that a lengthier in-season closure would have a greater potential for negative effects in regards to for-

[7] SERO ACL Monitoring Website (http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/index.html). Accessed January 31, 2018.

[8] Anglers have heterogeneous preferences and may target and/or harvest a diverse mix of snapper grouper and other species on a trip. The absence of the opportunity to fish for any single species may or may not affect their overall desire to take/pay for trips.

hire NOR; however, the realized effects would be dependent on how for-hire operators can market and sell their services for trips landing other species.

4.5.3 Social Effects

Some social effects of reducing the minimum size limit for gray triggerfish would be associated with the expected biological effects (**Section 4.5.1**). Additionally, there is a trade-off with reducing the minimum size limit in that an increase in the number of fish that can be retained may improve recreational trip satisfaction but may also contribute to an increase in the harvest rate and subsequent triggering of AM if landings reach the ACL before the end of the fishing year.

Reducing the minimum size limit (**Preferred Alternative 2**) may benefit Florida recreational fishermen by increasing the number of fish that can be kept, which may increase trip satisfaction. **Preferred Alternative 2** would also make the minimum size limit consistent in the EEZ off the South Atlantic states, thus, reducing regulatory complexity, and the number of regulatory discards, which can improve perceptions of management success.

The rate of harvest is anticipated to increase under the proposed minimum size limit in **Preferred Alternative 2** when compared to the minimum size limit in **Alternative 1** (**No Action**) (**Table 4.5.1.2**). The AM for gray triggerfish is an in-season closure in the South Atlantic EEZ, which extends the potential negative effects of **Preferred Alternative 2** to all recreational fishermen targeting gray triggerfish. The benefits and costs to recreational fishermen would depend on the balance of increasing the number of fish that can be kept while ensuring that an increased harvest rate would not result in a shortened recreational season. The full effect of reducing the minimum size limit for gray triggerfish would depend on management decisions under **Action 6** as an increase in landings would increase the likelihood of an in-season closure.

Preferred Alternative 2 could have a negative biological impact if larger, 14-inch FL gray triggerfish produce more eggs than smaller 12-inch FL fish, as indicated in SEDAR 41. The negative biological consequences could prevent long-term positive social effects throughout the fishery from being realized.

4.5.4 Administrative Effects

Administrative impacts on NMFS associated with the action alternatives would be incurred by rulemaking, outreach, education, and enforcement. However, alternatives that specify a consistent minimum size limit in federal waters throughout the South Atlantic Council's jurisdiction would help the public avoid confusion with regulations and aid law enforcement. Additionally, the minimum size limit would be consistent between state waters and federal waters off the east coast of Florida, also contributing to a more favorable administrative environment. Therefore, administrative effects incurred through outreach, education, and enforcement from **Preferred Alternative 2**, would be expected to be beneficial to NMFS when compared with **Alternative 1** (**No Action**).

4.6 Action 6. Modify the aggregate bag limit for the 20-fish aggregate

Alternatives*

1 (No Action). 20-Fish: 20 fish per person per day including whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.

2. No more than 10 gray triggerfish

3. No more than 10 Atlantic Spadefish

4. No more than 10 of any one species

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

4.6.1 Biological Effects

Expected Effects to Snapper Grouper Species and Bycatch of Co-Occurring Species

Modifying the 20-fish aggregate bag limit as proposed under **Alternatives 2** through **Preferred Alternative 4**, is expected to result in minimal reduction (less than 5%) to recreational landings of most snapper grouper species within this aggregate if the minimum size limit for gray triggerfish were to remain unchanged (**Table 4.6.1.1**). However, if the gray triggerfish minimum size limit were reduced as proposed under Action 5, recreational landings for this group of species would be expected to increase. The greatest increase would be expected to occur under **Alternative 3** (10-fish limit of Atlantic spadefish within the 20-fish aggregate) since this is the only alternative that does not limit retention of gray triggerfish to 10 fish. Thus, assuming a reduction in the minimum size limit of gray triggerfish as proposed under Action 5, **Alternatives 2** through **Preferred Alternative 4** would result in a net increase in recreational landings (using 2015-2016 data) from 9.5% (**Preferred Alternative 4**) to 12% (**Alternative 3**) for this group of species (**Table 4.6.1.1**).

The biological effects of proposed modifications to the 20-fish aggregate are expected to be neutral relative to **Alternative 1 (No Action)** in terms of risk of overfishing as ACLs are in place to ensure landings remain at or below the ACL to prevent overfishing and AMs are triggered to correct for any overages. Since there is an expected increase in gray triggerfish landings due to the decrease in the minimum size limit under Action 5, the recreational harvest of gray triggerfish would be expected to close in-season. In terms of expected landings reduction, biological benefits would be greater under **Alternative 3**, followed by **Alternative 2**, and **Preferred Alternative 4**. However, the expected differences are minor.

Similar to the other actions, bycatch and discards could increase, decrease, or remain the same for this action. If the bag limit is overly restrictive, fishers may be forced to discard once the limit is met. Bycatch and discards could also decrease if fishers stop fishing or move to water unlikely to encounter a snapper grouper species once the aggregate bag limit has been met.

Table 4.6.1.1. Predicted landings (in numbers of fish) and percent change in landings for 20-fish aggregate species from 2014 to 2016 combined with the proposed size limit changes for gray triggerfish (**Action 5**). **Alt 1 (no action)**; **Alt 2**: 10-fish gray triggerfish within the 20-fish aggregate; **Alt 3**: 10-Atlantic spadefish within the 20-fish aggregate; **Pref Alt 4**:10 fish of any one species within the 20-fish aggregate; and **Alt 2&3 combined**: 10 gray triggerfish and 10-Atlantic spadefish within the 20-fish aggregate.

		No Gray Triggerfish Size Limit Change				Includes Gray Triggerfish Size Limit Change			
Year	**Alt 1**	**Alt 2**	**Alt 3**	**Pref. Alt 4**	**Alt 2 and 3**	**Alt 2**	**Alt 3**	**Pref. Alt 4**	**Alt 2 and 3**
2014	1,286,329	1,277,636	1,279,233	1,258,602	1,277,636	1,277,636	1,279,233	**1,258,602**	1,277,636
2015	1,109,296	1,090,407	1,091,069	1,054,341	1,090,407	1,118,682	1,119,440	**1,082,968**	1,118,682
2016	937,554	934,589	934,599	931,951	933,068	1,140,992	1,158,309	**1,138,358**	1,139,471
2014		-0.68%	-0.55%	-2.16%	-0.68%	-0.68%	-0.55%	**-2.16%**	-0.68%
2015		-1.70%	-1.64%	-4.95%	-1.70%	0.85%	0.91%	**-2.37%**	0.85%
2016		-0.32%	-0.32%	-0.60%	-0.48%	21.70%	23.55%	**21.42%**	21.54%

4.6.2 Economic Effects

The economic effects of **Action 6** would be dependent on the species chosen in **Alternative 1 (No Action)** through **Preferred Alternative 4** as well as whether the minimum size limit for gray triggerfish is lowered to 12 inches FL in **Action 5**. Sub-alternatives that lead to higher harvest reductions can be assumed to have larger negative direct economic effects through decreasing CS derived from harvesting the covered species. When paired with a potential size limit decrease for gray triggerfish in **Action 5**, **Action 6** may buffer some of the anticipated increase in landings occurring from this size limit change and therefore, has the potential to mitigate the negative economic effects that may occur if an in-season closure is implemented for the recreational harvest of gray triggerfish (see **Section 4.5.2** for description of these negative economic effects).

Action 6 would implement restrictive measures on recreational harvest if **Alternative 2** through **4** are chosen as preferred; however, the direct economic effects on overall harvest and thus CS are expected to be minimal (**Section 4.6.1**) for the species affected. To estimate the economic effects from changes in harvest, projected landings in numbers of fish from **Table 4.6.1.1** were examined to provide an estimated change in recreational landings. A marginal CS estimate for a generic snapper value of $12.54 (2016 dollars) per fish was applied to the average change in recreational landings (**Section 3.3.2**). The anticipated marginal change in landings and CS solely from applying bag limits in **Action 6** can be seen in **Table 4.6.2.1.** Based on the anticipated reduction in landings, the projected change in CS resulting from the alternatives of in **Action 6** range from approximately -$118,000 to -$369,000 (2016 dollars) **(Table 4.6.2.1)**. While a value of $12.54 per fish was applied to the estimated reductions to calculate CS, due to diminishing marginal CS exhibited for fish that are landed later in a bag limit (Carter and Liese 2012), the CS for fish that would be discarded due to reaching the bag limits imposed in **Action 6** would be smaller, therefore, the reductions in total CS provided in **Table 4.6.2.1** are likely an upper bound estimate.

Table 4.6.2.1. Estimated change in recreational landings for species covered in **Action 6** in comparison to status quo (**Alternative 1** (**No Action**)) (numbers of fish).

Alternative	Change in landings (numbers of fish)	Change in Consumer Surplus (2016 dollars)	Short-term Economic Rank[1]
Alternative 2	-10,182	-$127,686	3
Alternative 3	-9,426	-$118,202	2
Preferred Alternative 4	-29,428	-$369,031	5
Alternatives 2 & 3	-01,689	-$134,044	4

[1]**Alternative 1 (No Action)** would rank 1st, as it does not have anticipated negative short-term economic effects.

Based on anticipated constraints in harvest, **Alternative 1 (No Action)** is expected to have the lowest negative short-term economic effects, followed by **Alternative 3**, **Alternative 2**, and **Preferred Alternative 4**.

4.6.3 Social Effects

In general, the social effects of modifying the recreational bag or vessel limit would be associated with the biological costs of each alternative (see **Section 4.6.1**), as well as the effects on current recreational fishing opportunities. Different levels of recreational fishing opportunities under each alternative could affect recreational anglers and for-hire businesses targeting species in the 20-fish aggregate. The social effects of bag limits are associated with how many and at what times of year the recreational catch may be retained. Additionally, any long-term negative biological effects on the stock due to changes in recreational landings from higher bag limits, or dead discards due to lower bag limits, would also likely result in negative effects on recreational fishing opportunities in future years. In general, social benefits from improved recreational fishing opportunities would result from a bag limit that allows for the longest recreational season with the highest number of fish per person.

As described in **Section 4.6.1**, **Alternative 2**, **Alternative 3**, and **Preferred Alternative 4** are not expected to have substantial impacts on total recreational landings. As a result, these proposed alternatives would not negatively affect recreational access to species included in the aggregate. However, in conjunction with the reduced recreational minimum size limit for gray triggerfish (**Action 5, Preferred Alternative 2**), landings of gray triggerfish may increase, which would be beneficial to communities highly engaged in recreational fishing for gray triggerfish by providing increased access to the resource and increased profits for the for-hire sector. However, direct and indirect social benefits are only realized if the increased access does not have any long-term negative impacts on the stock. The potential increase in landings of gray triggerfish would be greatest under **Alternative 3**. There could be negative social effects if the increase in landings results in a shortened recreational season due to the ACL being met, as predicted (**Figure 4.5.1.1**). This would cause negative social effects for recreational fishermen throughout the South Atlantic resulting from decreased access to the resource.

Alternative 2 and **Alternative 3** would increase regulatory complexity compared by **Alternative 1 (No Action)** and **Preferred Alternative 4**. Modifying the 20-fish aggregate to include separate restrictions on the number of gray triggerfish (**Alternative 2**) and/or Atlantic spadefish (**Alternative 3**) would increase complexity and may result in confusion and a decrease in compliance.

4.6.4 Administrative Effects

Administrative impacts associated with modifying the bag limits through **Alternatives 2**, **3**, and **Preferred Alternative 4)** would be incurred by rulemaking, outreach, education, and enforcement, compared with **Alternative 1 (No Action)**. **Alternatives 2**, **3**, and **Preferred Alternative 4)** may require more outreach to notify and educate the public, and more law enforcement efforts to enforce the regulations. However, since the 20-fish bag limit is currently in place, the effects to the administrative environment are not expected to be unusually burdensome. **Alternatives 2** and **3** would be the most burdensome since there would be a different bag limit within the 20-fish aggregate due to the restrictions on gray triggerfish, and Atlantic spadefish, respectively. **Preferred Alternative 4** would specify a consistent, individual bag limit for all species within the 20-fish aggregate which may be easier for the public to understand, resulting in less time and lower costs to inform and educate the public. Therefore, **Alternatives 2**, **3**, and **4** would impose the most administrative burden on NMFS, with **Alternative 1 (No Action**) imposing the least administrative burden.

Chapter 5. South Atlantic Council's Rationale for the Preferred Alternatives

5.1 Action 1. Establish a deep-water species aggregate

5.1.1 Snapper Grouper Advisory Panel (AP) Comments and Recommendations

At their April 11-13, 2018, meeting, the members of the Snapper Grouper AP offered the following comments on Action 1 as it was structured at that time (Modify the species composition of the recreational aggregates):

- Complexity of proposed changes to aggregates and bag limits is of concern.
- Need to define what constitutes "deep-water" vs "shallow-water." For instance, off North Carolina, red grouper (considered to be a shallow-water grouper) can be caught in 300-400 feet of water.

Alternatives**

1. No Action. Aggregates* currently in place:
Snappers: lane, yellowtail, gray, mutton, cubera, queen, blackfin, and silk.
Grouper and Tilefish: gag, black, red, scamp, yellowfin, yellowmouth, red hind, rock hind, graysby, coney, sand tilefish, snowy, misty, yellowedge, blueline tilefish, and golden tilefish.
20-Fish whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, Atlantic spadefish.
***Wreckfish is not included in an aggregate**

2. Establish a deep-water species aggregate: snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish

3. Establish a deep-water species aggregate: snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish, silk snapper, queen snapper, blackfin snapper

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

5.1.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. Members of the AP offered the following:

- The more complex the regulations are, the less likely fishermen are to voluntarily comply.

5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.1.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Fishery Management Council's (South Atlantic Council) online public comment form through June 8, 2018. Below is a summary of comments on this action (as it was structured at the time):

- All of these actions, if enacted as currently envisioned, will result in further loss of access to the snapper/grouper public resource.
- If **Alternative 2a** is chosen and black sea bass, red porgy, and vermilion snapper are included in the 20 fish aggregate, bottom fishermen would see their allowable catch cut almost in half.
- Too complex and hard to comprehend. Very confusing and overwhelming to try to understand all of this.
- One comment in support for **Preferred Alternative 2**.
- Aggregates need to be simplified. Definitely don't need to add a fourth aggregate. One aggregate and "you get what you get." The more complicated the rules are, the easier it is to break them without realizing it.

The public had another opportunity to offer comment at the December 2018 South Atlantic Council meeting in Kitty Hawk, North Carolina. Commercial and for-hire fishermen from that area expressed concern over a potential reduction in access to deep-water species, particularly blueline tilefish, from proposed Action 2 (recreational season for the deep-water species aggregate) and Action 3 (modifications to the aggregate bag limit for the deep-water species aggregate). Action 1 is necessarily connected to Actions 2 and 3 as it defines the recreational aggregate. Fishermen from North Carolina were concerned that if recreational harvest of deep-water species were to be allowed annually in January and February and again from May through August, as originally proposed under Action 2, the annual catch limits (ACLs) for some of the deep-water species (particularly blueline tilefish) could be harvested early in the year by fishermen in Florida, thus, jeopardizing the May-August recreational season for fishermen in North Carolina. Fishermen from North Carolina maintain that having deep-water species available to them in the summer months is critical to the success of their businesses. On the other hand, South Atlantic Council members from Florida, speaking on behalf of their constituents, explained that the winter months (January through March) are very important to for-hire captains since many tourists arrive in coastal areas of the state at this time expecting to have access to deep-water species.

5.1.5 South Atlantic Council's Conclusion

The South Atlantic Council had proposed **Alternative 2** as their preferred alternative because this is the necessary initial step for subsequent management measures focused on this group of species – the recreational season proposed under **Action 2** and the aggregate bag limit proposed under **Action 3**). However, after obtaining additional public testimony at the December 2018 South Atlantic Council meeting (see above) and further discussing the pros and cons of the proposed changes, the South Atlantic Council chose **Alternative 1 (No Action)** as their preferred

for **Action 1**. The South Atlantic Council concluded that establishing a recreational aggregate for deep-water species and proceeding with proposed measures under **Actions 2** and **3** would not meet the stated purpose of the framework amendment to increase predictability for the deep-water component of the recreational sector because of the seasonal differences in access to these species between North Carolina and Florida.

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

Establishing a recreational aggregate comprised of deep-water species does not directly respond to objectives in the 2016-2010 Vision Blueprint. However, creating the aggregate was a necessary first step to addressing other objectives/strategies in the Blueprint. For instance, consideration of a recreational season for deep-water species is listed as a priority item under Strategy 2.3 of Objective 2 under the broad Management goal. While imposing a season on recreational harvest of deep-water species could be accomplished without first establishing the aggregate, it would introduce additional complexity to an already complex regulatory environment in the South Atlantic region. In addition, establishing a Deep-water Species Aggregate could have allowed for better tailoring of regulations for that group of species, thus streamlining the management process and resulting in simpler regulations which, in turn, would promote compliance. However, seasonal differences in access to deep-water species at either end of the South Atlantic Council's jurisdiction (northern North Carolina and southern Florida) due to weather/current patterns and proximity to productive fishing grounds, preclude the management approach proposed in this framework amendment at this time.

5.2 Action 2. Specify the recreational season for the deep-water species aggregate

Alternatives*

1 (No Action). Fishing for blueline tilefish and snowy grouper is allowed May 1 – Aug 31. Fishing for wreckfish is allowed July 1 – Aug 31. There are no seasonal restrictions on recreational fishing for other deep-water species (misty grouper, yellowedge grouper, and golden tilefish).

2. Allow recreational fishing and possession of species in the deep-water species aggregate annually (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, wreckfish):

2a. May 1 – Jun 30
2b. May 1 – Aug 31
2c: Jan 1 – End of February
2d: Dec 1 – Jan 31

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

5.2.1 Snapper Grouper AP Comments and Recommendations

At their April 17-19, 2017, meeting, the Snapper Grouper AP offered the following:

- Concern that available recreational data are minimal.
- Season for deep-water species is a good idea.
- Include information on percent standard errors (PSE) for deep-water species.
- Concern that ACLs are being exceeded and will continue to be.
- Need for better region-wide survey to get information on deep-water species.
- Recreational effort for deep-water species in south Florida has increased.
- Recommend excluding sand tilefish from the Deep-water Species Aggregate.

MOTION: RECOMMEND THE COUNCIL CONSIDER A SUB-ALTERNATIVE FROM MAY 1 TO JUNE 30 AS SEASON FOR DEEP-WATER SPECIES. APPROVED BY AP (2 OPPOSED, 1 ABSTENTION)

At their April 11-13, 2018, meeting, Snapper Grouper AP members offered the following comments:

- Concern over possible increase in dead discards as a result of a recreational season for deep-water species.
- Need to define what constitutes “deep-water” vs “shallow-water.” For instance, off North Carolina, red grouper (considered to be a shallow-water grouper) can be caught in 300-400 feet of water.

5.2.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. The AP had no comments or recommendations specific to this action.

5.2.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.2.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. Below is a summary of comments on this action (as it was structured at the time):

- Concern about development of focused effort if a recreational season were to be implemented for deep-water species. This is of particular concern in South Florida as deep-water species are more readily accessible to fishermen than in other parts of the South Atlantic Council's jurisdiction. An increase in effort is apparent at the start of grouper season on May 1. Also, there are no accurate data to keep track of removals, especially for deep-water species.
- One comment in support for a recreational season.

The public had another opportunity to offer comment at the December 2018 South Atlantic Council meeting in Kitty Hawk, North Carolina. Commercial and for-hire fishermen from that area expressed concern over a potential reduction in access to deep-water species, particularly blueline tilefish, from proposed **Action 2** (recreational season for the deep-water species aggregate) and **Action 3** (modifications to the aggregate bag limit for the deep-water species aggregate). Fishermen from North Carolina were concerned that if recreational harvest of deep-water species were to be allowed annually in January and February and again from May through August, as originally proposed under **Action 2**, the ACLs for some of the deep-water species (particularly blueline tilefish) could be harvested early in the year by fishermen in Florida, thus, jeopardizing the May-August recreational season for fishermen in North Carolina. Fishermen from North Carolina maintain that having deep-water species available to them in the summer months is critical to the success of their businesses. On the other hand, South Atlantic Council members from Florida, speaking on behalf of their constituents, explained that the winter months (January through March) are very important to for-hire captains since many tourists arrive in coastal areas of the state at this time expecting to have access to deep-water species.

5.2.5 South Atlantic Council's Conclusion

The South Atlantic Council had selected **Alternative 2**, **Sub-alternatives 2b** and **2c** as the preferred alternative/sub-alternatives because these two periods of time would allow spatial/temporal differences preferred by recreational anglers to fish for these species and reduce overall harvest by the least amount when compared to the other sub-alternatives. However, as stated above, regional differences in access to some of the deep-water species (particularly blueline tilefish) created concern among North Carolina fishermen due to the potential for a large portion of the ACL being harvested in Florida during January and February, thus, shortening or possibly eliminating the proposed May-August season. The South Atlantic Council selected **Preferred Alternative 1 (No Action)** as none of the other proposed recreational season

alternatives was expected to meet the stated purpose of the amendment to increase predictability for the deep-water component of the recreational sector. Moreover, based on public testimony, the South Atlantic Council acknowledged that the proposed recreational seasons proposed under **Action 2** would disproportionately and negatively affect recreational fishermen at either end of the South Atlantic Council's area of jurisdiction, namely northern North Carolina and south Florida.

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

Establishing a recreational season for deep-water species is a priority item under Strategy 2.3 – *Support development of management approaches that account for the seasonality of the snapper grouper fishery* under Objective 2 – *Develop innovative management measures that allow consistent access to the fishery for all sectors* – of the Vision Blueprint's Management goal. While the action in the 2016-2020 Vision Blueprint states a recreational season should be specified by area, available data on abundance and recreational landings of deep-water snapper grouper species are insufficient at the present time to specify recreational seasons in different areas of the South Atlantic region. The proposed action would indirectly have addressed a priority action – *Consider predictability in for-hire business planning when making management decisions* – under Strategy 3.1 – *Consider development of management approaches that assist fishery-dependent businesses to operate efficiently and profitably*.

5.3 Action 3. Specify the aggregate bag limit for the deep-water species aggregate

5.3.1 Snapper Grouper AP Comments and Recommendations

At their April 17-19, 2017, meeting, the Snapper Grouper AP offered the following:

- Concern that alternatives for 1-fish of any one species would significantly increase discards.
- Concern that available recreational data are minimal.
- Include information on PSEs for deep-water species.
- Concern that ACLs are being exceeded and will continue to be.
- Need for better region-wide survey to get information on deep-water species.
- Recreational effort for deep-water species in south Florida has increased.

Alternatives*

1 (No Action). Aggregate bag limits currently in place:
Grouper and Tilefish: Three per person per day: red, scamp, yellowfin, yellowmouth, red hind, rock hind, graysby, coney, sand tilefish, snowy, misty, yellowedge, blueline tilefish, and golden tilefish. Within the aggregate: one gag or black grouper; one snowy grouper per *vessel* per day; one golden tilefish per person per day.

The bag limit for wreckfish is one per *vessel* per day.

2. Specify the aggregate bag limit for the deep-water species aggregate (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish)

2a. One per person per day.
2b. One per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.
2c. Two per person per day.
2d. Two per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.
2e. Three per person per day.
2f. Three per person per day with existing restrictions on golden tilefish, snowy grouper, and wreckfish.

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

5.3.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. Members of the AP offered the following:

- Aggregate bag limits are difficult to enforce. Suggest removing and utilizing single species' bag limits instead.

5.3.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.3.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on

the South Atlantic Council's online public comment form through June 8, 2018. No comments were received specific to this action.

5.3.5 South Atlantic Council's Conclusion

The South Atlantic Council had originally proposed **Alternative 2**, **Sub-alternative 2f** as the preferred alternative/sub-alternative because compared to other alternatives it would allow recreational anglers to have the largest bag limit while continuing to afford the extra protection needed for snowy grouper, golden tilefish, and wreckfish. However, seasonal differences in access to deep-water species at either end of the South Atlantic Council's jurisdiction (northern North Carolina and southern Florida) as well as incompatible regulations between Florida state and federal waters, led the South Atlantic Council to select **Preferred Alternative 1 (No Action)**. The South Atlantic Council discussed possibly a lower bag limit during the originally proposed January-February season and a higher bag limit during the May-August season under **Action 2**. However, recreational landings estimates for deep-water species are notably uncertain and the potential exists for few intercepts of the Marine Recreational Information Program resulting in very large expanded estimates that threaten to meet or exceed ACLs for these species. In addition, fishermen who offered public comment at the December 2018 meeting stated that an aggregate bag limit below 3 fish per person per day would result in negative socio-economic effects, particularly in northern North Carolina, where distances to productive fishing grounds are long. Hence, the South Atlantic Council concluded that this action, along with Actions 1 and 2, did not meet the intended purpose of this framework amendment to increase predictability for the deep-water component of the recreational sector.

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

Strategy 2.1 (under Management Objective 2) – *Support development of management approaches that address retention of snapper grouper species* – includes among its priority actions to *Consider bag and trip limit adjustments.*

5.4 Action 4. Remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper

5.4.1 Snapper Grouper AP Comments and Recommendations

At their April 17-19, 2017, meeting, the Snapper Grouper AP offered the following:

MOTION: RECOMMEND REMOVAL OF MINIMUM SIZE LIMIT FOR DEEPWATER SPECIES
APPROVED BY AP (UNANIMOUSLY)

Alternatives*

1 (No Action). The recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper is 12 inches total length.

2. Remove the 12-inch total length recreational minimum size limit for queen snapper, silk snapper, and blackfin snapper

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

5.4.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. The AP had no comments or recommendations specific to this action.

5.4.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.4.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. There was one comment in support for removing the minimum size limit.

5.4.5 South Atlantic Council's Conclusion

Silk snapper, blackfish snapper, and queen snapper are currently included in the Deepwater Complex, along with misty grouper, yellowedge grouper, and sand tilefish due to their habitat preference and life history characteristics. A 12-inch total length (TL) minimum size limit was established for these species in 1992 with implementation of Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP; SAFMC 1991). Amendment 4 stated that silk snapper, blackfin snapper, and queen snapper were among 14 species in the Snapper Grouper Complex thought to be overfished. A 12-inch TL minimum size limit was determined to be adequate to control growth overfishing and prevent recruitment overfishing of similar species (i.e., gray snapper, vermilion snapper) and was intended to protect the species and complement existing regulations in Florida. However, silk snapper, blackfin snapper, and queen snapper are currently the only deep-water species for which a minimum size limit is still in effect. Since 1992, knowledge of barotrauma

and subsequent mortality among species that are caught in deep water has grown; hence, fish that are discarded because they are undersized are almost certain to die. To curb potential discard losses, therefore, the South Atlantic Council proposed removing minimum size limits for species that are likely to die if they are caught and released. The South Atlantic Council concluded that **Preferred Alternative 2** best meets the purpose to minimize discards in the recreational snapper grouper fishery. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and other applicable law.

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

Removal of minimum size limits for deep-water species is addressed in the Vision Blueprint Strategy 4.2 (in Appendix B) under Management Objective 4 - *Consider management approaches that address the impact of depth on bycatch of snapper grouper species.* Three deep-water snappers – silk snapper, queen snapper, and blackfin snapper – are managed under a 12-inch TL minimum size limit in federal waters. These minimum size limits were put in place long ago, before estimates of discard mortality were available and long before the creation of the various Complexes. Species in the Deepwater Complex are typically associated with high discard mortality. To curb discard losses, the South Atlantic Council is considering action to eliminate minimum size limit requirements for these deep-water species.

5.5 Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

5.5.1 Snapper Grouper AP Comments and Recommendations

At their April 17-19, 2017, meeting, the Snapper Grouper AP offered the following:

MOTION: AP RECOMMENDS ALTERNATIVE 2, REDUCING THE MINIMUM SIZE LIMIT FOR GRAY TRIGGERFISH OFF EAST FLORIDA TO 12 INCHES
APPROVED BY AP (1 ABSTENTION)

Alternatives*

1 (No Action). The recreational minimum size limit for gray triggerfish in the South Atlantic exclusive economic zone off east Florida is 14 inches fork length. The recreational minimum size limit for gray triggerfish in the exclusive economic zone off Georgia, South Carolina, and North Carolina is 12 inches fork length.

2. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida to 12 inches fork length.

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

5.5.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. The AP had no comments or recommendations specific to this action.

5.5.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.5.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. One commenter from Cape Hatteras, North Carolina, supported reducing the minimum size limit to make it consistent with that in other South Atlantic states.

5.5.5 South Atlantic Council's Conclusion

The recreational minimum size limit for gray triggerfish was modified in 2015 through implementation of Amendment 29 to the Snapper Grouper FMP (SAFMC 2014). A recreational minimum size limit of 12 inches fork length (FL) was implemented in federal waters off North Carolina, South Carolina, and Georgia, and a recreational minimum size limit of 14 inches FL was put in place in federal waters off the east coast of Florida. This was precautionary action in response to concerns about the status of the gray triggerfish stock in the South Atlantic and to align regulations with those in the Gulf of Mexico. However, after the new minimum size limit went into effect (on July 1, 2015), stakeholders in Florida voiced concern to the Florida Fish and

Wildlife Conservation Commission (FWC) regarding increasing discards of gray triggerfish in south Florida where the average size of gray triggerfish is smaller than that in northeast Florida. In response, the FWC reduced the recreational minimum size limit of gray triggerfish to 12 inches FL in 2017 and requested that the South Atlantic Council follow suit in issuing consistent regulations.

As discussed in **Section 4.5.1**, lowering the minimum size limit to 12 inches FL would increase the rate of harvest, thus, increase landings and possibly shorten the current recreational seasons. However, due to the recent regulatory changes detailed above, there is uncertainty in predictions of season length and the South Atlantic Council opted to align the regulations to minimize discards and, thus, promote a consistent regulatory environment to benefit stakeholders and law enforcement.

The South Atlantic Council concluded that **Preferred Alternative 2** best meets the purpose to minimize discards in the recreational snapper grouper fishery and improve regulatory compliance and consistency. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

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

While consistent regulations between state and federal waters is not specifically listed as an objective in the Vision Blueprint, it is the South Atlantic Council's intent to, whenever possible, ensure a consistent regulatory environment to minimize confusion among resource users to promote compliance and aid in enforcement of fishery regulations.

5.6 Action 6. Modify the aggregate bag limit for the 20-fish aggregate

> ***Alternatives****
>
> 1 (No Action). 20-Fish: 20 fish per person per day including whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, and Atlantic spadefish.
>
> 2. No more than 10 gray triggerfish
>
> 3. No more than 10 Atlantic Spadefish
>
> **4. No more than 10 of any one species**
>
> * Preferred indicated in bold. Refer to Chapter 2 for detailed language of alternatives.

5.6.1 Snapper Grouper AP Comments and Recommendations

At their April 17-19, 2017, meeting, the Snapper Grouper AP offered the following on the action **as it was structured at that time:**
Action 3. Modify the 10-snapper and 20-fish recreational aggregate bag limits

- Concern about making regulations too complicated. Sub-alternatives 2c and 2d (2c: Within the 20-fish aggregate, no more than 10 fish can be of any one species; 2d: Within the 20-fish aggregate, no more than 5 fish can be of any one species) may be enough to capture the need to reduce take for some species.
- Five yellowtail within the aggregate may be too low for fishermen in the Keys.
- Consider adding flexibility in aggregate bag limits since fishery is so diverse and certain species are not available in some areas.

MOTION: AP RECOMMENDS ALTERNATIVE 1, NO ACTION, FOR ACTION 3.
APPROVED BY AP (11 IN FAVOR/6 OPPOSED/ 1 ABSTENTION)

MOTION: RECOMMEND THAT THE COUNCIL EXPLORE BAG LIMIT OF PORGIES (3 FISH, 5 FISH) WITHIN THE 20-FISH AGGREGATE
APPROVED BY AP (1 OPPOSED)

MOTION: RECOMMEND THE COUNCIL EXPLORE A 20 FISH AGGREGATE OF SPECIES CURRENTLY IN THE 10-SNAPPER AGGREGATE AND THE 20-FISH AGGREGATE
APPROVED BY AP (1 OPPOSED/1 ABSTENTION)
INTENT TO MAINTAIN THE CURRENT BAG LIMITS WITHIN THE AGGREGATE (I.E., GRAY SNAPPER IS 10)*

5.6.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP discussed the framework amendment at their May 18-19, 2018, meeting. The AP had no comments or recommendations specific to this action.

5.6.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their October 24-26, 2017, meeting. The SSC had no comments or recommendations.

5.6.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 26 were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11, 2018. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. Two commenters from Cape Hatteras, North Carolina, offered public comment on this action. They both supported a limit of 10 gray triggerfish within the aggregate.

5.6.5 South Atlantic Council's Conclusion

The South Atlantic Council chose **Preferred Alternative 4** as the preferred alternative because it allows recreational anglers to catch the same number of fish overall as **Alternative 1 (No Action)**, while limiting the number of any one species within the 20-fish aggregate to 10 fish. **Alternative 1 (No Action)** currently allows anglers to catch up to 20 of any single species in the aggregate. However, due to concerns over the status of the South Atlantic gray triggerfish stock and large catches of Atlantic spadefish in recent years, the South Atlantic Council chose to be proactive and limit the harvest of the two species, as well as the remainder of the species in the aggregate. In addition, the state of Florida currently limits harvest of gray triggerfish to 10 fish per person per day in state waters off the east coast. **Preferred Alternative 4** would simplify the regulatory environment by making recreational harvest and possession limits the same in state and federal waters off the east coast of Florida.

The South Atlantic Council concluded that **Preferred Alternative 4** best meets the purpose to increase regulatory compliance and consistency and best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

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

Strategy 2.1 (under Management Objective 2) – *Support development of management approaches that address retention of snapper grouper species* – includes among its priority actions to *Consider bag and trip limit adjustments.*

Chapter 6. Cumulative Effects

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 26 (Regulatory Amendment 26) 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 the present.

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

Fishery managers implemented the first significant regulations pertaining to snapper grouper species in 1983 through the Snapper Grouper FMP (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 implemented temporary measures to reduce overfishing of blueline tilefish while permanent measures were being developed in Amendment 32 to the Snapper Grouper FMP (Amendment 32). The temporary rule removed the blueline tilefish portion from the Deep-water Complex annual catch limit (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 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 measures to end overfishing of blueline tilefish. The amendment removed blueline tilefish from the Deep-water 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 Deep-water Complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, 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 seven 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.

Amendment 35 to the Snapper Grouper FMP, which became effective on June 22, 2016, was implemented to remove four species from the FMP (black snapper, dog snapper, mahogany snapper, and schoolmaster), and clarified regulations implementing the golden tilefish longline endorsement.

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

Amendment 36 to the Snapper Grouper FMP, which became effective on July 31, 2017, was implemented to establish new Spawning Special Management Zones to protect spawning areas for snapper grouper species.

Amendment 41 to the Snapper Grouper FMP, which became effective on February 10, 2018, modified management of mutton snapper in the South Atlantic to respond to a recent stock assessment and protect mutton snapper during the spawning season. Actions in the amendment include the modification of management benchmarks and allowable fishing levels. The amendment also designated the "spawning months" (during which stricter regulations may apply), modified the minimum size limit, recreational bag limit, and commercial trip limit.

Golden Tilefish Interim Measures to the Snapper Grouper FMP which became effective on January 2, 2018, was implemented to reduce the golden tilefish total ACLs for 2018 while the South Atlantic Council develops management measures to end overfishing on a permanent basis through Regulatory Amendment 28. These interim measures were effective for 180 days after the date of publication of the final temporary rule through July 1, 2018. The temporary rule was extended for an additional 186 days through a temporary rule extension, and was effective through January 3, 2019.

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

Regulatory Amendment 28 to the Snapper Grouper FMP, considers actions that would end overfishing of golden tilefish by reducing the total ACL. The proposed rule published on September 27, 2018, and the comment period ended on October 12, 2018. The final rule published on December 4, 2018, and became effective on January 4, 2019.

Present Actions

The Vision Blueprint Commercial Regulatory Amendment 27 (Regulatory Amendment 27) for the Snapper Grouper FMP considers actions to modify commercial regulations for blueline tilefish, snowy grouper, greater amberjack, red porgy, vermilion snapper, almaco jack, Other Jacks Complex (lesser amberjack, almaco jack, and banded rudderfish), queen snapper, silk snapper, blackfin snapper, and gray triggerfish. Actions include modifying fishing seasons, trip limits, and minimum size limits. The amendment was approved for Secretarial review at the September-October 2018 South Atlantic Council meeting.

Reasonably Foreseeable Future Actions

The South Atlantic Council has moved to end overfishing through the revised ABC and ACL for red grouper that was implemented via Abbreviated Framework Amendment 1 (effective August 18, 2018) but has not yet revised the red grouper rebuilding plan. At the March 2018 meeting, the South Atlantic Council directed staff to develop Regulatory Amendment 30 to the Snapper Grouper FMP to revise the current rebuilding plan before the next red grouper assessment is completed (currently scheduled as a standard assessment in 2021) to meet the statutory deadline of September 17, 2019. At the June 2018 meeting, the Snapper Grouper Committee moved actions from the Vision Blueprint amendments addressing modification to the spawning season closure for red grouper to Regulatory Amendment 30, and also requested that an additional action be added to establish a commercial trip limit. The abbreviated framework amendment was reviewed and public comment was received at the September-October 2018 meeting. Final approval for Secretarial review is expected to be held at the June 2019 South Atlantic Council meeting.

At the March 2018 meeting, the South Atlantic Council directed staff to continue to develop 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 framework amendment was approved for scoping at the June 2018 meeting, and scoping hearings were conducted on August 7 and 8, 2018, via webinar meeting. The framework amendment is expected to continue being developed in 2019.

At their 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. The South Atlantic Council reviewed actions and alternatives and provided guidance at their December 2018 meeting, and is expected to continue developing the amendment in 2019.

Regulatory Amendment 31 to the Snapper Grouper FMP (included with the Dolphin Wahoo Regulatory Amendment 2 in the Recreational Accountability Measures Amendment) considers actions to modify the in-season closures for the recreational sector. The South Atlantic Council reviewed actions and alternatives in the generic regulatory amendment and provided guidance at the December 2018 meeting, and is expected to continue developing the amendment in 2019.

At the March 2018 meeting, the South Atlantic Council directed staff to conduct scoping webinars for Amendment 42 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, scoping comments and an overview of the decision document were presented at the June 2018 meeting. The South Atlantic Council approved the amendment for public hearings at the December 2018 South Atlantic Council meeting, and final approval for Secretarial review is expected to be held at the March 2019 South Atlantic Council meeting.

Expected Impacts from Past, Present, and Future Actions

In recent years, participants in the recreational sector of the snapper grouper fishery and associated businesses have experienced some negative economic and social impacts due to changes in ACLs and early closures during the fishing years. Factors such as distance to fishing grounds, weather, and water temperature affect availability of species to the recreational fleets in different parts of the South Atlantic Council's jurisdiction.

The intent of Regulatory Amendment 26 is to address recreational stakeholder input to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency. Actions 1 through 3 were proposed to establish a Deep-water Species Aggregate, including specifying the recreational season and bag limit for these species. Since modifying the species composition of

recreational aggregates does not alter the current harvest or use of the resource there are also no anticipated direct or indirect economic or social effects on private recreational and for-hire participants, associated industries, or communities. The South Atlantic Council reasoned that creating an aggregate comprised of deep-water species with similar habitat requirements and life histories would facilitate implementing regulations for them. Grouping these species together was intended to allow the South Atlantic Council more flexibility to apply management approaches that would balance access to resource users and promote predictability, and optimize access to this group of species for recreational anglers throughout the South Atlantic Region. However, fishermen's access to these species from different areas of the South Atlantic region is heavily influenced by factors such as distance to fishing grounds and weather. Consequently, management measures such as a recreational season (considered in **Action 2**) are difficult to implement with the same level of success region-wide. Hence, the South Atlantic Council chose to make no changes for Actions 1-3.

Action 4 was proposed to reduce discard mortality and thus impart biological benefits for the affected species (queen snapper, silk snapper, and blackfin snapper). Snapper grouper species that inhabit deep-water are typically associated with high discard mortality. To curb potential discard losses, the South Atlantic Council is considering Action 4 to eliminate minimum size limit requirements for queen snapper, silk snapper, and blackfin snapper. However, removing the minimum size limit would likely have minimal effect on current recreational trips because these species are not commonly caught. Action 5 proposes to modify the minimum size limit for gray triggerfish in federal waters off the east coast of Florida. The reduction in the minimum size limit for gray triggerfish responds to stakeholders concerns regarding increasing discards of gray triggerfish in south Florida where the average size of gray triggerfish is smaller than in northeast Florida and is also intended to bring regulatory consistency. Action 6 proposes to limit harvest within the 20-fish aggregate to 10 fish of any one species to simplify regulations, and could be biologically beneficial to the well-being of the stocks.

When combined with the impacts of past, present, and future actions affecting the snapper grouper fishery, specifically for the species in Regulatory Amendment 26, minor cumulative impacts are likely to accrue. For example, there could be beneficial cumulative effects from the actions in this framework amendment, in addition to future proposed actions to reduce overfishing of snapper grouper species, require the use of descending devices, and reducing bycatch. Also, there may be cumulative socio-economic effects by promoting access to the fishery which would improve recreational fishing opportunities and benefits to associated businesses and communities; however, the actions in this framework amendment are not expected to result in significant cumulative adverse biological or socio-economic effects to the snapper grouper fishery when combined with the impacts of past, present, and future actions (see **Chapter 4**).

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

Climate Change

Global climate changes could have significant effects on South Atlantic fisheries, though the extent of these effects on the snapper grouper fishery is not known at this time. The Environmental Protection Agency's climate change webpage (https://www.epa.gov/climate-indicators/marine-species-distribution), and NOAA's Office of Science and Technology climate

webpage (https://www.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 Regulatory Amendment 26 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 actions are intended to address recreational stakeholder input to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency. The actions are expected to improve management of the recreational component of the snapper grouper fishery to achieve optimum yield, while minimizing, to the extent practicable, adverse socio-economic effects for recreational fishermen in the South Atlantic Region. The proposed management actions are summarized in **Chapter 2** of this document. Detailed discussions of the magnitude and significance of the impacts of the alternatives on the human environment appear in **Chapter 4** of this document. None of the impacts of the actions in this amendment, in combination with past, present, and future actions have been determined to be significant. Although several other management actions, in addition to this amendment, are expected to affect snapper grouper species, any additive effects, beneficial and adverse, are not expected to result in a significant level of cumulative impacts.

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

6.5 Monitoring and Mitigation

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

Chapter 7. List of Interdisciplinary Plan Team (IPT) Members

Name	Agency/Division	Title
Brian Cheuvront	SAFMC	Deputy Executive Director for Management
Myra Brouwer	SAFMC	IPT Lead/Fishery Biologist
Christina Wiegand	SAFMC	Social Scientist
Chip Collier	SAFMC	Fishery Scientist/Data Analyst
John Hadley	SAFMC	Fishery Economist
Roger Pugliese	SAFMC	Senior Fishery biologist
Mike Errigo	SAFMC	Data analyst
Mary Vara	SERO/SF	IPT Lead/Fishery Biologist
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Frank Helies	SERO/SF	Fishery Biologist
Joelle Godwin	SERO/SF	Technical Writer and Editor
Nick Farmer	SERO/SF	Data Analyst
Jeff Pulver	SERO/SF	Data Analyst
Tony Lamberte	SERO/SF	Economist
Christina Package-Ward	SERO/SF	Social Scientist
Jennifer Lee	SERO/PR	Fishery Biologist
David Dale	SERO/HC	EFH Specialist
Noah Silverman	NMFS/SER	Regional NEPA Coordinator
Nikhil Mehta	NMFS/SER	Fishery Biologist/NEPA
Monica Smit-Brunello	NOAA GC	General Counsel
Tracy Dunn	SERO/OLE	Criminal Investigator
Scott Crosson	SEFSC	Economist
Erik Williams	SEFSC	Biologist

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

Chapter 8. Agencies and Persons Consulted

Responsible 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

Environmental Assessment:

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

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
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

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Appendix A. Considered But Rejected Alternatives

In June 2017 the South Atlantic Fishery Management Council (South Atlantic Council) removed the following actions/alternatives from further consideration:

Action 3. Modify the 10-snapper and 20-fish recreational aggregate bag limits
Alternative 2. Modify the current species composition of the 10-snapper aggregate grouper bag limit and the 20-fish aggregate bag limit. Establish a 20-fish aggregate limit including species in the current 20-fish aggregate in addition to those in the current 10-snapper aggregate: whitebone porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, gray triggerfish, bar jack, almaco jack, banded rudderfish, lesser amberjack, white grunt, margate, sailor's choice, Atlantic spadefish, lane snapper, yellowtail snapper, gray snapper, mutton snapper (daily limit is 5 per person)*, and cubera snapper (<30 inches; max. 2 per person but no more than 2 per vessel > 30 inches TL off Florida). **Pending approval of Amendment 41*

Sub-alternative 2d. Within the 20-fish aggregate, no more than 5 fish can be of any one species.

Rationale: The South Atlantic Council removed Sub-alternative 2d from consideration because the proposed bag limit of 5 fish was too low for some of the species included in the aggregates.

Action 4. Modify the seasonal prohibition on recreational harvest and possession of shallow-water groupers
Alternative 2. Prohibit recreational harvest and possession of shallow-water grouper species (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, and coney) seasonally by area:

Sub-alternative 2a. In federal waters off East Florida from the Georgia/Florida state boundary south to the end of the South Atlantic Fishery Management Council's jurisdiction, the closure applies (month) to (month).

Sub-alternative 2b. In federal waters off Georgia and the Carolinas from the Georgia/Florida border north to the North Carolina/Virginia border, the closure applies (month) to (month)

Rationale: The South Atlantic Council removed Alternative 2 from consideration because it would place a dividing line between Georgia and the Carolinas and east Florida and would not address the issue of access to gag in south Florida. Fishermen maintain that gag spawn in the area in March and then move elsewhere; hence, anglers in south Florida do not have access to gag as do anglers in other areas of the South Atlantic Council's jurisdiction. At the time, other alternatives under this action were retained in the amendment because they allowed consideration of management modifications that would balance out access to gag and other shallow-water groupers for recreational fishermen.

In September 2017 the South Atlantic Council removed the following actions/alternatives from further consideration:

Action 6. Reduce the recreational minimum size limit for black sea bass

Rationale: The South Atlantic Council chose to delay consideration of modifying the minimum size limit for black sea bass because results of the stock assessment at the time were still pending. There was concern that if the assessment results indicated the stock was not in good shape and catch levels were reduced, then a reduction in the recreational minimum size limit could lead to shorter seasons. In addition, due to delays in the black sea bass stock assessment, analyses for a reduction to minimum size limit would not have been available in time for the South Atlantic Council to prodeed with this action. At the time, the South Atlantic Council indicated their intent to consider a reduction in the recreational minimum size limit for black sea bass once results of the SEDAR 56 stock assessment were available.

Action 8. Remove the recreational prohibition on the use of powerheads in the Exclusive Economic Zone off South Carolina

Rationale: The South Atlantic Council removed this action from consideration because it did not conform to the structure and intent of the amendment at that time. The intent of the action is to promote a consistent regulatory environment since the exclusive economic zone off South Carolina is currently the only place in the South Atlantic where the use of powerhead gear is prohibited. However, some South Atlantic Council members expressed interest in including an alternative that would prohibit the use of powerhead gear in the South Atlantic exclusive economic zone. Such an alternative would be controversial and possibly delay development of the amendment; hence the South Atlantic Council opted to move this action to another amendment.

In December 2017 the South Atlantic Council removed the following actions/alternatives from further consideration:

Action 1. Remove sand tilefish from the Deep-Water Complex and revise the annual catch limits, optimum yield, and recreational annual catch target

Rationale: The South Atlantic Council removed this action from consideration (during their September 2017 meeting) because modification to an existing Complex would need to be done through a plan amendment as opposed to a framework amendment. Actions in framework amendments are limited to management measures (i.e., bag limits, size limits, seasons) and revisions to catch levels (i.e., annual catch limits).

Action 2. Modify the species composition of the recreational aggregates

Alternative 2. Remove the recreational Snapper Grouper aggregate groupings that are in place in the South Atlantic Region.

Alternative 4. Modify existing Snapper Grouper aggregates to establish a Deep-water Species Aggregate, Shallow-water Species Aggregate, and an Other Snapper Grouper Species Aggregate

Alternative 5. Modify existing Snapper Grouper aggregates to establish a **Deep-water Species Aggregate** and an **Other Snapper Grouper Species Aggregate**:

Deep-water Species Aggregate: queen snapper, blackfin snapper, silk snapper, snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish.

Other Snapper Grouper Aggregate: all other species

Rationale: The South Atlantic Council removed Alternative 2 under Action 2 from consideration because the original intent of the action was to modify existing aggregates to better reflect how the recreational snapper grouper fishery operates and to simplify regulations. Alternative 2 would have removed the existing aggregates, which have been in place since the early 1990s, and would have introduced undue confusion and possibly created additional regulatory burden since bag limits would have to be specified for every species. The South Atlantic Council removed Alternatives 4 and 5 from consideration to minimize confusion among stakeholders since the alternatives did not simplify the current approach. In addition, there was concern that, under Alternative 5, species for which there are individual bag limits (e.g., vermilion snapper, black sea bass), would be included in a new aggregate and many exceptions would have to be created for the new aggregate bag limit, thus complicating regulations.

Action 4. Specify management measures for the proposed shallow-water grouper aggregate

Sub-action 4.1. Specify the recreational season for the proposed shallow-water grouper aggregate

Alternative 2. Allow recreational possession of species included in the proposed shallow-water grouper aggregate annually from January 1 through December 31.

Alternative 3. Maintain seasonal prohibition on recreational possession of shallow-water grouper aggregate annually from January 1 to April 30 north of 28 degrees North latitude. Prohibit recreational harvest and possession of shallow-water grouper species (gag, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, and coney) (excluding black grouper) south of 28° North latitude (approximately off Palm Bay, Florida):

Sub-alternative 3a. January – March (three months)
Sub-alternative 3b. February – March (two months)
Sub-alternative 3c. February – April (three months)
Sub-alternative 3d. February – May (four months)

Alternative 4. Maintain seasonal prohibition on recreational possession of shallow-water grouper aggregate annually from January 1 to April 30 north of 28 degrees North latitude. Prohibit recreational harvest and possession of black grouper in the exclusive economic zone south of 28 degrees north latitude.

Sub-alternative 4a. January – March (three months)
Sub-alternative 4b. January
Sub-alternative 4c. February
Sub-alternative 4d. March

Rationale: The South Atlantic Council cited stakeholder support for their decision to remove Alternative 2 from consideration. The alternative would have removed the current January through April closure for recreational harvest and possession of shallow water groupers, an action that was not supported by the public or the Snapper Grouper Advisory Panel. Similarly, there was little support for modifying the closure for shallow-water groupers (except black grouper) off south Florida, as proposed under Alterantive 3, so the South Atlantic Council opted to remove it from consideration. Alternative 4 was removed from consideration since it was essentially tied to Alterantive 3 as it provided options to modify the closure for black grouper only.

Sub-action 4.2. Specify the aggregate bag limit for the proposed shallow-water grouper aggregate

Alternative 2. Specify bag limits for proposed shallow-water grouper aggregate

Sub-alternative 2e. Four fish per person per day.

Sub-alternative 2f. Four fish per person per day with existing restrictions on gag and black grouper.

Rationale: South Atlantic Council members cited evidence from personal observation, public testimony, and advice from the Snapper Grouper Advisory Panel to remove consideration of a four-fish aggregate limit for the shallow-water grouper aggregate.

In June 2018 the South Atlantic Council provided detailed guidance to restructure the amendment to only include certain actions. Actions, sub-actions, and alternatives that were previously in the document prior to the June 2018 South Atlantic Council meeting are below.

Action 1. Modify the species composition of the recreational aggregates

Rationale: The South Atlantic Council opted for establishment of a deep-water aggregate only and to no longer consider modification to other recreational aggregates since the proposed changes were more likely to add regulatory complexity as opposed to simplifying regulations.

Sub-Action 2.4. Establish gear requirements for the deep-water species aggregate

Rationale: The South Atlantic Council directed staff to move this action to another amendment that is considering other gear requirements/modifications.

Sub-action 3.1. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

Rationale: The South Atlantic Council directed staff to move this action to a developing amendment considering other changes to the management of red grouper.

Sub-action 3.2. Specify the aggregate bag limit for the shallow-water grouper aggregate
Sub-action 4.2. Specify the aggregate bag limit for the other shallow-water species aggregate
Action 5. Specify the aggregate bag limit for the snapper grouper species aggregate

Rationale: As explained above, the South Atlantic Council opted to no longer consider changes to the recreational aggregates, except for the establishment of a Deep-water Species Aggregate. Hence, proposed actions/sub-actions pertaining to the previously considered aggregates were removed.

2.2 Action 2. Specify the recreational season for the deep-water species aggregate

Preferred Alternative 2. Establish a recreational season for species in the deep-water species aggregate (snowy grouper, misty grouper, yellowedge grouper, blueline tilefish, golden tilefish, and wreckfish):
Sub-alternative 2c. July 1 through August 31
Sub-alternative 2d. July 1 through October 31

Rationale: The South Atlantic Council opted not to consider Sub-alternative 2c as it excludes late spring/early summer, a time when fishermen in the region frequently target deep-water species. In addition, a two-month season was deemend too short. Sub-alternative 2d was also excluded from further consideration due to the reason stated above and because fishermen north of Florida do not typically target these species in the fall months due to weather. Hence Sub-alternative 2d would have disproportionately benefitted fishermen in south Florida.

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 framework 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

Updated: 2/12/2019

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.

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 #2 (1990a)	10/30/90	PR: 55 FR 31406 FR: 55 FR 46213	-Prohibited harvest/possession of goliath grouper in or 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;

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.
			-Granted non-transferable permit with 225 lb trip limit 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; -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 Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	-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.
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 = $F_{MSY.}$
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.

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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. <u>Snowy Grouper</u> 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. <u>Golden Tilefish</u> 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. <u>Vermilion Snapper</u> Commercial: Quota of 1,100,000 lb gw; Recreational: 12” TL size limit. 4. <u>Black Sea Bass</u> Commercial: Quota of 477,000 lb gw in year 1, 423,000 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;

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			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; and §§ 622.5, 622.8, and 622.18(b)(1)(ii) required OMB approval.	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 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

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			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; -Specified status determination criteria for red snapper; -Specified a fishery-independent monitoring program for red snapper. -Implemented an area closure for snapper-grouper species.

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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 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);

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			-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.
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:7 % and hook-and-line:25%);

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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; -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 electronic reporting for headboat vessels at weekly intervals.

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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.
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)

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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, 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.

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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 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.	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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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 addressed overfishing of red snapper by specifying recreational and commercial ACLs beginning in 2018;
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.
Regulatory Amendment #28 (2018a)	1/4/2019	PR: 83 FR 48788 FR: 83 FR 62508	-End overfishing of golden tilefish by reducing the ACL based on the most recent stock assessment.
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)

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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 -Modify the seasonal prohibition on recreational and commercial harvest of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina -Establish a commercial trip limit for red grouper
Regulatory Amendment #32	Not developed	N/A	-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
Abbreviated Framework Amendment 2	TBD	TBD	-Adjust the ACLs for South Atlantic vermilion snapper and black sea bass in response to the results of the latest stock assessments.
Amendment #45 ABC Control Rule	TBD	TBD	-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.
Recreational Accountability Measures	TBD	TBD	-Modify the recreational AMs for the recreational sector.

References:

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Appendix D. Bycatch Practicability Analysis

Background

The Magnuson-Stevens Fishery Conservation and Management Act at §3(2) defines bycatch as "fish which are 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 due to the type of species, size, and/or sex of the fish 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 (South Atlantic Council) manages species in the Snapper Grouper Complex in federal waters from the Florida Keys to the Virginia/North Carolina border. In Vision Blueprint Recreational Regulatory Amendment 26 (Regulatory Amendment 26) to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), the South Atlantic Council has proposed modifications of recreational regulations such as changing the species composition of aggregates, fishing seasons, bag limits, and minimum size limits for species in the Snapper Grouper FMP. These proposed management measures are intended to address recreational stakeholder input allowing more focused management in the Snapper Grouper FMP, and to minimize discards. In

the South Atlantic, most snapper grouper species are harvested with hook-and-line gear. Some of the species under consideration in Regulatory Amendment 26 are captured infrequently; for this reason, uncertainty in the historical data is often high.

1.1 Population Effects for the Bycatch Species

Current Discards

For the recreational sector, estimates of the number of recreational discards from 2014 through 2016 were available from the Marine Recreational Information Program (MRIP) and the Southeast Fisheries Science Center (SEFSC) headboat survey. The MRIP system classifies recreational catch into three categories:

- Type A - Fishes that were caught, landed whole, and available for identification and enumeration by the interviewers.
- Type B - Fishes that were caught but were either not kept or not available for identification:
    - Type B1 - Fishes that were caught and filleted, released dead, given away, or disposed of in some way other than Types A or B2.
    - Type B2 - Fishes that were caught and released alive.

Recent improvements have been made to the MRIP recreational survey, formerly called Marine Recreational Fisheries Statistics Survey. Beginning in 2013, the Access Point Angler Intercept Survey was introduced to remove potential bias in the sampling process. Changes to the effort survey are also underway, transitioning from the Coastal Household Telephone Survey to a more effective mail-based system, as well as using license and registration information. Other improvements have been and will be made to the MRIP survey that should result in better estimates of recreational catches and the variances around those estimates. Harvest from headboats was monitored by the NMFS SEFSC Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) were filled out by the headboat operators, or in some cases by NMFS-approved headboat samplers based on personal communication with the captain or crew. Headboat trips were subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, and stomachs) were obtained as time allowed. Lengths of discarded fish were occasionally obtained but these data were not part of the headboat database.

From 2014 through 2016, the mean annual South Atlantic recreational landings and discards in numbers of fish were calculated for headboat, MRIP charter (Type B1 + B2), and MRIP private angling (Type B1 + B2; including shore) sectors (**Table D-1**).

$$\text{Discard ratio} = \left(\frac{Discards}{Landings} * 100\right)$$

Discard ratios were higher in the private angling sector compared to either the headboat or charter boat categories for many species such as black grouper, black sea bass, gray snapper, mutton snapper, vermilion snapper, white grunt, and yellowtail snapper. Black sea bass accounted for the highest number of discards for all sectors. Recent analyses in Regulatory Amendment 25 to the Snapper Grouper FMP estimated that almost 95% of the recreationally

black sea bass discards were due to the current size limit of 13-inches total length, thus unlikely to be affected by actions in this amendment (SAFMC 2016). For all sectors reported from 2014 through 2016, most of the deep-water snapper grouper species such as golden tilefish and yellowedge grouper, had zero or very low discards.

For the headboat sector, average annual landings in numbers of fish were highest for white grunt, yellowtail snapper, and vermilion snapper. Besides black sea bass, higher numbers of discards were reported in the headboat sector for vermilion snapper, yellowtail snapper, tomtate, white grunt, and gray triggerfish compared to other species. The highest annual average charter sector landings were for vermilion snapper, black sea bass, and gray triggerfish. Black sea bass and vermilion snapper also had some of the highest numbers of discards reported by the charter sector. Further analyses are needed to determine if the discards for black sea bass and vermilion snapper are due to the current minimum size limit, bag limit, or other reasons. For the private recreational component, the highest annual average landings in numbers of fish from 2014 through 2016, were for gray snapper, white grunt, and black sea bass. Gray snapper, hogfish, lane snapper, and mutton snapper had much higher landings and discards in the private angling sector compared to both the headboat and charter sectors. Very high numbers of discards were reported on average annually by the private angling sector for black sea bass, gray snapper, and white grunt in the South Atlantic from 2014 through 2016

Table D-1. Mean annual South Atlantic recreational landings and discards for snapper grouper species from 2014 through 2016. Headboat and MRIP (charter and private) landings and discards are in numbers of fish.

Species	HEADBOAT			CHARTER			PRIVATE		
	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)
Almaco Jack	6,047	1,197	20%	6,995	3,169	45%	14,032	44,240	315%
Atlantic Spadefish	286	105	37%	512	0	0%	123,781	112,706	91%
Banded Rudderfish	23,840	8,201	34%	6,360	77	1%	1,580	7,428	470%
Bar Jack	493	65	13%	197	714	363%	971	6,777	698%
Black Grouper	402	685	170%	2,622	5,242	200%	7,085	45,370	640%
Black Sea Bass	64,026	620,664	969%	59,635	473,245	794%	185,547	3,342,522	1,801%
Blackfin Snapper	801	91	11%	41	0	0%	275	0	0%
Blueline Tilefish	4,305	270	6%	8,341	20	0%	8,994	2,351	26%
Coney	182	207	114%	82	84	102%	0	907	—
Cubera Snapper	20	0	2%	146	0	0%	946	240	25%
Gag	846	1,155	137%	3,328	4,251	128%	7,639	57,124	748%
Golden Tilefish	152	26	17%	3,192	0	0%	1,483	0	0%
Goliath Grouper	0	163	—	0	130	—	0	11,587	—
Gray Snapper	68,348	12,546	18%	20,409	23,547	115%	581,044	2,107,896	363%
Gray Triggerfish	45,412	36,004	79%	41,052	15,521	38%	95,459	270,559	283%
Graysby	2,299	4,508	196%	660	303	46%	8,022	12,359	154%
Greater Amberjack	5,058	4,870	96%	27,479	21,486	78%	25,485	38,589	151%
Hogfish	215	563	261%	4,187	1,848	44%	161,828	23,000	14%
Jolthead Porgy	6,183	859	14%	4,422	24	1%	30,981	194	1%
Knobbed Porgy	5,566	794	14%	323	0	0%	1,517	454	30%
Lane Snapper	31,183	5,152	17%	5,494	2,511	46%	82,307	194,851	237%
Lesser Amberjack	515	168	33%	22	0	0%	164	0	0%
Margate	915	199	22%	0	104	—	3,255	886	27%

Table D-1. Continued.

Species	HEADBOAT			CHARTER			PRIVATE		
	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)
Misty Grouper	10	0	3%	0	0	—	0	0	—
Mutton Snapper	19,968	14,171	71%	30,479	18,291	60%	104,726	318,898	305%
Queen Snapper	449	0	0%	0	0	—	0	0	—
Red Grouper	1,904	7,722	406%	5,290	12,149	230%	20,779	70,406	339%
Red Hind	220	208	95%	134	72	53%	353	1,093	310%
Red Porgy	15,878	17,177	108%	15,071	12,319	82%	25,578	17,893	70%
Rock Hind	2,955	2,749	93%	108	0	0%	1,307	1,115	85%
Sailors Choice	1,430	381	27%	376	16	4%	32,378	17,100	53%
Sand Tilefish	1,425	2,065	145%	185	5,111	2,767%	2,744	16,893	616%
Saucereye Porgy	69	6	8%	43	0	0%	0	0	—
Scamp	1,914	1,488	78%	823	94	11%	3,376	220	7%
Scup	10,807	2,612	24%	295	0	0%	791	290	37%
Silk Snapper	1,023	19	2%	146	5	3%	0	0	—
Snowy Grouper	810	16	2%	3,586	123	3%	1,287	2,639	205%
Tomtate	52,392	79,954	153%	6,367	75,752	1,190%	48,051	187,711	391%
Vermilion Snapper	125,902	87,826	70%	63,377	66,904	106%	115,961	162,012	140%
White Grunt	169,256	60,267	36%	27,594	18,693	68%	289,247	933,720	323%
Whitebone Porgy	5,154	1,470	29%	2,180	374	17%	20,960	2,909	14%
Yellowedge Grouper	287	0	0%	54	0	0%	0	0	—
Yellowfin Grouper	19	3	14%	0	0	—	0	0	—
Yellowmouth Grouper	14	1	5%	0	0	—	0	0	—
Yellowtail Snapper	166,561	64,385	39%	313,036	92,708	30%	434,604	929,224	214%

Sources: MRIP data from SEFSC Recreational ACL Dataset (February 2018); Headboat data from SEFSC Headboat Logbook CRNF files (expanded; March 2017).

Trip Co-occurrence

Many species in the Snapper Grouper FMP could be directly impacted by actions included in Regulatory Amendment 26. **Tables D-2** through **D-4** list the species most often captured (landed or discarded) on the same intercept or headboat trip in the South Atlantic using MRIP or SEFSC headboat survey data from 2014 through 2016. The analyses first isolated all recreational intercepts or headboat trips that reported at least one fish captured for the species of interest from 2014 through 2016 in the South Atlantic to best reflect current fishing trends. Next, on the same intercepts or headboat trips, the number other species were also reported captured were used to provide a percentage of trip co-occurrence. For example, if on the 143 MRIP charter intercepts that captured almaco jacks, 55 greater amberjack were also reported captured, and the percentage of trip co-occurrence between these two species was 38.5% (55/143). Only species that were captured on greater than 100 MRIP intercepts or headboat trips were included in the analyses as a species of interest for more robust results. Also note that MRIP methods focus on measuring the catch of all species coast-wide. Therefore, trip co-occurrence derived from MRIP data may contain common inshore species such as spotted seatrout.

For the private angling sector, high trip co-occurrence was present among red snapper, black sea bass, gray triggerfish, and vermilion snapper (**Table D-2**). There was also high co-occurrence in the private angling sector among gray snapper, lane snapper, mutton snapper, hogfish, and yellowtail snapper. Therefore, aligning seasonal or quota closures among species with high co-occurrence would be expected to minimize regulatory discarding. Similar groupings were present in the charter sector with high co-occurrence among red snapper, black sea bass, gray triggerfish, and vermilion snapper (**Table D-3**). There were many more headboat sector trips available for analyses than either charter or private angling trips (**Table D-4**). A large grouping with high co-occurrence was present among black sea bass, gray triggerfish, tomtate, vermilion snapper, scamp, red snapper, whitebone porgy, almaco jack, gag, and Atlantic spadefish. Similar to the charter and private angling sectors, another grouping of high co-occurrence was among gray snapper, yellowtail snapper, mutton snapper, white grunt, hogfish, graysby, and black grouper. Gray triggerfish had overlap in trip co-occurrence in the headboat component between both the groupings identified.

In addition to the recent trip co-occurrence analyses, the time series of the same analyses was expanded to the most recent ten years (2007 through 2016) and limited to only species managed by the South Atlantic Council in the Snapper Grouper FMP to attempt obtaining enough data for meaningful analyses of the nine species being considered for the **Action 1** Deep-water Species Aggregate. Misty grouper was not reported captured to the MRIP program (private angling and charter combined) in the South Atlantic during that time period and only one intercept was reported for queen snapper and wreckfish. For the only wreckfish intercept, the only other species managed by the South Atlantic Council reported captured was snowy grouper and wahoo supporting **Preferred Alternative 2** in **Action 1**. For the only queen snapper intercept, no other species being considered in the deep-water aggregate were reported captured as well. Both of the other two snapper species in **Action 1**, blackfin and silk snapper, co-occurred with other species in the current snapper aggregate on more MRIP intercepts than the species being considered in the other species in the deep-water aggregate supporting **Preferred Alternative 2 (Table D-5)**. While not a lot of intercepts were available for most of the remaining species being considered in the deep-water aggregate, blueline tilefish, snowy grouper, and yellowedge

grouper had high trip co-occurrence supporting **Preferred Alternative 2**. Similar inferences to the expanded MRIP series could also be made using data from the headboat sector (**Table D-6**). There were no reported captures of wreckfish on any headboat trip during this time. Once again, the three snapper species being considered for the deep-water aggregate had little evidence to support being included in the deep-water aggregate.

Trip co-occurrence analyses using data from the headboat sector are likely more robust than analyses derived from MRIP data due to the number of intercepts or trips available for most species. Additionally, more fish are being captured on average per intercept or trip than the other sectors due to the number of anglers typically fishing. It is not possible to do a meaningful analysis of any long-term population effects due to changes in effort shifting based on the high connectivity of species being captured in the fishery, but efforts being made to align any seasonal or quota closures and aggregates with the groupings identified having high co-occurrence would be beneficial. Many of the groupings, such as the high co-occurrence between vermilion snapper and gray triggerfish or between gray snapper and yellowtail snapper, were as also recognized by Farmer et al. (2010) using various multivariate approaches to identify stock complexes in the South Atlantic. Other studies have incorporated Reef Fish Observer Program and independent sampling program data that may provide additional insights, but are focused on the Gulf of Mexico and not the South Atlantic (Farmer et al. 2016; Pulver et al. 2016).

Table D-2. The species of interest, the number of private angling intercepts where at least one species of interest as captured, and the top three species caught on the same private angling intercepts in the South Atlantic from 2014 through 2016 including the percentage of intercept co-occurrence for species one through three.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Atlantic Spadefish	241	Pinfish (14.9%)	Spot (12.9%)	Southern Kingfish (11.2%)
Black Sea Bass	2,378	Pinfish (25.9%)	Atlantic Croaker (19%)	Pigfish (17.2%)
Gag	193	Black Sea Bass (19.2%)	Gray Snapper (18.1%)	Pinfish (14.5%)
Gray Snapper	1,531	Crevalle Jack (17.6%)	Hardhead Catfish (15.9%)	Spotted Seatrout (12.4%)
Gray Triggerfish	408	Black Sea Bass (21.1%)	Red Snapper (19.9%)	Vermilion Snapper (18.9%)
Greater Amberjack	196	Red Snapper (21.4%)	Dolphin Fish (17.9%)	Vermilion Snapper (17.3%)
Hogfish	103	Gray Snapper (31.1%)	Lionfish (18.4%)	Mutton Snapper (16.5%)
Lane Snapper	288	Gray Snapper (30.6%)	Blue Runner (19.1%)	Mutton Snapper (16.7%)
Mutton Snapper	426	Gray Snapper (30%)	Blue Runner (25.6%)	Yellowtail Snapper (22.3%)
Red Snapper	262	Black Sea Bass (45%)	Gray Triggerfish (30.9%)	Vermilion Snapper (27.1%)
Tomtate	120	Black Sea Bass (41.7%)	Red Snapper (28.3%)	Gray Triggerfish (26.7%)
Vermilion Snapper	193	Gray Triggerfish (39.9%)	Black Sea Bass (38.9%)	Red Snapper (36.8%)
White Grunt	273	Yellowtail Snapper (27.8%)	Gray Triggerfish (20.5%)	Blue Runner (17.9%)
Yellowtail Snapper	386	Grunt Family (27.5%)	Blue Runner (25.6%)	Mutton Snapper (24.6%)

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads. Note: Only species captured on greater than 100 intercepts were included in the analyses and species managed by the Council are highlighted.

Table D-3. The species of interest, the number of charter intercepts where at least one species of interest as captured, and the top three species caught on the same charter intercepts in the South Atlantic from 2014 through 2016 including the percentage of intercept co-occurrence for species one through three.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Almaco Jack	143	Greater Amberjack (38.5%)	Vermilion Snapper (29.4%)	Dolphin Fish & Gray Triggerfish (28.7%)
Black Sea Bass	337	Gray Triggerfish (28.8%)	Red Snapper (26.1%)	Vermilion Snapper (22.6%)
Gag	120	Black Sea Bass (45.8%)	Red Snapper (26.7%)	Greater Amberjack (25.8%)
Gray Snapper	214	Mutton Snapper (45.3%)	Yellowtail Snapper (45.3%)	Blue Runner (38.3%)
Gray Triggerfish	323	Vermilion Snapper (44.9%)	Black Sea Bass (30%)	Yellowtail Snapper (29.1%)
Greater Amberjack	404	Dolphin Fish (26%)	Little Tunny (18.6%)	King Mackerel (18.3%)
Mutton Snapper	343	Yellowtail Snapper (67.9%)	Blue Runner (32.9%)	Gray Snapper (28.3%)
Red Snapper	155	Black Sea Bass (56.8%)	Gray Triggerfish (43.9%)	Greater Amberjack (40%)
Vermilion Snapper	233	Gray Triggerfish (62.2%)	Black Sea Bass (32.6%)	White Grunt (27.9%)
White Grunt	184	Gray Triggerfish (47.3%)	Yellowtail Snapper (41.3%)	Mutton Snapper (40.2%)
Yellowtail Snapper	569	Mutton Snapper (40.9%)	Blue Runner (21.6%)	Gray Snapper (17%)

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads. Note: Only species captured on greater than 100 intercepts were included in the analyses and species managed by the Council are highlighted.

Table D-4. The species of interest, the number of headboat trips where at least one species of interest as captured, and the top three species caught on the same headboat trips in the South Atlantic from 2014 through 2016 including the percentage of trip co-occurrence for species one through three.

Species of Interest	Trips	Species One	Species Two	Species Three
Almaco Jack	4,352	Gray Triggerfish (68.4%)	Vermilion Snapper (64.4%)	Black Sea Bass (50.5%
Atlantic Spadefish	275	Vermilion Snapper (60.7%)	Red Snapper (60%)	Black Sea Bass (57.8%)
Banded Rudderfish	2,696	Gray Triggerfish (69.8%)	Blue Runner (56%)	Tomtate (51.9%)
Bar Jack	599	Blue Runner (74.1%)	Gray Triggerfish (68.4%)	Tomtate (66.4%)
Black Grouper	1,744	Yellowtail Snapper (90.1%)	Mutton Snapper (66.8%)	White Grunt (63.4%)
Black Sea Bass	14,475	Sharpnose Shark (50.1%)	Tomtate (45.3%)	Gray Triggerfish (44.3%)
Blackfin Snapper	134	Mutton Snapper (76.9%)	Red Grouper (61.9%)	Blackfin Tuna (54.5%)
Blueline Tilefish	175	Dolphin Fish (42.9%)	Vermilion Snapper (34.3%)	Snowy Grouper (30.9%)
Coney	757	Yellowtail Snapper (90.4%)	Mutton Snapper (84%)	Blue Runner (77.5%)
Gag	2,550	Black Sea Bass (69.6%)	Gray Triggerfish (61.3%)	Vermilion Snapper (56.2%)
Goliath Grouper	228	Red Snapper (67.1%)	Gray Snapper (67.1%)	Lane Snapper (65.4%)
Gray Snapper	16,474	Yellowtail Snapper (74.8%)	Mutton Snapper (54.2%)	White Grunt (43.6%)
Gray Triggerfish	17,748	Mutton Snapper (44.6%)	Yellowtail Snapper (44.4%)	Vermilion Snapper (40.8%)
Graysby	4,905	Yellowtail Snapper (85.7%)	White Grunt (69.1%)	Mutton Snapper (59.9%)
Greater Amberjack	4,109	Black Sea Bass (74.1%)	Vermilion Snapper (73.6%)	Gray Triggerfish (66.8%)
Hogfish	680	Yellowtail Snapper (83.1%)	White Grunt (64.7%)	Mutton Snapper (59.6%)
Jolthead Porgy	6,260	Yellowtail Snapper (71.8%)	Mutton Snapper (64.1%)	White Grunt (56.2%)
Knobbed Porgy	3,730	Yellowtail Snapper (85.5%)	White Grunt (83.8%)	Gray Snapper (55.1%)
Lane Snapper	10,050	Gray Snapper (60.1%)	Yellowtail Snapper (52%)	Gray Triggerfish (46.8%)

Table D-4. Continued

Species of Interest	Trips	Species One	Species Two	Species Three
Lesser Amberjack	440	Gray Triggerfish (55.2%)	King Mackerel (44.8%)	Little Tunny (42.3%)
Margate	907	Yellowtail Snapper (79.8%)	Mutton Snapper (69%)	Gray Snapper (52.1%)
Mutton Snapper	18,172	Yellowtail Snapper (76.5%)	Blue Runner (50.1%)	Gray Snapper (49.1%)
Red Grouper	6,420	Yellowtail Snapper (84.6%)	Mutton Snapper (69%)	White Grunt (64.1%)
Red Hind	619	Yellowtail Snapper (90.8%)	White Grunt (82.4%)	Mutton Snapper (71.4%)
Red Porgy	1,879	Vermilion Snapper (89.9%)	Gray Triggerfish (79.7%)	Black Sea Bass (79.6%)
Red Snapper	5,187	Black Sea Bass (85.7%)	Vermilion Snapper (68.3%)	Gray Triggerfish (67.3%)
Rock Hind	2,622	Yellowtail Snapper (78.3%)	White Grunt (50.9%)	Mutton Snapper (49.8%)
Sailors Choice	1,442	Yellowtail Snapper (84.5%)	White Grunt (79.5%)	Mutton Snapper (76.1%)
Sand Tilefish	3,503	Yellowtail Snapper (76.7%)	Mutton Snapper (71.6%)	Blue Runner (66.2%)
Saucereye Porgy	143	Gray Triggerfish (83.2%)	Yellowtail Snapper (77.6%)	Mutton Snapper (74.1%)
Scamp	1,392	Vermilion Snapper (85.1%)	Black Sea Bass (79.8%)	Gray Triggerfish (72.8%)
Scup	1,357	Black Sea Bass (97.2%)	Spottail Pinfish (75.6%)	Tomtate (71.6%)
Silk Snapper	173	Mutton Snapper (60.7%)	Vermilion Snapper (59%)	Red Grouper (52.6%)
Snowy Grouper	101	Blueline Tilefish (53.5%)	Vermilion Snapper (53.5%)	Almaco Jack (44.6%)
Tomtate	8,930	Black Sea Bass (73.5%)	Gray Triggerfish (50.3%)	Sharpnose Shark (46.3%)
Vermilion Snapper	10,867	Gray Triggerfish (66.7%)	Black Sea Bass (52.2%)	Tomtate (35.2%)
White Grunt	16,014	Yellowtail Snapper (68.9%)	Gray Snapper (44.9%)	Mutton Snapper (42.1%)
Whitebone Porgy	4,795	Black Sea Bass (75.6%)	Gray Triggerfish (71.5%)	Vermilion Snapper (64.2%)
Yellowtail Snapper	24,155	Mutton Snapper (57.6%)	Gray Snapper (51%)	White Grunt (45.7%)

Source: SEFSC Headboat Logbook CRNF files (March 2017). Note: Only species captured on greater than 100 trips were included in the analyses and species managed by the Council are highlighted.

Table D-5. The species of interest, the number of MRIP intercepts (private angling and charter combined) for species being considered in the deep-water aggregates in A**ction 1** were captured, and the most common Snapper Grouper FMP species caught on the same MRIP intercepts in the South Atlantic from 2007 through 2016 including the percentage of trip co-occurrence for each species.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Blackfin Snapper	15	Vermilion Snapper (46.7%)	Yellowtail Snapper (40.0%)	Lane Snapper (26.7%)
Blueline Tilefish	348	Snowy Grouper (16.1%)	Greater Amberjack (9.8%)	Red Porgy (6.0%)
Silk Snapper	22	Vermilion Snapper (59.1%)	Gray Triggerfish (31.8%)	Snowy Grouper (22.7%)
Snowy Grouper	164	Blueline Tilefish (34.1%)	Greater Amberjack (25.0%)	Red Porgy (11.0%)
Golden Tilefish	60	Greater Amberjack (16.7%)	Almaco Jack (11.7%)	Snowy Grouper (10.0%)
Yellowedge Grouper	11	Blueline Tilefish (72.7%)	Snowy Grouper (54.5%)	Greater Amberjack (36.4%)

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads.

Table D-6. The species of interest, the number of headboat trips for species being considered in the deep-water aggregates in A**ction 1** were captured, and the most c Snapper Grouper FMP common species caught on the same headboat trips in the South Atlantic from 2007 through 2016 including the percentage of trip co-occurrence for each species.

Species of Interest	Trips	Species One	Species Two	Species Three
Blackfin Snapper	221	Mutton Snapper (70.1%)	Red Grouper (52.5%)	Yellowtail Snapper (52.0%)
Blueline Tilefish	576	Black Sea Bass (42.9%)	Vermilion Snapper (25.5%)	Snowy Grouper (22.4%)
Misty Grouper	25	Blackfin Snapper (92.0%)	Black Grouper, Blueline Tilefish, Scamp, Yellowedge Grouper (88.0%)	
Queen Snapper	45	Blackfin Snapper, Blueline Tilefish (95.6%)		Scamp, Yellowedge Grouper (93.3%)
Silk Snapper	606	Mutton Snapper (62.5%)	Yellowtail Snapper (50.8%)	Red Grouper (49.7%)
Snowy Grouper	426	Gray Triggerfish (50.0%)	Vermilion Snapper (46.9%)	Black Sea Bass (45.3%)
Golden Tilefish	88	Blueline Tilefish, Mutton Snapper (38.6%)		Blackfin Snapper, Yellowedge Grouper (36.4%)
Yellowedge Grouper	69	Blueline Tilefish (78.3%)	Scamp (71.0%)	Blackfin Snapper (69.6%)

Source: SEFSC Headboat Logbook CRNF files (June 2018)

Release Mortality Rates

Release mortality rates are expected to vary among species. Generally, release mortality is highly correlated with depth for reef fish species with highest mortality associated with the deepest depth of capture (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 studies and industry input. Stock assessment reports can be found at http://sedarweb.org/.

SEDAR 50 (2017) estimated a point release mortality rate of 82% (sensitivity range: 64-100%) for blueline tilefish captured in the South Atlantic hook-and-line recreational fishery. Snowy grouper also had a high release mortality rate of 100% estimated in SEDAR 36 (2014). Similarly, high release mortality rates of 100% were estimated for yellowedge grouper and golden tilefish based on their typical deep depth of capture in the Gulf of Mexico (SEDAR 22 2011). An assessment for golden tilefish in the South Atlantic assumed discards to be negligible in all sectors of the golden tilefish fishery, therefore, release mortality rates were not estimated (SEDAR 25 Update 2016). SEDAR estimates of release mortality were not 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%).

A release mortality rate of 38% (sensitivity range: 20-50%) was estimated for vermilion snapper captured by both the headboat and general recreational sectors in the South Atlantic during SEDAR 55 (2018). A gray snapper recreational release mortality estimate of 6.9% (sensitivity range: 1.4-14.4%) was recommended in SEDAR 51 (2017) in the Gulf of Mexico. A low release mortality range between 5 and 15% was also recommended for lane snapper in the Gulf of Mexico in SEDAR 49 (2017) due the typical shallow depth of capture, therefore lack of barotrauma. A SEDAR assessment has not been completed in the South Atlantic for gray or lane snapper. The release mortality rate for mutton snapper was estimated to be 15% in the SEDAR 15A Update (2015). The release mortality rate for yellowtail snapper was recommended to be between 10 and 30%, based off data collected by at-sea samplers on recreational fishing trips (SEDAR 27A 2012).

The SEDAR 10 Update (2014) estimated a point estimate of 25% (sensitivity range: 15-35%) for gag in the South Atlantic for the headboat and recreational sectors based on a mark-recapture study by Sauls (2014). SEDAR 19 (2010) recommended a 20% point release mortality rate (sensitivity range: 10-30%) for black grouper in the recreational hook-and-line fishery. However, SEDAR 48 (2017) recommended using the depth dependent discard mortality functions developed for gag during SEDAR 33 (2014) as a proxy to estimate a lower release mortality range between 9 and 26% for black grouper. A South Atlantic red grouper release mortality point estimate of 20% (sensitivity range: 10-30%) was used in SEDAR 53 (2017). It was noted after the assessment that 20% might be too low of an estimate for red grouper based on other research and the most recent assessment in the Gulf of Mexico (Pulver 2017; SEDAR 42 2015).

SEDAR 01 Update (2012) recommended a point release mortality rate for red porgy of 8% in the general recreational sector and a rate of 35% for the headboat sector based on the previous SEDAR, but also discussed higher rates, especially for the headboat sector, similar to those reported by Stephen and Harris (2010) of 82% may be more appropriate. The SEDAR 01 Update assessment determined if the higher release mortality rates were correct, overfishing may have occurred multiple years during the previous decade. The SEDAR 25 Update (2016) recommended a release mortality rate of 7% (sensitivity range: 4-15%) for black sea bass captured on hook-and-line gear based on a recent study by Rudershausen et al. (2010) using mark-recapture information. SEDAR 37 (2013) recommended a release mortality rate of 10% for hook-and-line gear and 100% for spear gear for hogfish. SEDAR 41 (2016) estimated a relatively low release mortality of 12.5% (sensitivity range: 5-20%) for gray triggerfish in the South Atlantic for all sectors; however, new mark-recapture research is being presented at the June 2018 Council meeting suggesting the release mortality rate may be much higher.

A low release mortality rate of 10% (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. A very low discard mortality rate (sensitivity range: 0-10%) was recommended in SEDAR 49 (2016) for almaco jack in the Gulf of Mexico. Fishers cited the shallower depth of capture and the general hardiness of almaco jacks compare to other reef fish and jack species as support for the very low release mortality rate. In the same assessment, a low release mortality range between 20 and 40% was recommended for lesser amberjack. Any SEDAR estimate of banded rudderfish release mortality is currently unavailable, but based on their similar physiology to other species within the same genus (almaco jack, greater amberjack, and banded rudderfish) a range between 0 and 40% should be expected.

Expected Impacts on Bycatch for the Proposed Actions

Action 1 would establish a Deep-water Species Aggregate. This action would likely reduce bycatch and discards in the fishery. The harvest of snapper grouper species is currently regulated with minimum size limits, bag limits, and annual catch limits (ACLs). However, these management tools may have the unavoidable adverse effect of creating regulatory discards, which reduces the amount of fish that may be retained. The action should allow for more focused management in the future with species aggregates more representative of how recreational fishermen currently target species. This action should reduce bycatch, allowing managers to better focus measures and achieve the intended results for species groupings that are being captured together. The action, indirectly, should have positive long-term population effects. The South Atlantic Council selected Alternative 1 (No Action) as their preferred alternative; thus, no changes in bycatch are expected for **Action 1**.

Action 2 would specify the recreational season for the Deep-water Species Aggregate specified in Action 1. Based on analyses provided in **Appendix-J,** landings would decrease for all the species that had enough information available. Reduced landings would benefit the population by allowing the biomass to increase, as long as discards do not increase. Aligning the fishing season between species likely to co-occur should minimize discards as fishers would likely be targeting deep-water aggregate species at the same time. Targeting deep-water aggregate species at the same time would reduce regulatory discarding that may be occurring

when fishing seasons are not aligned, (e.g. targeting blueline tilefish when snowy grouper is currently closed causes any snowy grouper that are captured to be discarded). However, discards could also increase if the ACL is reached for one of the species in the aggregate, causing a quota closure while the season is still open for other species in the aggregate. The South Atlantic Council selected Alternative 1 (No Action) as their preferred alternative; thus, no changes in bycatch are expected for **Action 2**.

Action 3 would specify the aggregate bag limit for the Deep-water Species Aggregate specified in Action 1. Deep-Water Species Aggregate landings would substantially decline based on analyses in **Appendix-J,** resulting in a positive population effect. Bycatch and discards could increase, decrease, or remain the same with this action. A more restrictive bag limit can encourage discards from high-grading if the bag limit has been met. Bycatch and discards could also decrease if fishers stop fishing or move to water unlikely to encounter a deep-water species once the aggregate bag limit has been met. The South Atlantic Council selected Alternative 1 (No Action) as their preferred alternative; thus, no changes in bycatch are expected for **Action 3**.

Action 4 would remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper. Eliminating the minimum size limit should reduce discards, but very few or no discards have been reported recently for these species. There is no expected change in population effects because any fish that were previously released were likely discarded dead due to the depth of capture typically associated with these three species.

Action 5 would reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off the east coast of Florida. Reducing the minimum size limit should reduce discards when harvest for the species is open, but the increase in harvest from the reduced minimum size limit could shorten the fishing season and increase discards due to an in-season closure if the ACL is met. Any benefit from reduced discarding when gray triggerfish is open may be minimal because of the low (12.5%) current estimated release mortality rate, (e.g., most of the undersized gray triggerfish likely survive). However, if release mortality is much as higher as new research suggests, the benefits from reduced discarding would be substantially greater. Further, the stock may be negatively affected by harvesting gray triggerfish at an earlier age, potentially reducing spawning potential.

Action 6 would specify the aggregate bag limit for the snapper grouper species aggregate. Very small reductions in the number of species landed were predicted in **Appendix-J,** resulting in minimal population effects. Similar to the other actions, bycatch and discards could increase, decrease, or remain the same for this action. If the bag limit is overly restrictive, fishers may be forced to discard once the limit is met. Bycatch and discards could also decrease if fishers stop fishing or move to water unlikely to encounter a snapper grouper species once the aggregate bag limit has been met.

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 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 likely had limited effect on the magnitude of overall bycatch of snapper grouper species in the South Atlantic.

Other actions have been taken in amendments that have reduced bycatch 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 addressed overfishing for nine 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, black grouper, and vermilion snapper.

The Comprehensive ACL Amendment (SAFMC 2011c) implemented ACLs and AMs for species not undergoing overfishing in the FMPs 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 2011c) 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 remainder of that fishing year. ACLs and AMs have likely reduced bycatch of target species and species complexes as well as incidentally caught species.

Regulatory Amendment 15 to the Snapper Grouper FMP removed the commercial AM that prohibited harvest of shallow-water grouper harvest once the gag ACL was met or was projected to be met (SAFMC, 2013a). Amendment 36 to the Snapper Grouper FMP established Spawning Special Management Zones, and is expected to provide additional protection to many snapper grouper species, especially speckled hind and warsaw grouper.

The Joint Dealer Reporting Amendment (SAFMC 2013), which went into effect on January 27, 2014, changed the reporting frequency for landings by headboats from monthly to weekly, and required that reports be submitted electronically. The action is intended 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 South Atlantic Council developed Amendment 39 to the Snapper Grouper FMP, Amendment 9 to the Dolphin Wahoo FMP, and Amendment 27 to the Coastal Migratory Pelagics (CMP) 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, and CMP 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 amendments were approved on June 12, 2018. The proposed rule published on April 4, 2018 (83 FR 14400), and the comment period ended on May 4, 2018. The final rule has not yet been published.

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

Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP proposes to modify commercial regulations for species in the snapper grouper complex, including fishing seasons, trip limits, seasonal closures, and size limits for certain species. The purpose of this amendment is to address commercial stakeholder input to enable equitable access for fishermen participating in the snapper grouper fishery, and to minimize discards. The South Atlantic Council took final action to approve this amendment at their September-October 2018 meeting.

Regulatory Amendment 29 to the Snapper Grouper FMP would implement actions pertaining to best fishing practices (e.g., descending devices) and powerhead regulations to improve the survivability of released fish.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational AMs Amendment) would include actions to revise recreational AMs to allow more flexibility in managing recreational fisheries.

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 and minimize discard mortality. Additional information on fishery related actions from the past, present, and future considerations can be found in **Chapter 6** (Cumulative Effects) of the 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 26 are not expected to result in major 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 26 is not expected to result in major changes in bycatch of other fish species not included in this amendment. 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. Additionally, data collection improvements using electronic reporting and monitoring should allow more accurate and timely tracking of catch as well as other capture information. Also, the South Atlantic Council has developed a Citizen Science Program to allow constituents to help increase scientific knowledge by collecting useful 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, 2018, and 2019 (proposed) LOF classifies as a Category II (81 FR 20550, April 8, 2016, 81 FR 54019, August 15, 2016; February 7, 2018, 83 FR 5349; October 23, 2018, 83 FR 53422, 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 fishery in the South Atlantic are classified in the 2016, 2017, 2018, 2019 (proposed) 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 Endangered Species Act biological opinion (2016 Opinion) on the Snapper Grouper Fishery (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 Fishery Management Council, which would require electronic reporting of landings information by federally permitted commercial vessels to increase the timeliness and accuracy of landings and discard data.

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 that For-Hire Amendment at their March 2013 meeting, and the amendment 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 species aggregates and bag limits through Regulatory Amendment 26 could result in a modification of fishing practices by recreational fishers, thereby affecting the magnitude of discards during the designated timeframe. Whereas, it is likely bycatch of species in the Snapper Grouper fishery management unit will be reduced for many of the actions, there is a potential for the discards to increase if fishing seasons are not aligned between species with high co-occurrence. 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. Recreational 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 26.

Social effects of actions proposed in Regulatory Amendment 26 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. Spawning seasons with stricter regulations, new or reduced quotas, reduced bag limits, and increased size limits could also cause some recreational 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. Bag limits, size limits, gear restrictions, and catch monitoring are currently used to regulate the recreational 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 BPA 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 26 are intended to modify recreational regulations, such as changing the bag limits and minimum size limits for species in the Snapper Grouper FMP. These actions are necessary to enable recreational stakeholder input allowing more focused management 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 26 are not expected to result in significant changes in bycatch for most of the actions. In addition, the South Atlantic Council, NMFS, and the SEFSC have implemented and plan to implement numerous management measures and reporting requirements that have improved, or are likely to improve monitoring efforts of discards and discard mortality.

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Appendix E. Regulatory Impact Review

Introduction

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

Problems and Objectives

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

Description of Fisheries

A description of the recreational sector of the snapper grouper fishery of the South Atlantic region is provided in **Section 3.3** of this amendment and is incorporated herein by reference.

Effects of Management Measures

Action 1. Establish a deep-water species aggregate

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.1.2**. The following discussion summarizes the expected economic effects of the preferred alternative.

Modifying the species composition of recreational aggregates would not alter the current harvest or use of the resource. As such, there would be no anticipated direct economic effects on private recreational and for-hire participants, associated industries, or communities from **Action 1**. Specification of aggregates may have indirect economic effects, as other management measures that alter fishing behavior and resource use may rely on how the aggregates are specified as far as the species and fisheries that may be affected. These indirect effects are highly dependent on the subsequent management measures chosen and such effects would be addressed in the analyses for these actions. Since **Preferred Alternative 1 (No Action)** was chosen, there are no anticipated direct or indirect effects from this action.

Action 2. Specify the recreational season for the deep-water species aggregate

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.2.2**. The following discussion summarizes the expected economic effects of the preferred alternative.

Recreational landings of deep-water species have been variable and in many cases landings data are sparse. Nevertheless, while not accounting for likely changes in angling behavior, past landings can be used to project the effects of changes in the fishing season within **Action 2**. Overall, the alternatives considered that specify a recreational season for the deepwater aggregate are expected to result in a decrease in landings and thus a decrease in consumer surplus (CS). Since **Preferred Alternative 1 (No Action)** was chosen, there would be no anticipated change in landings and thus an expected change in CS of $0.

Action 3. Specify the aggregate bag limit for the deep-water species aggregate

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.3.2**. The following discussion summarizes the expected economic effects of the preferred alternative.

The economic effects of **Action 3** would be highly dependent on the species chosen to be included in the deep-water aggregate in **Action 1** as well as the season length that is chosen for the deep-water species in **Action 2**. Sub-alternatives that lead to higher harvest reductions can be assumed to have larger negative direct economic effects, however the economic effects would also be dependent on the species that are impacted. In **Action 3**, some sub-alternatives are less restrictive than current measures for golden tilefish, snowy grouper and/or wreckfish. As such, it is possible that harvest for these species may increase, thereby, increasing the CS attributed to these species as well. Since **Preferred Alternative 1 (No Action)** was chosen, there would be no anticipated change in landings and thus an expected change in CS of $0.

Action 4. Remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.4.2**. The following discussion summarizes the expected economic effects of the preferred alternative relative to the No Action alternative (i.e., the status quo) for each action.

Removing minimum size limits for queen snapper, silk snapper, and blackfin snapper may increase harvest, which would provide positive direct economic effects for the recreational sector provided there are no long-term negative effects for these deep-water snapper stocks. Based on the projected increases in harvest, the overall change in harvest and economic effects are expected to be minimal. **Preferred Alternative 2** is estimated to increase CS by approximately $1,400 (2016 dollars) due to the anticipated increase in harvest of the affected snapper species.

Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

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

The economic effects of lowering the minimum size limit for gray triggerfish in the EEZ off of east Florida (**Action 5**) would be variable depending on how landings change in reaction to such a management adjustment. Harvest of gray triggerfish would increase under **Preferred Alterative 2** which would more thoroughly harvest the recreational ACL for gray triggerfish and incur direct positive economic benefits through increased CS in the recreational fishery derived from such harvest. **Preferred Alternative 2** is expected to increase CS by $189,125 (2016 dollars).

The benefit of an increase in harvest and CS for gray triggerfish can be weighed with the likelihood of the management change causing an in-season harvest closure for the species due to the ACL being met and accountability measures being triggered. An in-season closure is likely, as recreational landings are projected to greatly increase under **Preferred Alternative 2**. A harvest closure for recreationally landed triggerfish is projected to occur in Wave 6 (November to December) due to meeting the ACL as a result of an increase in landings from lowering the minimum size limit for gray triggerfish in the exclusive economic zone (EEZ) off Florida.

In-season closures may negatively affect angler demand for for-hire (charter and headboat) trips, resulting in decreased booking rates and for-hire business net operating revenue (NOR). Due to the complex nature of angler behavior and the for-hire industry, it is not possible to quantify these potential economic effects with available data. As such, no estimates of the change in for-hire NOR are provided, although they may exist. It is expected that a lengthier in-season closure would have a greater potential for negative effects in regards to for-hire NOR; however, the realized effects would be dependent on how for-hire operators can market and sell their services for trips landing other species.

Action 6. Modify the aggregate bag limit for the 20-fish aggregate

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.6.2**. The following discussion summarizes the expected economic effects of the preferred alternative relative to the No Action alternative (i.e., the status quo) for each action.

Action 6 would implement restrictive measures on recreational harvest under **Preferred Alternative 4**; however, the direct economic effects on overall landings and thus CS are expected to be minimal for the species affected when compared to total landings. The anticipated marginal change in CS solely from applying bag limits under **Preferred Alternative 4** is -$369,031 (2016 dollars). While a value of $12.54 per fish was applied to the estimated reductions in landings to calculate CS, due to diminishing marginal CS exhibited for fish that are landed later in a bag limit (Carter and Liese 2012), the CS for fish that would be discarded due to

reaching the bag limits imposed under **Preferred Alternative 4** would be smaller, therefore, the reduction in total CS provided is likely an upper bound estimate.

Overall, the quantified effects of management measures in this amendment are estimated to have net negative economic effects on the recreational sector in regards to CS, which is a measure of net economic benefits. In aggregate, these management measures are expected to result in a change in total CS of -$178,506 (2016 dollars) in 2019, the first year of the expected implementation for the amendment.

Public Costs of Regulations

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

South Atlantic Fishery Management Council (Council) costs of document preparation, meetings, public hearings, and information dissemination.	$15,000
NMFS administrative costs of document preparation, meetings and review	$15,000
TOTAL	$30,000

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

Net Benefits of Regulatory Action

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

For current purposes, the reasonably "foreseeable future" is considered to be the next 5 years. There are two primary reasons for considering the next 5 years the appropriate time period for

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

evaluating the benefits and costs of this regulatory action rather than a longer (or shorter) time period. First, this regulatory action does not include a predetermined sunset provision. Second, based on the history of management in the snapper-grouper fishery in the South Atlantic, regulations such as those considered in this amendment are often revisited within 5 years or so.

The analyses of the net changes in economic benefits indicates an annual decrease of $178,506 (2016 dollars). In discounted terms and over a 5-year time period, the total net present value of this decrease in economic benefits is -$731,910 using a 7% discount rate and -$817,505 using a 3% discount rate. The estimated non-discounted public costs resulting from the regulation are $30,000. The costs resulting from the amendment and the associated rulemaking process should not be discounted as they will be incurred prior to the effective date of the final rule.

Based on this information, this regulatory action is expected to decrease net benefits to the Nation. Over a 5-year time period, the quantified change in net economic benefits is expected to be -$761,910 using a 7% discount rate and -$847,505 using a 3% discount rate.

Determination of Significant Regulatory Action

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

Appendix F. Regulatory Flexibility Analysis

Introduction

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

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

Additional information on the description of affected entities and expected economic effects of the proposed action may be found in Chapters 3 and 4, respectively.

Statement of the Need for, Objective of, and Legal Basis for the Proposed Action

The purpose of this regulatory amendment, as discussed in Section 1.4, is to address recreational stakeholder input to increase predictability for the deep-water component of the recreational snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency. The need is to improve management of the recreational component of the snapper grouper fishery to achieve optimum yield, while minimizing, to the extent practicable, adverse socio-economic effects for recreational fishermen in the South Atlantic region.

The Magnuson-Stevens Fishery Conservation and Management Act provides the statutory basis for this regulatory amendment.

Description and Estimate of the Number of Small Entities to which the Proposed Action would Apply

The proposed action would apply only to the recreational sector of the South Atlantic snapper grouper fishery. This proposed action would remove the recreational minimum size limits for queen snapper, silk snapper, and blackfin snapper; reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida; and, modify the aggregate bag limit for the 20-fish aggregate.

Recreational anglers fishing for snapper grouper species would be directly affected by the proposed action, but anglers are not considered business entities under the RFA. For-hire vessels would also be affected by this action but only in an indirect way. For-hire businesses (charter vessels and headboats) operate in the recreational sector, but these businesses only sell fishing services to recreational anglers. For-hire vessels provide a platform for the opportunity to fish and not a guarantee to catch or harvest any species, though expectations of successful fishing, however defined, likely factor into the decision by anglers to purchase these services. Because the effects on for-hire vessels would be indirect, they fall outside the scope of the RFA.

In summary, the proposed action would not directly affect any small business entities in the snapper grouper fishery.

Mainly for informational purposes, the following description of small entities (i.e., for-hire vessels) indirectly affected by the proposed action is provided. Charter boats and headboats (also called party boats) are the two types of vessel operating in the for-hire business industry. Although charter boats tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is typically determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

A federal for-hire vessel permit (South Atlantic Charter/Headboat Snapper/Grouper Permit) is required for harvesting snapper grouper species when fishing on for-hire vessels. The South Atlantic for-hire permit is an open access system. As of December 19, 2018, there were 1,746 valid (non-expired) or renewable Atlantic charter/headboat snapper/grouper permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Some vessel owners may have obtained open access permits as insurance for uncertainties in the fisheries in which they currently operate. In the period 2012 through 2016, the lowest number of for-hire vessel permits occurred in 2014 and the highest in 2016. The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; and approximately 10% of the total number of for-hire snapper grouper vessels are home-ported in states outside of the SAFMC's area of jurisdiction. Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter boat, operation as either a headboat or charter boat is not restricted by the permitting regulations, and vessels may operate in both

capacities. However, according to the NMFS Southeast Region Headboat Survey there were 63 headboats operating in the South Atlantic.

Economic value for for-hire vessels can be measured by producer surplus (PS) per passenger trip (the amount of money that a vessel owner earns in excess of the cost of providing the trip). Estimates of the PS per for-hire passenger trip are not available. Instead, net operating revenue (NOR), which is the return used to pay all labor wages, returns to capital, and owner profits, is used as a proxy for PS. For the South Atlantic region, estimated NOR values are $165 per charter angler trip and $45 per headboat angler trip.

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

No duplicative, overlapping, or conflicting Federal rules have been identified with the regulatory amendment.

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

This regulatory amendment would not introduce any changes to reporting and record-keeping and other compliance requirements which are currently required.

Significance of Economic Impacts on a Substantial Number of Small Entities

Substantial Number of Small Entities Criterion

As noted above, the proposed action would not affect any small business entities in the snapper grouper fishery, thus this criterion is not applicable.

Significant Economic Impact Criterion

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

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

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

In the absence of any economic impacts on small entities in the snapper grouper fishery, it is concluded that the proposed action would not result in any significant economic impacts on small business entities.

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

Because the proposed action would not have significant economic impacts on any small business entities in the snapper grouper fishery, the issue of significant alternatives to the proposed action is not relevant.

Appendix G. Other Applicable Laws

1.1 Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Among other things under the APA, the National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. Vision Blueprint Recreational Regulatory Amendment 26 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 26) 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 26 uses the best available information and made a broad presentation thereof. The information contained in this document was developed using best available scientific information. Therefore, this document is in compliance with the IQA.

1.3 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. The Council believes the actions in this 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 (2016 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.

Additionally, 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. 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.

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.

A regulation is significant if it: 1) has an annual effect on the economy of $100 million or more or adversely affects in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments and communities; 2) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; 3) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or 4) raises novel legal or policy issues arising out of legal mandates,the President's priorities, or the principles set forth in this Executive Order.

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, Section 7.

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 Fishery Management

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

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

SAFMC EFH User Guide
(http://safmc.net/download/SAFMCEFHUsersGuideFinalRevAug17_2.pdf)

The EFH Users Guide developed during the FEP II development process is available through the FEP II Dashboard (see following sections) and provides a comprehensive list of the designations of EFH and EFH-HAPCs for all species managed by the Council and the clarifications identified during FEP II development. As noted above, additional detailed information supporting the EFH designations appears in FEP, FEP II and in individual FMPs, and general information on the EFH provisions of the Magnuson-Stevens Act and its implementing regulations (50 CFR 900 Subparts J and K) can be found at https://sero.nmfs.noaa.gov/habitat_conservation/index.html. These sources should be reviewed for information on the components of EFH assessments, steps to EFH consultations, and other aspects of EFH program operation.

SAFMC EFH Policy and EFH Policy Statements

Policy 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 Council to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the 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 Council 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 Essential Fish Habitat Policy Statements
Considerations to Reduce or Eliminate the Impacts of Non-Fishing Activities on EFH

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

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

Habitat Conservation and Fishery Ecosystem Plans

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

Building on the long-term conservation approach, the Council facilitated the evolution of the Habitat Plan into the first FEP to provide a clear description and understanding of the fundamental physical, biological, and human/institutional context of ecosystems within which fisheries are managed and identify information needed and how that information should be used in the context of FMPs. Developing a South Atlantic FEP required a greater understanding of the

South Atlantic ecosystem, including both the complex relationships among humans, marine life, the environment and essential fish habitat and a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to EBFM in the region. To support the move towards EBFM, the Council adopted broad goals: (1) maintaining or improving ecosystem structure and function; (2) maintaining or improving economic, (3) social, and cultural benefits from resources; and (4) maintaining or improving biological, economic, and cultural diversity.

Ecosystem Approach to Conservation and Management of Deep-water Ecosystems

The Council's Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel supported an ecosystem approach and proactive efforts to identify and protect deep-water coral ecosystems in the South Atlantic region. Through Comprehensive Ecosystem-Based Amendment 1, Comprehensive Ecosystem-Based Amendment 2, and Coral Amendment 8, the Council established and expanded deep-water coral HAPCs (CHAPCs) and co-designated them as EFH-HAPCs to protect the largest continuous distribution (>23,000 square miles) of pristine deep-water coral ecosystems in the world from fishing and non-fishing activities.

Fishery Ecosystem Plan II Development

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

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

Fishery Ecosystem Plan II Dashboard

The FEP II Dashboard and associated online tools provide a clear description of the fundamental physical, biological, human, and institutional context of South Atlantic ecosystems within which fisheries are managed. The FEP II Digital Dashboard layout and online links follow are below:

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

NOAA Ecosystem Based Fishery Management Activities Supporting FEP II

NOAA EBFM Policy and Road Map

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

FEP II Implementation Plan Structure and Framework

The Implementation Plan (http://safmc.net/download/SAFMC-FEP-II-Implementation-Plan-March-2018.pdf) is structured to translate approved policy statements of the Council into actionable items. The plan encompasses chapters beginning with an introduction to the policy statement, a link to the complete policy statement, and a table which translates policies and policy components into potential action items. The actions within the plan are recommendations for activities that could support the Council's FEP II policies and objectives.

FEP II Two Year Roadmap

The FEP II Two Year Roadmap (http://safmc.net/download/SAFMC-FEP-II-Two-Year-Roadmap-March-2018.pdf) draws from the Implementation Plan and presents three to five priority actions for each of the nine approved policy statements of the Council which would be initiated or completed over the next two years. The Roadmap provides "Potential Partners" and other potential regional collaborators, a focused list of priority actions they could cooperate with the Council on to advance policies supporting the move to EBFM in the South Atlantic region.

Monitoring/Revisions to FEP II Implementation Plan

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

Regional Habitat and Ecosystem Partners

The Council, with the Habitat Protection and Environmental Based Management Advisory Panel as the foundation, collaborates with regional partners to create a comprehensive habitat and ecosystem network in the region to enhance habitat conservation and EBFM.

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.

Southeast Coastal and Ocean Observing Regional Association (SECOORA)

The Southeast Coastal Ocean Observing Regional Association (SECOORA) is the coastal ocean observing system for the Southeast U.S. SECOORA is one of 11 regional coastal observing systems that comprise the NOAA-led United States Integrated Ocean Observing System (U.S. IOOS®). SECOORA's mission is to observe, understand, and increase awareness of our coastal ocean; promoting knowledge, economic, and environmental health through strong regional partnerships. Guided by their members, users, regional ocean experts, managers, and other stakeholders, SECOORA collects data and creates tools that support human populations, coastal economies and a healthy, sustainable environment. The SECOORA observing system is comprised of multiple data products, moored and coastal stations, high-frequency radars, and a glider observatory. The SECOORA footprint spans the eastern side of Gulf of Mexico to South Atlantic Bight and is connected by the Loop Current-Florida Current-Gulf Stream continuum. The SECOORA Strategic Plan (2016-2020) was developed by the Board in 2015 and guides tasks for the next 4 years. SECOORA supports projects that are important to stakeholders in the

southeast. SECOORA talks to users and produces oceanographic observations, models, web tools, applications, and products based on their needs. Data are available on the portal http://secoora.org/data/. Each project SECOORA supports is linked to one of four focus areas: Marine Operations, Coastal Hazards, Ecosystems, and Climate Variability.

The Council is a voting member and Council staff serves on the Board of Directors to guide and direct priority needs for observation and modeling to support fisheries oceanography and integration into stock assessments through SEDAR.

Collaboration facilitates SECOORAs ability to: refine current or water column designations of EFH and EFH-HAPCs (e.g., Gulf Stream and Florida Current); provide oceanographic models linking benthic, pelagic habitats, and food webs; provide oceanographic input parameters for ecosystem mode; integrate OOS information into SEDAR process in the South Atlantic; facilitate OOS system collection of data and other research necessary to support the Council's conservation of habitat and use of area-based management tools in the South Atlantic Region including designation of EFH and EFH-HAPC and establishment of Marine Protected Areas, Deepwater C-HAPCs, Special Management Zones, Spawning Special Management Zones and Allowable Gear Areas; characterize connectivity of habitats and managed areas; highlight the OOS program in the South Atlantic FEP II Dashboard; and provide access to OOS products to facilitate model and tool development and provide researchers access to data or products including those collected/developed by South Atlantic OOS partners. The Council is also collaborating with SECOORA to advance the coordination, techniques and data integration for biodiversity and environmental observations in support of region-specific decision making and implement a sustainable National Marine Biodiversity Observation Network (Marine Biodiversity Observation Network).

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

The Councils serve on the National Habitat Board http://www.fishhabitat.org/ and, as a member of the Southeast Aquatic Resource Partnership (SARP) https://southeastaquatics.net/, has highlighted this collaboration by including the Southeast Aquatic Habitat Plan (SAHP) and associated watershed conservation restoration targets into the original FEP. Many of the habitat, water quality, and water quantity conservation needs identified in the threats and recommendations Volume of the original 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 EFH for Council-managed species or habitat important to their prey. 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) https://southeastaquatics.net/sarps-programs/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.

South Atlantic Landscape Conservation Cooperative

The Council participates as Steering Committee member for the South Atlantic Landscape Conservation Cooperative (SALCC), an applied conservation science partnership focused on the South Atlantic region that informs on-the-ground strategic conservation efforts at landscape scales. LCC partners included Department of Interior (DOI) agencies, other federal agencies, states, tribes, non-governmental organizations, universities, and others. The DOI Southeast Climate Services Center (CSC) had 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 and a regional blueprint to address the rapid changes in the South Atlantic including climate change, urban growth, and increasing human demands on resources which are reshaping the landscape. 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 Webservices present spatial representations of EFH, managed areas, regional fish and fish habitat distribution, and fishery operation information which was drawn on as a critical part of the collaboration with the SALCC Conservation Planning Atlas and the Regional Conservation Blueprint. While the LCCs are no longer funded, the South Atlantic Conservation Blueprint continues to be refined and serves as the technical foundation for the Southeast Conservation Adaptation Strategy (SECAS).

Southeast Conservation Adaptation Strategy: http://secassoutheast.org/

SECAS unites the conservation community around a shared, long-term vision for the future to consider dramatic changes sweeping the Southeastern United States including urbanization, competition for water resources, extreme weather events, sea-level rise, and climate change which pose unprecedented challenges for sustaining our natural and cultural resources. Through SECAS, diverse partners are working together to design and achieve a connected network of lands and waters that supports thriving fish and wildlife populations and improved quality of life for people across the Southeastern United States and the Caribbean. The primary product of SECAS is the Southeast Conservation Blueprint SECAS Blueprint. http://secassoutheast.org/blueprint.html. The Blueprint stitches together smaller sub-regional plans into one unifying map that identifies important areas for conservation and restoration.

Regional Ecosystem Modeling in the South Atlantic

South Atlantic Ecopath with Ecosim 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 helped the Council and cooperators identify available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provided a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships. While individual efforts were underway in the South Atlantic, only with significant investment of resources through other programs was a comprehensive regional model further developed.

A subsequent collaboration building on the previous Ecopath model developed through the Sea Around Us project for the South Atlantic Bight focused on simulating forage fish population changes that could result from environmental or oceanographic variation associated with climate change effect and how it could potentially affect managed species.

As part of the FEP II development process a new generation South Atlantic ecosystem modeling effort funded by the SALCC, was conducted to engage a broader scope of regional partners. This effort facilitated development of a new generation Ecopath with Ecosim (EwE) model which will ultimately provide evaluation tools for the SSC and Council and inform other regional conservation planning efforts.

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

A modeling team comprised of FWRI staff, Council staff and other technical experts as needed, will coordinate with members of the original Ecosystem Modeling Workgroup to maintain and further refine the South Atlantic Model. The SAFMC Ecospecies online species information system will be the long-term repository for the processed inputs and outputs associated with the South Atlantic model. Online access to the EcoSpecies system is available through the FEP II Dashboard through individual links under Managed Species Section http://safmc.net/uncategorized/safmc-managed-species/ and through the Tools Section http://safmc.net/fishery-ecosystem-plan-ii-tools/ The direct link to the system is http://saecospecies.azurewebsites.net/.

Tools to support EBFM in the South Atlantic Region

The Council developed a Habitat Conservation and Ecosystem Management Section of the website http://safmc.net/fishery-ecosystem-plan-ii-introduction/which provides access to the FEP II Digital Dashboard and associated tools. Florida's FWRI maintains and distributes GIS data, imagery, and documents relevant to habitat conservation and ecosystem-based fishery management in their jurisdiction. Over the last several years, FWRI has created web services and applications using the ArcGIS for Server (AGS) software. AGS enables collaboration among various federal, state and local agencies to evaluate and analyze fisheries-related information in a new way. By transitioning to the AGS platform, the Council enhanced their online suite of tools to support fisheries management in their region. The Council has continued its collaboration with FWRI in the 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 online systems provide access to the following Services:

SAFMC Fisheries Webservice: (http://ocean.floridamarine.org/SA_Fisheries/)

The service provides access to species distribution and spatial presentation of regional fishery independent data from the Southeast Area Monitoring and Assessment Program (South Atlantic) SEAMAP-SA, the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP), and NOAA Southeast Fishery-Independent Survey (SEFIS).

SAFMC EFH Webservice: (http://ocean.floridamarine.org/sa_efh/)

The EFH service provides access to spatial representation of EFH and EFH-HAPCs for Council managed species and Highly Migratory Species.

SAFMC Managed Areas Service: (http://ocean.floridamarine.org/safmc_managedareas/).

The Managed Area service provides access to spatial presentations of Council and other managed areas in the region. A new data layer of gear restrictions to include in the Managed Areas map service. Restrictions for black sea bass pots, fish traps, roller rigs, octocoral harvest, spiny lobster closed areas, golden crab closed areas, pelagic sargassum harvest, and longline prohibited areas are provided.

SAFMC EcoSpecies Online Species Information System:
(http://saecospecies.azurewebsites.net/)

FWRI works with the Council to provide support relevant to habitat conservation and ecosystem-based fishery management in the Council's jurisdiction. The system provides species life history and habitat information to flexibly fill the needs of the South Atlantic Council and other regional users. The updated and refined system provides the Council with the foundation from which to attain a more comprehensive understanding of habitat and biology of species, fisheries information, social and economic impacts of management, and ecological consequences of conservation and management. The system was further refined with information supporting EFH designations, Annual Catch Limits (ACLs), and Accountability Measures (AMs) associated with all Council-managed species, added and additional refinement of structure and function further enhancing the systems capabilities and utility. In addition, new habitat information based on life history stage was imported into the database and a link to a User's Guide (http://safmc.net/download/EcoSpecies-WebUser-Manual-3-17.pdf) was added. The project in 2019 will continue to update and refine the online data system. Updates included in this phase of the project address the need by the Council to refine and update species information for future 5-year EFH reviews and to highlight and expand accessibility and availability of detailed species, habitat, and fishery information for FEP II to further support the move to Ecosystem-Based Fishery Management.

South Atlantic Artificial Reefs Web Application:

(http://myfwc.maps.arcgis.com/apps/webappviewer/index.html?id=f3c6ac59ee5f49e59f1ae5c96c5bc76b). This application provides a regional view of artificial reefs locations, contents and eventually imagery associated with programs in the southeastern U.S. overseen by individual states (Florida, Georgia, South Carolina, North Carolina).

South Atlantic ACCSP Web Map and Application:

A new ArcGIS Online web map displays Atlantic Coastal Cooperative Statistics Program (ACCSP) Statistical Areas with related ACCSP non-spatial tables of non-confidential data binned into 5-year time steps to better represent catch and values of Council-managed species

across time. The web map provides an easy interface to view landings of a statistical area over time. FWRI also created an ACCSP web application for users to query by species for each time step or query by ACCSP Statistical Areas. The ACCSP web application is powered by the web map to display charts of landings and values for ACCSP Statistical Areas. The related table widgets summarize the fields for "live_pounds" and "dollar_values" by species and time step.

SAFMC Habitat and Ecosystem Digital Dashboard Enhancements:

To further enhance the Councils Digital Dashboard and enhance linkages with regional partners mapping and characterizing habitats and documenting species use of habitats in the South Atlantic Region, a live link to the *Okeanos Explorer* while on cruise was added to the Projects page and a link to the Atlantic Coastal Fish Habitat Partnership (ACFHP) was added to the Partners page.

Ecosystem-Based Action, Future Challenges and Needs

The Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deep-water 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 EFH, and use of other spatial management tools including Special Management Zones and Spawning Special Management Zones. Through development of the Comprehensive Ecosystem-Based Amendments, the Council has taken an ecosystem approach to protecting deep-water ecosystems while providing for traditional fisheries for the Golden Crab and Royal Red shrimp in areas where they do not impact deep-water coral habitat. The stakeholder-based process tapped into 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 habitat conservation and EBFM needs.

One of the greatest challenges to enhance habitat conservation and EBFM in the region is funding high priority research, including comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for Council use in place-based management measures. Additional resources need to be dedicated to expanding regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. The FEP II Implementation Plan includes Appendix A to highlight research and data needs excerpted from the SEAMAP 5 Year Plan because they represent short and long-term research and data needs that support EBFM and habitat conservation in the South Atlantic Region.

Development of ecosystem information systems to support 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. 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 information supporting FEP II, which support refinement of EFH designations and spatial representations and future EBFM actions. These are the highest priority needs to support habitat conservation and EBFM, the completion of mapping of near-shore, mid-shelf, shelf edge, and deep-water habitats in the South Atlantic region and refinement in the characterization of species use of habitats.

Appendix I. Recreational Data Analyses of Management Alternatives

Introduction

Vision Blueprint Regulatory Amendment 26 to the Snapper Grouper Fishery Management Plan contains actions to address items in the 2016-2020 Vision Blueprint for the Snapper Grouper Fishery of the South Atlantic Region (Vision Blueprint). The Council chose to focus on actions that would address "seasonality" and "retention" in the fishery and began development of two amendments to address the commercial and recreational sectors, respectively.

This document describes analyses to predict the potential effects of proposed recreational management measures on harvest of snapper grouper species in the South Atlantic. Proposed measures include adjustments to the composition of recreational aggregates; modifications to bag limits for proposed aggregates; a minimum size limit reduction for gray triggerfish and minimum size limit removal for three deep-water snappers; and specification of a recreational season for deep-water species.

Uncertainties and Assumptions

These analyses are based on information collected through the Marine Recreational Information Program (MRIP) and Southeast Region Headboat Survey (SRHS). Data collected through the MRIP survey from charter and private vessels are often limited for many species in the snapper grouper fishery management unit. The percent standard error (PSE) of the landings and catch (kept plus released fish) estimate is often high (>40%) for many snapper grouper species and exceeds recommended acceptable levels from the Atlantic Coastal Cooperative Statistics Program (ACCSP 2016). When considering management for such species, the data need to be examined at a finer scale than using annual landings estimates across the South Atlantic region. In order to estimate the effects of proposed management measures in this amendment, landings are examined for proposed aggregate groupings (e.g., deep-water species), based on 2-month waves and by varying bag limits. The landings estimates used in the analyses should be viewed with extreme caution because the associated PSE is likely greater than 60%.

It is assumed that the fishing effort and catch that occurred from 2014 to 2016 will represent effort and catches moving forward. All analyses currently assume no change in fishing behavior (effort) would occur based on the regulations. For example, most of the golden tilefish landings that occur in the South Atlantic region occur outside of proposed season. It is likely fishermen would change their behavior when fishing for golden tilefish if a season were to be specified. The current analysis assumes no golden tilefish landings that occurred outside of the proposed fishing season will shift to the proposed season and compliance is 100% with federal regulation (including state waters). This is a necessary assumption because it is difficult to predict how fishermen's behavior would change in response to the proposed actions and alternatives.

Catches can also vary as fish population and recruitment change. Many of the snapper grouper species have not been assessed (40 out of 54 included in this amendment). Although the most commonly caught stocks have been assessed, an index of abundance has not been developed for most stocks. Methods to track changes in population size, recruitment, or projected populations would enhance predicted catches relative to annual catch limits for the proposed actions and alternatives.

Data

For all the analyses, size limits were adjusted first. For the actions proposing to remove the minimum size limit for three deep-water snapper species and reducing the minimum size limit of gray triggerfish off east Florida, any fish reported as released on a trip could be converted to a landed catch. For the deep-water species, if there were discards of the deep-water snapper species, each individual was changed to landed catch. For gray triggerfish, a portion of the discards were changed to landed catch based on the length observations from MRIP Observer Program (see section below).

Proposed changes to fishing seasons were analyzed next. Seasons were analyzed by converting any landed catch outside of the proposed season to releases. Any releases that occurred within the proposed open seasons were analyzed to determine if changing a released fish into a landed fish would exceed the bag limit. For any trip that caught the bag limit (landings + releases) during the proposed open season, the landings were set equal to the bag limit and any remaining fish were considered releases. For any trip that caught less than the bag limit during the proposed open season, the landings were set to the landings + releases and it was assumed that no releases occurred.

Lastly, bag limits were analyzed. Bag limits were analyzed differently for different species. Some proposed actions would potentially increase harvest of golden tilefish, snowy grouper, wreckfish, black grouper, and gag. For these species, if there were released fish on a given trip, then the catch was increased by the number of releases up to the proposed bag limit as described above. Actions 3 and 6 propose modifications to aggregate bag limits. For those analyses, the number of fish landed by species in the aggregate were summed. The landings (in numbers of fish) were reduced based on the proposed bag limits and any remaing catch were releases.

Marine Recreational Information Program (MRIP)

The MRIP data includes both private recreational trips and charter trips (data downloaded from MRIP Website 5/8/2017). Data were available at the trip level and included number of fish observed (by the interviewer, type A), number of fish killed but not observed (type B1), number of fish discarded (type B2), the number of anglers on board, the date of the intercept, the kind of day (weekend vs. weekday), the length of each fish, and the expansion factor used to expand the landings and releases of each trip to the total landings and discards for the entire South Atlantic based on the estimated fishing effort. Estimates were developed using the surveymeans procedure in SAS 9.4 software (SAS Institute 2013). Scup trips occurring north of Cape Hatteras based on county of landing were removed from the analysis as the Council does not manage that

species north of Cape Hatteras. Monroe County (Florida Keys) landings were added to those for the South Atlantic region.

The estimated impact of proposed management measures has considerable uncertainty due to the limited sample size throughout the year, seasonally, or spatially. **Tables I-1** and I-**2** show the number of MRIP intercepts (catch and releases) for species included in Regulatory Amendment 26 for the charter and private vessel components of the recreational sector.

Southeast Region Headboat Survey (SRHS)

Headboat (HB) data were also available at the trip level and were obtained from logbook data (data provided by NMFS SRHS 5/8/2017). These data also included number of fish kept, number of fish discarded, number of anglers on board, and the date of the trip. Number of days was also included in the analysis since headboats can take multiday trips. The multiday trip limits allow retention of a bag limit for each day the vessel is fishing. All scup were included in the analysis because landings for headboats could not be separated from north and south of Cape Hatteras (**Figure I-1**). Monroe County was included in the analysis of landings for all species.

MRIP Observer Program

Observer data were available for a variety of species from North Carolina through Florida (data provided by FWRI 5/10/2017 and NCDMF 5/18/2017). In this analysis, size information was used to determine the effects of removing the size limit for blackfin snapper, queen snapper, and silk snapper and reducing the size limit for gray triggerfish off east Florida. The three deep-water snappers were only observed off Florida and the proposed reduction in the gray triggerfish minimum size limit would only apply off the east coast of Florida; therefore, only data from the Florida Fish and Wildlife Conservation Commission were used in the size limit analysis. Observers were onboard charter and headboat vessels and measured landed and released fish. These observed length measurements were used to estimate the impact of removing or reducing the minimum size limits for the species listed above.

Landings in Weight

Weight of fish was developed by combining the numbers above with the Recreational ACL File (6/11/2018). The ACL file, which is used to track the annual catch limit and updated frequently, was used to convert number of fish to pounds for fish with annual catch limits tracked in pounds. If a management action considered a season, then average weight by wave was used to develop wave landings estimate in pounds. If a management action did not consider a season, then an annual average weight for the species or aggregate was used to develop annual landings.

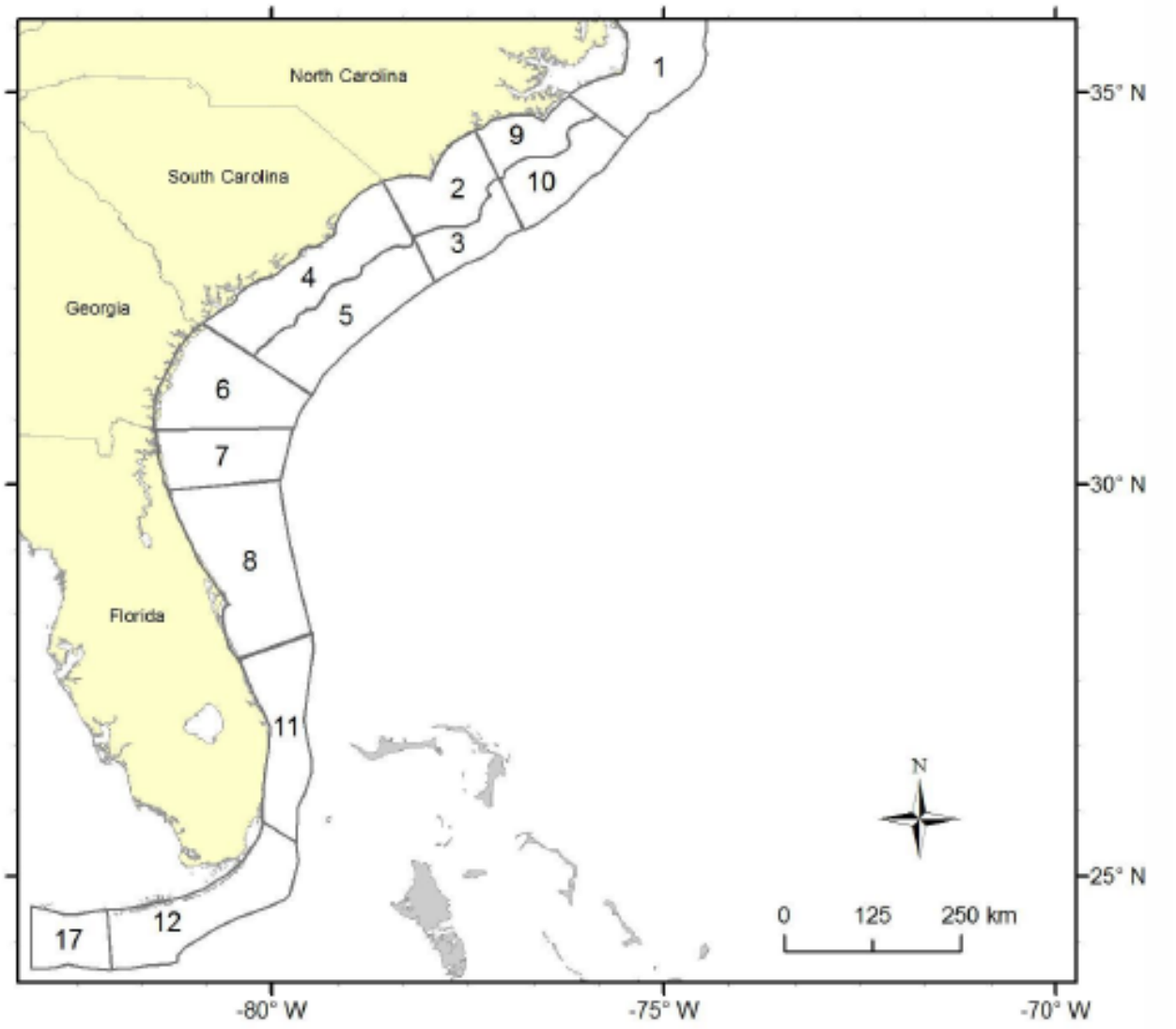

Figure I-1. Map of headboat data grids included in the analysis for Regulatory Amendment 26.

Table I-1. Number of MRIP intercepts from 2014 to 2016 for the private vessel component of the recreational sector for species included in Regulatory Amendment 26. Red = less than or equal to 10 intercepts, yellow = 11 to 30 intercepts, and green = greater than 30 intercepts.

Component	Year	Species	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Private	2014	ALMACO JACK	4	9	16	22	9	3
Private	2015	ALMACO JACK	10	1	11	19	11	4
Private	2016	ALMACO JACK	15	6	18	22	1	2
Private	2014	ATLANTIC SPADEFISH			16	30	19	1
Private	2015	ATLANTIC SPADEFISH	2		19	40	3	
Private	2016	ATLANTIC SPADEFISH		1	18	50	6	
Private	2014	BANDED RUDDERFISH		4	6	4	3	1
Private	2015	BANDED RUDDERFISH		1	4	3		
Private	2016	BANDED RUDDERFISH		8	5	13		
Private	2014	BAR JACK		2	1	2	1	
Private	2015	BAR JACK	2	1	4	1		
Private	2016	BAR JACK		2	2	3		
Private	2014	BLACKFIN SNAPPER				1		2
Private	2014	BLUELINE TILEFISH	1	7	9	10	11	1
Private	2015	BLUELINE TILEFISH	3	1	3		1	
Private	2016	BLUELINE TILEFISH	1		6	19		
Private	2014	GRAY TRIGGERFISH	10	13	32	48	28	18
Private	2015	GRAY TRIGGERFISH	12	19	35	23	21	5
Private	2016	GRAY TRIGGERFISH	13	19	33	52	7	5
Private	2014	JOLTHEAD PORGY	6	5	4	7	1	11
Private	2015	JOLTHEAD PORGY	19	10	12	4	8	4
Private	2016	JOLTHEAD PORGY	7	12	8	16	4	6
Private	2014	KNOBBED PORGY		1	2	5		
Private	2015	KNOBBED PORGY	2		1	3	1	2
Private	2016	KNOBBED PORGY	3	2	2	2		1
Private	2014	LESSER AMBERJACK				1		
Private	2015	LESSER AMBERJACK	1					
Private	2016	LESSER AMBERJACK			2			
Private	2015	MARGATE	3	4	1			
Private	2016	MARGATE	2		2	1		
Private	2015	QUEEN SNAPPER	1					
Private	2016	QUEEN SNAPPER				1		
Private	2014	SAILORS CHOICE		1		1	3	1
Private	2015	SAILORS CHOICE	1	2	6	3	1	
Private	2016	SAILORS CHOICE	2	3		1		1
Private	2014	SAND TILEFISH	2	1	4	6	2	3
Private	2015	SAND TILEFISH	3	11	6	8	1	2
Private	2016	SAND TILEFISH	1	4	5	9	3	1
Private	2014	SAUCEREYE PORGY		1	1			1

Component	Year	Species	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Private	2015	SAUCEREYE PORGY			3			1
Private	2016	SAUCEREYE PORGY		1		1		1
Private	2014	SCUP			1	3		
Private	2015	SCUP			1		1	
Private	2014	SILK SNAPPER			1	1		2
Private	2015	SILK SNAPPER	2		1	1		
Private	2016	SILK SNAPPER			1	1		1
Private	2014	SNOWY GROUPER		5	2		2	
Private	2015	SNOWY GROUPER	1	7	4	2	2	
Private	2016	SNOWY GROUPER	1		10	3		
Private	2014	TILEFISH		2				
Private	2015	TILEFISH	3	3	3	1		
Private	2016	TILEFISH	4	3	1		1	
Private	2014	WHITE GRUNT	5	11	26	31	8	16
Private	2015	WHITE GRUNT	14	18	18	25	12	2
Private	2016	WHITE GRUNT	7	14	29	33	9	8
Private	2014	WHITEBONE PORGY		1	2	3	2	2
Private	2015	WHITEBONE PORGY	2	5	4	10	3	
Private	2016	WHITEBONE PORGY	1	4	7	6	2	1
Private	2014	YELLOWEDGE GROUPER				1	1	
Private	2015	YELLOWEDGE GROUPER		2	2			
Private	2016	YELLOWEDGE GROUPER		1	2			

Table I-2. Number of MRIP intercepts from 2014 to 2016 for the charter vessel component of the recreational sector for species included in Regulatory Amendment 26. Red = less than or equal to 10 intercepts, yellow = 11 to 30 intercepts, and green = greater than 30 intercepts.

Component	Year	Species	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Charter	2014	ALMACO JACK		2	2	7	1	2
Charter	2015	ALMACO JACK		2	18	26	25	3
Charter	2016	ALMACO JACK	2		9	3		
Charter	2014	ATLANTIC SPADEFISH	1		5	10	3	
Charter	2015	ATLANTIC SPADEFISH	1		6	6	3	
Charter	2016	ATLANTIC SPADEFISH		1	2	6		1
Charter	2014	BANDED RUDDERFISH			2	2		
Charter	2015	BANDED RUDDERFISH		3	6	2		
Charter	2016	BANDED RUDDERFISH			1			
Charter	2014	BAR JACK		2	3	1	2	
Charter	2015	BAR JACK		2	3	5	1	
Charter	2016	BAR JACK		1	1	1		
Charter	2014	BLACKFIN SNAPPER					1	
Charter	2016	BLACKFIN SNAPPER			1			
Charter	2014	BLUELINE TILEFISH	1	2	3	2	1	
Charter	2015	BLUELINE TILEFISH	2	1	2	2		
Charter	2016	BLUELINE TILEFISH			2	4		
Charter	2014	GRAY TRIGGERFISH	14	13	40	51	11	12
Charter	2015	GRAY TRIGGERFISH	7	25	37	22	14	14
Charter	2016	GRAY TRIGGERFISH	13	14	42	32	10	17
Charter	2014	JOLTHEAD PORGY	13	4	10	4	4	8
Charter	2015	JOLTHEAD PORGY	22	17	7	1	9	7
Charter	2016	JOLTHEAD PORGY	8	7	9	9	1	3
Charter	2014	KNOBBED PORGY	3	5	3	3		4
Charter	2015	KNOBBED PORGY	1	2	4	1		
Charter	2016	KNOBBED PORGY	2	3	2			1
Charter	2014	LESSER AMBERJACK			1			
Charter	2015	LESSER AMBERJACK					1	
Charter	2014	MARGATE	1	1	3			
Charter	2015	MARGATE	1	5	2	2	1	1
Charter	2016	MARGATE	1		2			1
Charter	2016	QUEEN SNAPPER				1		
Charter	2014	SAILORS CHOICE	6	3	5	9	1	4
Charter	2015	SAILORS CHOICE	5	2	5	6	4	1
Charter	2016	SAILORS CHOICE	2	1	3	1		1
Charter	2014	SAND TILEFISH	9	1	8	4	2	
Charter	2015	SAND TILEFISH		5	7	4	5	2
Charter	2016	SAND TILEFISH	2	3	5	1		2
Charter	2014	SAUCEREYE PORGY	1					1

Component	Year	Species	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Charter	2015	SAUCEREYE PORGY	2	6				2
Charter	2016	SAUCEREYE PORGY	3					
Charter	2014	SCUP				1	1	1
Charter	2014	SNOWY GROUPER		1	2	1		1
Charter	2015	SNOWY GROUPER	2	3	2	1		
Charter	2016	SNOWY GROUPER			1	1		
Charter	2014	TILEFISH	1	2	1			
Charter	2015	TILEFISH		4	1			
Charter	2016	TILEFISH	1		4			
Charter	2014	WHITE GRUNT	27	15	38	38	12	23
Charter	2015	WHITE GRUNT	31	38	43	27	6	11
Charter	2016	WHITE GRUNT	14	14	34	25	6	18
Charter	2014	WHITEBONE PORGY	5		2	7	1	4
Charter	2015	WHITEBONE PORGY	1	2	4	5	2	1
Charter	2016	WHITEBONE PORGY	2	7	2	2	2	1
Charter	2016	YELLOWEDGE GROUPER				1		

Table I-3. Landings by species or complex for species included in Regulatory Amendment 26 from 2014 to 2016 for the recreational sector (private and charter). Highlighted in yellow are years when the ACL was exceeded. Units are numbers of fish (Num) or whole weight (ww).

Species	Year	Landings	ACL	% of ACL	Units	Closure Date	Source
Atlantic Spadefish	2014	702,011	154,352	454.8%	ww		MRIP
Atlantic Spadefish	2015	225,861	661,926	34.1%	ww		MRIP
Atlantic Spadefish	2016	27,591	661,926	4.2%	ww		MRIP
Bar Jack	2014	1,979	19,515	10.1%	ww		MRIP
Bar Jack	2015	4,612	49,021	9.4%	ww		MRIP
Bar Jack	2016	2,005	49,021	4.1%	ww		MRIP
Blueline Tilefish	2014	95,712	111,893	85.5%	ww		MRIP
Blueline Tilefish	2015	45,323	17,791	254.8%	ww	6/10/2015	MRIP
Blueline Tilefish	2016	172,286	87,277	197.4%	ww		MRIP
Deepwater Complex	2014	14,489	19,313	75.0%	ww		MRIP
Deepwater Complex	2015	16,271	38,644	42.1%	ww		MRIP
Deepwater Complex	2016	17,494	38,628	45.3%	ww		MRIP
Golden Tilefish	2014	1,357	3,019	44.9%	Num	6/7/2014	MRFSS
Golden Tilefish	2015	3,595	3,019	119.1%	Num	8/11/2015	MRFSS
Golden Tilefish	2016	13,010	3,019	430.9%	Num	8/27/2016	MRFSS
Gray Triggerfish	2014	431,516	353,638	122.0%	ww		MRIP
Gray Triggerfish	2015	354,237	404,675	87.5%	ww		MRIP
Gray Triggerfish	2016	393,302	404,675	97.2%	ww		MRIP
Grunts	2014	354,543	588,113	60.3%	ww		MRIP
Grunts	2015	282,552	618,122	45.7%	ww		MRIP
Grunts	2016	420,847	618,122	68.1%	ww		MRIP
Jacks	2014	226,004	267,799	84.4%	ww		MRIP
Jacks	2015	125,212	267,799	46.8%	ww		MRIP
Jacks	2016	247,571	267,799	92.4%	ww	8/9/2016	MRIP
Porgies	2014	128,231	106,914	119.9%	ww		MRIP
Porgies	2015	111,577	106,914	104.4%	ww		MRIP
Porgies	2016	140,105	106,914	131.0%	ww	9/3/2016	MRIP
Snowy Grouper	2014	1,214	523	232.1%	Num	6/7/2014	MRFSS
Snowy Grouper	2015	1,621	4,152	39.0%	Num	9/1/2015	MRIP
Snowy Grouper	2016	9,746	4,483	217.4%	Num		MRIP
Wreckfish	2014	0	11,750	0.0%	ww		MRFSS
Wreckfish	2015	0	21,650	0.0%	ww		MRIP
Wreckfish	2016	0	21,185	0.0%	ww		MRIP

Action 2. Specify the recreational season for the deep-water species aggregate

Estimates of the number of fish landed based on the proposed recreational season alternatives are highly uncertain. Misty grouper, queen snapper, and wreckfish were not intercepted on charter trips from 2014 to 2016, and misty grouper and wreckfish were not intercepted from 2014 through 2016 on private recreational trips. There were 165 MRIP intercepts that reported catching species in the proposed Deep-water Species Aggregate from 2014 through 2016 and 12.1% of the intercepts had multiple deep-water aggregate species reported for a trip. Blueline tilefish were the most common deep-water aggregate species and were reported on 95 intercepts through MRIP (charter and private combined). There were 433 headboat trips that reported deep-water aggregate species from 2014 through 2016 and 262 reported multiple deep-water species. Blueline tilefish and silk snapper were the most common deep-water aggregate species in the SRHS.

For any trip that reported landings for a deep-water aggregate species outside of the proposed recreational season alternatives, the landings were converted to released fish. This change was applied to the catch of blueline tilefish and snowy grouper even though a recreational season was in place for these two species during the timeframe analyzed. For trips that reported releasing deep-water aggregate species during the proposed open season(s), released fish were converted to landed fish according to the current bag limit. It should be noted that some landings of deep-water species are reported in state water off Florida. These landings are included in the ACL monitoring.

Overall, the recreational seasons considered under this action would result in a decrease in landings. On average **Sub-alternatives 2a**, **Sub-alternatives 2b** and **2c**, and **Sub-alternative 2d** are predicted to result in a reduction in recreational harvest of deep-water species from about 50% to as much as 97% compared to landings from 2014 to 2016 (**Table I-4**). The combination of **Sub-alternative 2b and Sub-alternative 2c** resulted in the smallest decrease in landings of deep-water aggregate species compared to landings for those species in 2014-2016 (average 35% reduction in landings). The percent reduction in harvest under each of the sub-alternatives would vary by species but may not have been sufficient to prevent exceeding the ACL based on past catch rates. It is important to note that there were many regulatory changes for blueline tilefish during 2015 and 2016 (e.g., ACL changes, recreational management measures including a recreational season). Also, recreational landings of golden tilefish exceeded the recreational ACL in 2015 and 2016 and snowy grouper landings exceed the ACL in 2014 and 2016 and the ACL was increased in 2015. In addition, interpretation of results should consider that harvest of some species occurs in state waters, where regulations may be different than those in federal waters, and landings are applied to the ACL.

Table I-4. Predicted landings (in numbers of fish) and percent reduction of deep-water aggregate species for Action 2 based on season alternatives from 2014 to 2016 for (A) deepwater grouper and tilefish (**Action 1 Alternative 2**) and (B) deepwater grouper, tilefish, and snapper (**Action 1 Alternative 3**).

(A)

	Year	Alt 1	Sub-Alt 2a	Sub-Alt 2b	Sub-Alt 2c	Sub-Alt 2d	Sub-Alt 2a + 2c	Sub-Alt 2a + 2d	Sub-Alt 2b + 2c	Sub-Alt 2b + 2d
Deepwater Grouper and Tilefish	2014	30,117	6,305	14,335	2,531	1,901	8,836	8,206	**16,866**	16,236
	2015	20,290	4,591	7,212	6,226	505	10,817	5,096	**13,438**	7,717
	2016	50,545	10,138	35,045	1,718	1,150	11,856	11,288	**36,763**	36,195
	2014		79.07%	52.40%	91.60%	93.69%	70.66%	72.75%	**44.00%**	46.09%
	2015		77.37%	64.45%	69.32%	97.51%	46.69%	74.88%	**33.77%**	61.97%
	2016		79.94%	30.67%	96.60%	97.72%	76.54%	77.67%	**27.27%**	28.39%
		Average	78.79%	49.17%	85.84%	96.31%	64.63%	75.10%	**35.01%**	45.48%

(B)

	Year	Alt 1	Sub-Alt 2a	Sub-Alt 2b	Sub-Alt 2c	Sub-Alt 2d	Sub-Alt 2a + 2c	Sub-Alt 2a + 2d	Sub-Alt 2b + 2c	Sub-Alt 2b + 2d
Deepwater Grouper, Tilefish, and Snapper	2014	32,784	6,440	14,980	2,771	2,079	9,210	8,519	**17,751**	17,059
	2015	23,788	5,567	9,349	6,373	506	11,940	6,073	**15,722**	9,855
	2016	60,530	11,254	43,516	1,916	1,151	13,170	12,405	**45,432**	44,667
	2014		80.36%	54.31%	91.55%	93.66%	71.91%	74.01%	**45.85%**	47.97%
	2015		76.60%	60.70%	73.21%	97.87%	49.81%	74.47%	**33.91%**	58.57%
	2016		81.41%	28.11%	96.83%	98.10%	78.24%	79.51%	**24.94%**	26.21%
		Average	79.45%	47.70%	87.20%	96.54%	66.65%	76.00%	**34.90%**	44.25%

Action 3. Specify the aggregate bag limit for the deep-water species aggregate

Table I-5 shows estimates of the number of trips reaching different bag limits. While some deep-water species have bag limits of 3 fish per person or less, queen snapper, silk snapper and blackfin snapper are currently included in the 10-snapper aggregate. Also, as mentioned previously, regulations on the harvest of some species are different in state vs. federal waters. Very few of the trips examined reached the maximum proposed bag limit of 3 per person even under **Action 1 Alternative 3**, which would include three more species in the aggregate than **Action 1 Alternative 2**.

The landings for all species in the deep-water aggregate were combined then averaged to determine the effect of the proposed aggregate bag limits. Each bag limit alternative (**Table I-6**) was combined with the seasonal reduction resulting from **Action 2**. Estimates at the species-level are not possible due to insufficient data, but it can be assumed most of the reduction would be due to changes in the harvest of blueline tilefish,

silk snapper, and snowy grouper since those species make up the majority of the landings. All of the alternatives resulted in a decrease of deep-water aggregate landings mainly due to the effect of imposing a recreational season under **Action 2**. The smallest reduction would occur under a three-fish bag limit with minor differences between **Sub-Alternatives 2e** (three fish per person per day) and **Preferred Sub-alternative 2f** (three fish per person per day but maintaining existing restrictions for golden tilefish, snowy grouper, and wreckfish). The largest reduction is predicted to occur under **Sub-Alternative 2b** (one fish per person per day maintaining restrictions on golden tilefish, snowy grouper, and wreckfish) followed by **Sub-Alternative 2a** (one fish per person per day). This is expected since current regulations limit recreational harvest of snowy grouper and wreckfish to 1 per *vessel* per day. Similarly, **Sub-Alternatives 2b**, **2d,** and **2f (Preferred)** resulted in higher reductions compared to the corresponding alternatives that did not propose retaining current possession limits on golden tilefish, snowy grouper and wreckfish since golden tilefish and snowy grouper are two of the more common deep-water species being landed.

Table I-5. Percent of trips reaching combined bag limits for deepwater species (**Action 1 Alternative 3**) from 2014 to 2016. Trips from MRIP were expanded using expansion factors and headboat estimates were developed from reports in the SRHS.

Number Kept Per Person	2014	2015	2016
All Released	15.95%	9.52%	1.44%
Less than 1 per person	50.88%	67.79%	67.10%
1 to 1.99	17.33%	21.54%	9.35%
2 to 2.99	12.57%	1.12%	12.27%
3 to 3.99	2.09%	0.02%	6.32%
4 to 4.99	0.83%	0.01%	0.55%
5 to 5.99	0.00%	0.01%	0.00%
6 to 6.99	0.33%	0.00%	1.24%
Greater than 7	0.01%	0.00%	1.74%

Table I-6. Average estimated landings (in numbers of fish) and percent reduction for (A) **Action 3 Sub-Alternatives 2a-2f** combined with **Action Action 2 Alternatives 2a-2d** (recreational season) for (A) **Action 1 Alternative 2** and (B) **Action 1 Alternative 3**. Aggregate bag limit sub-alternatives that would maintain exiting restrictions on the harvest of golden tilefish, snowy grouper, and wreckfish are denoted with *. The combination of preferred alternatives for the three sub-actions is denoted in bold. The reductions are based on comparing to the status quo for both actions.

(A)

					Deepwater Grouper and Tilefish (Action 1 Alt 2)				
Action 3 Sub-Alt	**Action 2 Alt 1 (Status Quo)**	**Action 2/2a**	**Action 2/2b**	**Action 2/2c**	**Action 2/2d**	**Action 2/2a + 2/2c**	**Action 2/2a + 2/2d**	**Action 2/2b + 2/2c**	**Action 2/2b + 2/2d**
Status Quo	33,651	7,012	18,864	3,491	1,185	10,503	8,197	22,356	20,050
2a (1 fish)	25,950	6,883	14,484	6,924	7,458	13,806	14,341	21,408	21,943
2b (1 fish*)	22,045	5,411	11,378	2,918	1,020	8,329	6,431	14,295	12,398
2c (2 fish)	33,671	9,121	19,966	9,723	10,320	18,845	19,441	29,689	30,286
2d (2 fish*)	27,805	6,625	16,895	3,449	1,177	10,074	7,803	20,344	18,073
2e (3 fish)	35,883	9,459	21,949	11,061	11,739	20,520	21,198	33,010	33,688
2f (3 fish*)	30,002	6,993	18,806	3,478	1,185	10,471	8,178	22,284	19,991
2a (1 fish)		79.55%	56.96%	79.42%	77.84%	58.97%	50.04%	36.38%	34.79%
2b (1 fish*)		83.92%	66.19%	91.33%	96.97%	75.25%	74.53%	57.52%	63.16%
2c (2 fish)		72.89%	40.67%	71.10%	69.33%	44.00%	32.31%	11.77%	10.00%
2d (2 fish*)		80.31%	49.79%	89.75%	96.50%	70.06%	67.99%	39.54%	46.29%
2e (3 fish)		71.89%	34.77%	67.13%	65.11%	39.02%	25.50%	1.90%	-0.11%
2f (3 fish*)		79.22%	44.11%	89.66%	96.48%	68.88%	65.16%	33.78%	40.59%

(B)

					Deepwater Grouper, Tilefish, and Snapper (Action 1 Alt 3)				
Action 3 Sub-Alt	**Action 2 Alt 1 (Status Quo)**	**Action 2/2a**	**Action 2/2b**	**Action 2/2c**	**Action 2/2d**	**Action 2/2a + 2/2c**	**Action 2/2a + 2/2d**	**Action 2/2b + 2/2c**	**Action 2/2b + 2/2d**
Status Quo	39,034	7,753	22,615	3,686	1,245	11,440	11,861	26,302	23,860
2a (1 fish)	29,505	7,538	16,776	8,183	8,780	15,721	16,318	24,959	25,556
2b (1 fish*)	25,817	6,134	13,737	3,081	1,063	9,215	7,196	16,818	14,800
2c (2 fish)	37,074	9,640	22,207	11,173	11,860	20,814	21,500	33,380	34,066
2d (2 fish*)	31,609	7,271	19,392	3,600	1,237	10,871	8,508	22,992	20,629
2e (3 fish)	39,446	9,958	24,366	12,730	13,498	22,688	23,456	37,096	37,864
2f (3 fish*)	33,820	7,564	21,388	3,614	1,245	11,178	8,809	25,002	22,633
2a (1 fish)		80.69%	57.02%	79.04%	77.51%	59.73%	58.19%	36.06%	34.53%
2b (1 fish*)		84.29%	64.81%	92.11%	97.28%	76.39%	81.56%	56.91%	62.09%
2c (2 fish)		75.30%	43.11%	71.38%	69.62%	46.68%	44.92%	14.49%	12.73%
2d (2 fish*)		81.37%	50.32%	90.78%	96.83%	72.15%	78.20%	41.10%	47.15%
2e (3 fish)		74.49%	37.58%	67.39%	65.42%	41.88%	39.91%	4.96%	3.00%
2f (3 fish*)		80.62%	45.21%	90.74%	96.81%	71.36%	77.43%	35.95%	42.02%

Action 4. Remove the recreational minimum size limits for certain deep-water species

Due to the limited sample size for deep-water snapper species, the impact of removing the minimum size limit for silk sapper, queen snapper, and blackfin snapper is uncertain. In order to perform this analysis, the landings for each trip were increased if any trip reported discarding any deep-water snapper assuming that releases were due to the minimum size limit. The current 12-inch minimum size limit was used as the basis for comparison.

There was a total of 19 MRIP intercepts including deep-water snapper species and 259 trips reporting deep-water snapper species in the SRHS. Removing the minimum size increased the landings of deep-water snapper species by 334 fish over the three years examined or 111 fish per year (**Table I-7**). The potential increase in weight is not likely to result the ACL for the Deep-water Complex being reached. The estimates for landings of Deep-water Complex species are highly uncertain.

Table I-7. Estimated increase in deep-water snapper (queen, silk, and blackfin) landings (in numbers of fish) as a result of **Preferred Alternative 2**, removing the 12-inch minimum size limit, compared to **Alternative 1 (No Action)**.

Species	Average Increase in Number	Average Percent Increase in Number	Average Increase in Weight (ww)
Blackfin Snapper	76	7.4%	134
Queen Snapper	0	0.0%	0
Silk Snapper	35	1.6%	67

Action 5. Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

The proposed reduction in the minimum size limit of gray triggerfish was analyzed first since it would affect the bag limit analysis. To determine the effect of reducing the minimum size limit, the percent of triggerfish between 12 and 14 inches was first obtained to determine any regional differences. Based on observer data, there was a higher percentage of 12- to 14-inch fork length gray triggerfish in the northeast portion of Florida (Nassau County through Indian River County) compared to the southeast (St. Lucie County through Miami-Dade County) and the Florida Keys in the charter and headboat components of the recreational sector from 2014 through 2016 (**Table I-8**).

Predicted effects on the private recreational component were based on predicted changes to the charter component. **Preferred Alternative 2** is expected to increase gray triggerfish landings by 66.87% (**Table I-9**). This change averaged 2015 (change in size limit was applied after July) and 2016 only since changes to the regulations increased the minimum size limit from 12 inches to 14 inches July 2015. **Preferred Alternative 2** would establish a 12-inch fork length minimum size limit. The estimated change compared to landings in 2016 was over than 100%. This increase in landings will likely result in the ACL for gray triggerfish being exceeded as occurred in 2014. These predicted increases include landings that would occur in Monroe County; however, landings from Monroe County would not be counted toward the South Atlantic ACL.

The number of gray triggerfish were converted to pounds of fish by using the length-weight relationship reported in SEDAR 41 (**Figure 2**, SEDAR 2016). Two different sizes were used to develop a range of increases in landings: 12-inch fork length (1.5 lbs), which is the proposed minimum size limit, and 13-inch fork length (1.8 lbs), which is mid-point of the change in the size limit. The predicted increases in 2015 and 2016 would result in additional 43,084 to 402,487 lbs of gray triggerfish being landed, respectively (**Table I-10**). The predicted closure would occur in Wave 6 based on average landings from 2015 and 2016 when the size limit could be changed (**Figure I-3**). The minimum size limit in 2014 was smaller than the proposed 12-fork length limit. In 2014 the recreational landings exceeded the ACL.

Table I-8. Percent of gray triggerfish between 12 and 14 inches that could potentially change from released fish to landed fish off Florida based on observer data from 2014 to 2016. NE = Nassau County through Indian River County, SE = St. Lucie County through Miami-Dade County, and KW = Keys.

Component	Region	Average Percentage	Lower Limit	Upper Limit
Charter	NE	79.41%	71.42%	87.40%
Charter	SE	29.76%	23.08%	39.21%
Charter	KW	7.68%	0.00%	15.48%
Headboat	NE	57.02%	47.40%	66.64%
Headboat	SE	24.29%	20.05%	28.52%
Headboat	KW	7.93%	0.00%	15.94%

Table I-9. Estimated gray triggerfish landings (in numbers of fish) for Alternative 1, and due to a decrease in the minimum size limit for gray triggerfish off east Florida under **Preferred Alternative 2**.

Year	Alt 1	Alt 2	% Change
2014	220,044	219,822	-0.10%
2015	155,877	184,599	18.43%
2016	193,916	417,519	115.31%
Average last 2 years		301,059	66.87%
Average last 3 years		273,980	44.55%

Table I-10. Gray triggerfish landings (in pounds whole weight), annual catch limit, and potential increase in landings due to size limit change in the South Atlantic region from 2014 to 2016.

Year	Landings (lbs)	ACL (lbs)	Increase in landings with average weight 1.5 lbs	Increase in landings with average weight 1.8 lbs
2014	495,706	353,638	0	0
2015	358,707	404,675	43,084	51,700
2016	378,257	404,675	335,406	402,487

Source: Landings developed based on data sets from 2017. Average weight for kept landings was developed from Recreational ACL Monitoring File (6/11/2018) website and average weight for fish previously under-sized is based length-weight equation in SEDAR 41 for 12-inch and 13-inch fork length for gray triggerfish (SEDAR 2016).

*The landings estimate was developed using number of fish in the MRIP database downloaded 5/8/2017 and provided by SRHS 5/8/2017. These numbers have changed and are different than information included in the more recent Recreational ACL Monitoring File (6/11/2018).

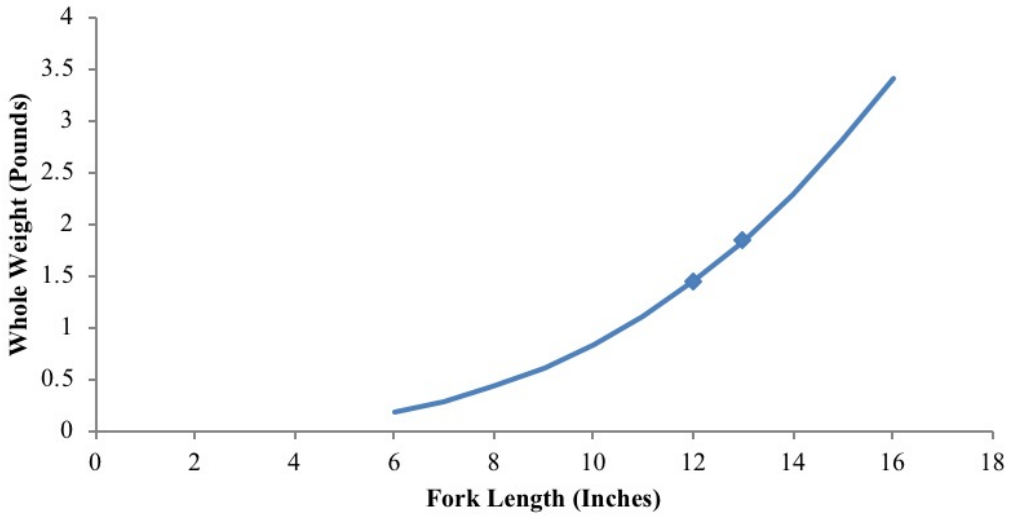

Figure I-2. Length-weight relationship for gray triggerfish developed in SEDAR 41 (SEDAR 2016). The length is fork length in inches and weight in pounds. The diamonds indicate sizes included in analysis.

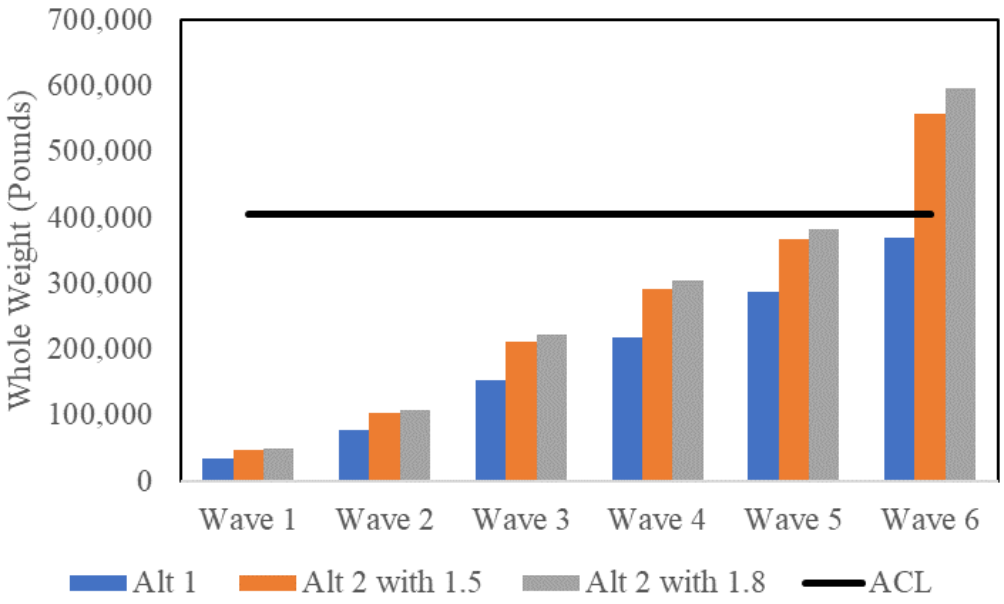

Figure I-3. Cumulative average landings (2015 and 2016) of triggerfish based on Alternative 1 (Status Quo), Alternative 2 with increased landings based on weight for 12-inch fork length fish (1.5 lbs), Alternative 2 with increased landings based on weight for 13-inch fork length fish (1.8 lbs), and annual catch limit (ACL) for gray triggerfish.

Action 6. Modify the aggregate bag limit for the other shallow-water species aggregate

A 20-fish combined bag limit currently exists for almaco jack, banded rudderfish, bar jack, lesser amberjack, jolthead porgy, knobbed porgy, saucereye porgy, scup, whitebone porgy, margate, sailor's choice, tomtate, white grunt, gray triggerfish, and Atlantic spadefish. Fishermen can possess 20 of one species or 20 fish of any of the fish above in

combination. There are four alternatives under this action: status quo (Alternative 1), 10 gray triggerfish limit within the 20-fish aggregate, 10 Atlantic spadefish limit within the 20-fish aggregate, and a maximum of 10 fish of any of the species within the 20-fish aggregate. An additional analysis was done in case bag limits were selected for both gray triggerfish and Atlantic spadefish.

Modifying the 20-fish bag limit as proposed under **Alternatives 2-4**, is expected to result in minimal reduction (less than 5%) to recreational landings of most snapper grouper species within the aggregate if the minimum size limit for gray triggerfish were left unchanged (**Table 11**). However, if the gray triggerfish minimum size limit were reduced as proposed under **Action 5**, data from 2016 show an increase of over 20% in the number of landed fish within the 20-fish aggregate (**Table 11**). The greatest increase is expected to occur under **Alternative 3** (10-fish limit of Atlantic spadefish within the 20-fish aggregate) since this is the only alternative that does not limit retention of gray triggerfish to 10 fish. Under the current gray triggerfish minimum size limit, few trips caught greater than 10 gray triggerfish per person from 2014 through 2016 (**Figure 4**).

Table I-11. Predicted landings (in numbers of fish) and percent change in landings for 20-fish aggregate species from 2014 to 2016 combined with the proposed size limit changes for gray triggerfish (**Action 4**). The sub-alternatives were combined based on potential to select different options. **Alt 1 (no action)**, 10-fish gray triggerfish within the 20-fish aggregate (**Alt 2**), 10-Atlantic spadefish within the 20-fish aggregate (**Alt 3**), 10 fish of any one species within the 20-fish aggregate (**Alt 4**), and 10 gray triggerfish and 10-Atlantic spadefish within the 20-fish aggregate (**Alt 2 and Alt 3 combined**).

		No Gray Triggerfish Size Limit Change				Includes Gray Triggerfish Size Limit Change			
Year	Alt 1	Alt2a	Alt 2b	Alt 2c	Alt 2a and 2b	Alt2a	Alt 2b	Alt 2c	Alt 2a and 2b
2014	1,286,329	1,277,636	1,279,233	1,258,602	1,277,636	1,277,636	1,279,233	1,258,602	1,277,636
2015	1,109,296	1,090,407	1,091,069	1,054,341	1,090,407	1,118,682	1,119,440	1,082,968	1,118,682
2016	937,554	934,589	934,599	931,951	933,068	1,140,992	1,158,309	1,138,358	1,139,471
2014		-0.68%	-0.55%	-2.16%	-0.68%	-0.68%	-0.55%	-2.16%	-0.68%
2015		-1.70%	-1.64%	-4.95%	-1.70%	0.85%	0.91%	-2.37%	0.85%
2016		-0.32%	-0.32%	-0.60%	-0.48%	21.70%	23.55%	21.42%	21.54%

		No Gray Triggerfish Size Limit Change				Includes Gray Triggerfish Size Limit Change			
Year	Alt 1	Alt2a	Alt 2b	Alt 2c	Alt 2a and 2b	Alt2a	Alt 2b	Alt 2c	Alt 2a and 2b
2014	1,286,329	1,277,636	1,279,233	1,258,602	1,277,636	1,277,636	1,279,233	1,258,602	1,277,636
2015	1,109,296	1,090,407	1,091,069	1,054,341	1,090,407	1,118,682	1,119,440	1,082,968	1,118,682
2016	937,554	934,589	934,599	931,951	933,068	1,140,992	1,158,309	1,138,358	1,139,471
2014		-0.68%	-0.55%	-2.16%	-0.68%	-0.68%	-0.55%	-2.16%	-0.68%
2015		-1.70%	-1.64%	-4.95%	-1.70%	0.85%	0.91%	-2.37%	0.85%
2016		-0.32%	-0.32%	-0.60%	-0.48%	21.70%	23.55%	21.42%	21.54%

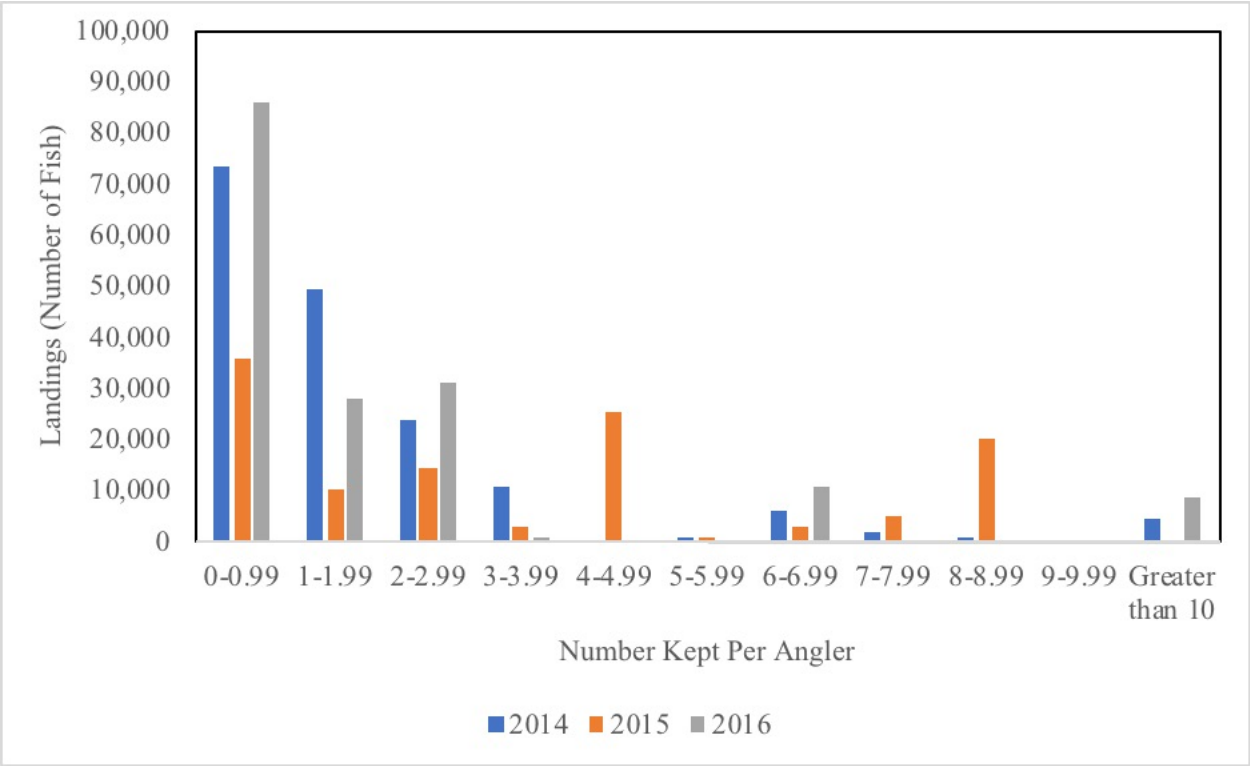

Figure I-4. Landings of gray triggerfish (in numbers of fish) by number of fish kept per angler from 2014 to 2016.

References

SAS Institute Inc 2013. SAS/ACCESS® 9.4 Interface to ADABAS: Reference. Cary, NC: SAS Institute Inc.